

Proven Practice

Installing & Configuring IBM Cognos Controller 10.4.1 server

Product(s): IBM Cognos Controller

Area of Interest: Infrastructure

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Contents

1	INTRODUCTION.....	5
1.1	PURPOSE.....	5
1.2	APPLICABILITY	5
1.3	EXCLUSIONS AND EXCEPTIONS	5
2	IMPORTANT NOTES, TIPS AND WARNINGS.....	6
2.1	DO NOT IGNORE/SKIP ANY SECTIONS OF THIS DOCUMENT, UNLESS YOU UNDERSTAND THE CONSEQUENCES!	6
2.2	SERVER NAME CONVENTIONS – FQDN AND NETBIOS.....	6
3	INITIAL SERVER PREREQUISITES	7
3.1	SERVER HARDWARE RECOMMENDATIONS	7
3.2	VMWARE / ESX (AND OTHER VIRTUAL PLATFORMS).....	7
3.3	OPERATING SYSTEM	7
3.4	WINDOWS PATCHES	7
3.5	WINDOWS USER DURING INSTALLATION	7
3.6	REQUIRED WINDOWS COMPONENTS – MICROSOFT IIS WEBSERVER & ENABLE NETWORK COM+ ACCESS8	
3.7	OTHER MICROSOFT SOFTWARE	10
3.8	DATABASE CLIENT SOFTWARE	11
3.9	ADOBE ACROBAT READER.....	19
3.10	OTHER MISCELLANEOUS WINDOWS SETTINGS	19
3.11	WINDOWS UAC	19
3.12	ENABLE THE WINDOWS POLICY 'DO NOT FORCEFULLY UNLOAD THE USER REGISTRY AT USER LOGOFF'. 19	
3.13	BEST PRACTICES BEFORE PROCEEDING.....	20
4	RECOMMENDED SERVER SYSTEM SETTINGS.....	21
4.1	CREATE A CONTROLLER SYSTEM WINDOWS DOMAIN USER.....	21
4.2	ALLOW COGNOS CGI/ISAPI EXTENSIONS – OPTIONAL (REQUIRED IF USING CA 'GATEWAY' FEATURE FOR SSO)	21
4.3	OPTIMISE IIS WEBSITE 'APPLICATION POOL' SETTINGS	24
4.4	DISABLE INTERNET EXPLORER ENHANCED SECURITY CONFIGURATION.....	25
4.5	DISABLE INTERNET EXPLORER'S PUBLISHER CERTIFICATE REVOCATION CHECKING	25
4.6	ADD SERVERS TO TRUSTED SITES ZONE IN IE.....	26
5	DATABASE PREPARATION	27
5.1	DEFAULT COLLATION SETTING FOR SQL SERVER	27
5.2	UPGRADE SQL SERVER TO LATEST SERVICE PACK	29
5.3	POST-INSTALL SQL SERVER OPTIMISATIONS.....	29
5.4	CONTROLLER SQL LOGIN USER AND DATABASE CREATION.....	31
5.5	CREATE AN OPTIMISE2 (A.K.A. "ADVANCED EXCEL LINK" OR "E.R.O." – ENHANCED REPORTING OPTIMISATION)	33
5.6	OPTIONAL - RESTORE OTHER DATABASES (IF NECESSARY)	33
5.7	CREATE DATABASE MAINTENANCE PLANS	33
6	INSTALLATION OF CONTROLLER SERVER.....	34
6.1	DOWNLOAD THE CONTROLLER 10.4.1 RTM, CA AND PA SOFTWARE FROM THE IBM WEBSITE ...	34
6.2	DOWNLOAD ANY PREFERRED/RECOMMENDED (POST 10.4.1 RTM) INTERIM FIX PACKS	34
6.3	OBTAIN A SUITABLE JDBC DRIVER	35
6.4	CONTROLLER SERVER SOFTWARE INSTALLATION.....	36
6.5	INSTALL/APPLY REQUIRED CONTROLLER INTERIM FIX / FIX PACK.....	36
6.6	COGNOS ANALYTICS (CA) SERVER INSTALLATION	37
7	CONFIGURATION OF CONTROLLER SERVER.....	38
7.1	COPY REQUIRED JDBC DRIVERS ONTO SERVER	38
7.2	FOR ORACLE ONLY - CONFIGURE 'CCR-SYSTEM-PROPERTIES.PROPERTIES' FILE	39
7.3	COGNOS ANALYTICS CONFIGURATION.....	40
7.4	TEST COGNOS ANALYTICS (COGNOS CONNECTION).....	42

7.5	IMPORT THE CONTROLLER "STANDARD REPORTS" FRAMEWORK MANAGER MODEL VIA COGNOS CONNECTION	42
7.6	'CONTROLLER CORE' IIS CONFIGURATION	44
7.7	CONTROLLER CONFIGURATION UTILITY.....	46
7.8	ENABLE BATCH SERVICE(S)	50
7.9	ENABLE OPTIMISE2	50
7.10	'CONTROLLER WEB' CONFIGURATION	51
8	INSTALL AND CONFIGURE FINANCIAL ANALYTICS PUBLISH (FAP)	54
9	POST-INSTALL OPTIMISATIONS.....	55
9.1	PROACTIVE SERVER REBOOTS.....	55
9.2	OPTIONAL: ENABLE EMAIL FUNCTIONALITY.....	55
10	TESTING ON APPLICATION SERVER	56
10.1	INSTALL CLIENT SOFTWARE ON THE APPLICATION SERVER	56
10.2	LAUNCH CONTROLLER CLIENT AND PERFORM BASIC TESTING (ON APPLICATION SERVER ITSELF)...	56
10.3	TROUBLESHOOTING.....	56
10.4	GENERAL WINDOWS (NON-COGNOS SPECIFIC) PERFORMANCE TESTING	57
11	INSTALL CLIENT SOFTWARE ON USER'S PC	58
12	BASIC TESTING FOR EACH CLIENT PC INSTALLATION.....	58
12.1	MAIN CONTROLLER PROGRAM	58
12.2	EXCEL LINK	58
13	OPTIONAL - CUSTOMISING THE ENVIRONMENT.....	59
13.1	OPTIONAL – CHANGE SECURITY (LOGON METHOD) FROM 'NATIVE' TO 'COGNOS' (ALSO KNOWN AS 'CAM') AUTHENTICATION	59
13.2	OPTIONAL – IMPLEMENT SINGLE SIGN ON (SSO).....	59
13.3	OPTIONAL – CONFIGURE CONTROLLER TO USE SSL (HTTPS).....	59
13.4	OPTIONAL – CONFIGURE CONTROLLER TO USE A CA GATEWAY (T=CONTROLLER).....	59
13.5	OPTIONAL – PUBLISH TO TRADITIONAL (NON-FAP) DATA MARTS.....	59

1 Introduction

1.1 Purpose

This document is designed to be a simple/basic guide (complete with screenshots) for how to install a "standard" Controller 10.4.1 system from scratch.

- It is intended to be utilised by IBM Cognos (and partners) technical consultants, to help perform an installation of Controller 10.4.1 server in '**simple / standard**' environments.
- It is also possible for less-experienced people (for example customer's I.T. departments) to use this document too, **so long as**:
 - It will be a simple/standard implementation of Controller
 - The customer accepts responsibility for any problems that may arise from the use of this document

In other words, the customer must accept that IBM's recommendation is always to employ an experienced IBM Cognos Technical Consultant to help them install Controller.

- Employing an experienced IBM technical consultant will ensure that the risk is minimised of unexpected issues arising from an install or upgrade.

By following these "best practices" the intention is to make Controller installation as easy as possible, with the minimum of possibility for errors/issues. The author suggests that experienced technical consultants can also use this document as an 'aide-memoir', i.e. a concise set of instructions for installing the software as per current best practices, for typical situations.

1.2 Applicability

This document is based on installing Controller 10.4.1, which was released 11th June 2019.

1.3 Exclusions and Exceptions

There are an infinite variety of possible customer I.T. environments/needs/specialist requirements. Therefore, IBM has intentionally made Controller flexible to give the customer many different ways to install Controller 10.4.1. Therefore the advice in this document may have to be modified by the reader to fit in with their specific needs/environment.

Although this document demonstrates proven practices suitable for most environments, it is not necessarily perfect for all environments.

Employing an experienced IBM Cognos technical consultant to upgrade your Controller server(s) is always the recommended & ideal scenario.

NOTE: This document was last updated by the author August 14th 2019.

- The latest version of this document can always be found here: <http://www-01.ibm.com/support/docview.wss?uid=swg21608353>

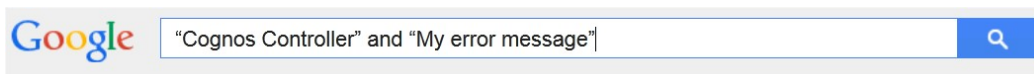
2 Important Notes, Tips and WARNINGS

2.1 Do not ignore/skip any sections of this document, unless you understand the consequences!

It is possible to install Controller and get it working without performing some of the steps that the author prescribes/recommends (in this document). However, customer feedback has confirmed that, unless you perform all of my recommendations/extra-steps, then the customer's Controller system will NOT work well in the long-term.

Many of the author's tips and recommendations refer to IBM "Technotes".

- One method of searching the Technote knowledgebase is to use this link: <https://www.ibm.com/mysupport>
- Alternatively it is easy to search the Technotes by simply using 'Google'. For example, if you want to search for the error message "My error message" then run the following **Google search**, and the top results should be our Technotes:



In addition, most of the author's other **Proven Practice** documents can be found inside these Technotes.

- For example, see here for the latest version of this document: <http://www-01.ibm.com/support/docview.wss?uid=swg21608353>

2.2 Server name conventions – FQDN and NetBIOS

Throughout this document, the author shall talk about configurations that refer to the **<servername>** of your Controller server. There are two main conventions for server naming:

1. NetBIOS – for example 'MYSERVERNAME'
2. FQDN – for example 'MYSERVERNAME.uk.companyname.com'

Alternatively, you may even be using something else to refer to your servers. For example, you may want to use a "virtual" DNS name (for Disaster Recovery purposes). **Whatever naming convention that you choose, you **must** use the SAME (correct) version of your server name at **all** times, to retain consistency.**

WARNING: To summarise, customers should typically use either NetBIOS or FQDN names **throughout their entire configuration/deployment**, but not both (a mixture). [Using a mixture of naming conventions will cause complications/problems later].

3 Initial Server Prerequisites

3.1 Server hardware recommendations

Naturally, customers must deploy Controller on hardware that is sufficiently powerful to give the end users a good experience.

- Please refer to the author's Technote for my server hardware recommendations (based on customer success/feedback) here: <https://www-01.ibm.com/support/docview.wss?uid=ibm10871602>

3.2 VMWare / ESX (and other virtual platforms)

Most customers choose to deploy Controller on virtual hardware (such as VMWare/ESX). However, the author recommends:

- Make sure that the virtual hardware is configured correctly. For example, configure the number of CPU cores per socket correctly (see **scenario #8** here: <http://www-01.ibm.com/support/docview.wss?uid=swg21365257>)
- When the system is 100% tested (and working OK) the author recommends that customers create a virtual snapshot (of the image) as a backup precaution. Archive this backup somewhere safe (in case it is necessary to revert to it later).

3.3 Operating System

Full details of the supported environments for Controller 10.4.1 are here:

https://www.ibm.com/support/knowledgecenter/en/SS9S6B_10.4.1/com.ibm.swg.ba.cognos.qrc_ctrl_inst.doc/c_qsg_ctrl_supportedenvironments.html

- Although other environments are supported, this document shall mainly assume that you are using **Windows 2016 Standard Edition**.

3.4 Windows Patches

As a general best practice, ensure that your operating system is patched to the latest Microsoft Windows patches.

- Make sure that your operating system is patched to the very latest fixes.

3.5 Windows User during installation

When using modern versions of Windows (for example 2012 onwards) there are many tasks that are 'locked down' to user accounts who are not the 'Administrator' account.

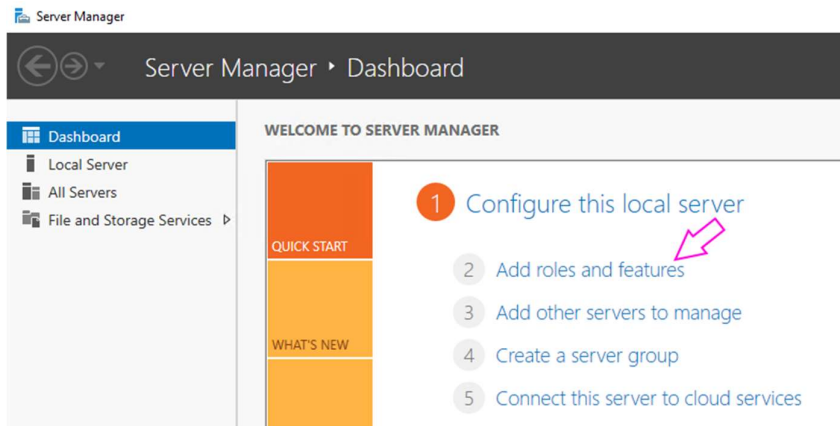
Therefore, to make things easier/quicker, the author currently recommends that (if possible) perform all install/configuration tasks when logged on as the local 'Administrator' user account.

- This is an optional recommendation - purely to make things easier/quicker/simpler.

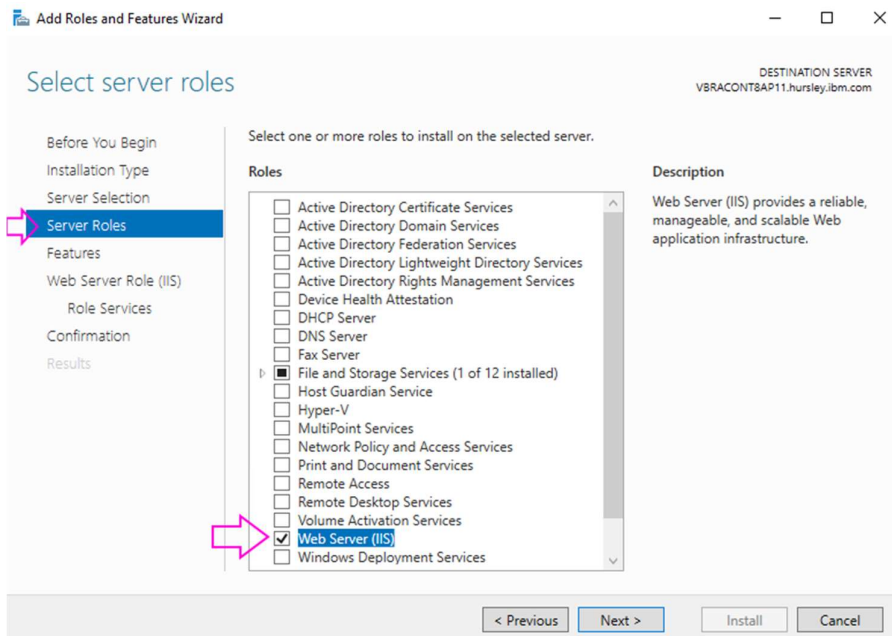
3.6 Required Windows Components – Microsoft IIS webserver & Enable network COM+ access

By default, several required Windows components are not installed/enabled. Therefore:

- Click 'Start – **Server Manager**'
- Click "Add Roles and Features":

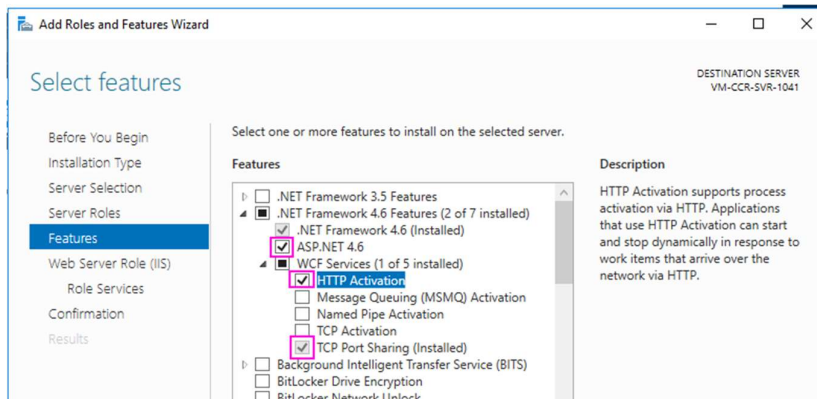


- Choose "Role-based or feature-based installation", and click Next.
- Select your server, and click Next.
- Select/tick **Web Server (IIS)** (if it is not already installed) and click 'Add Features'.

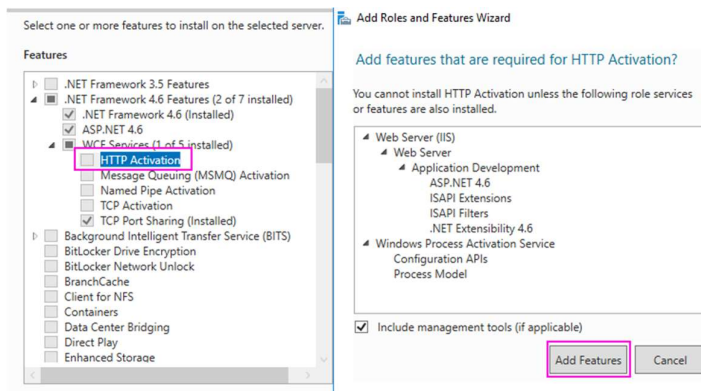


- Click **Next**

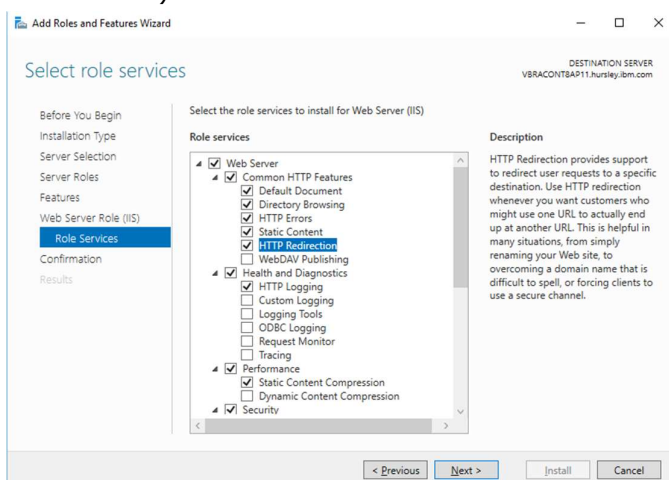
- Inside "Features" you must expand ".NET Framework 4.6 Features"
- Ensure that the following options are ticked/enabled:



- After ticking 'HTTP Activation', you may receive the following screen. If so, then click "Add Features":

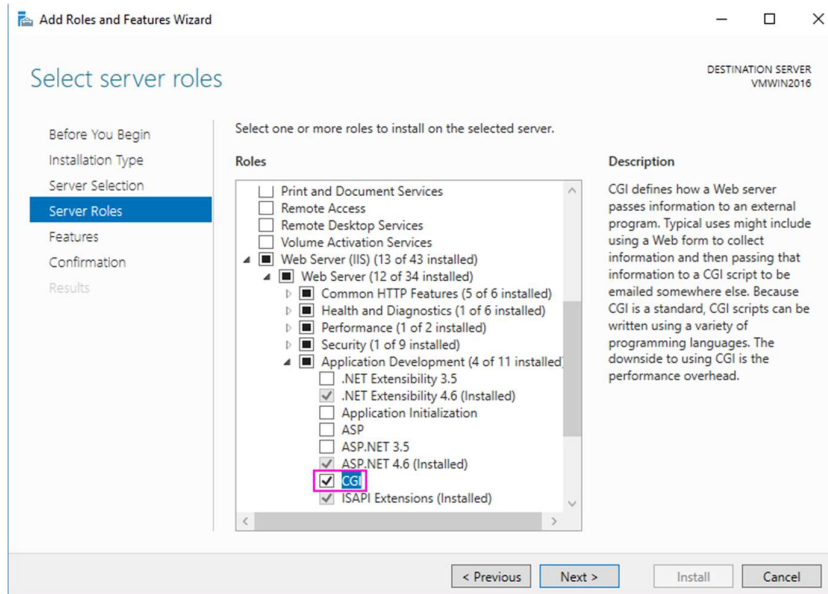


- Click Next, Next.
- When you reach the 'Role Services' section for **IIS**, ensure the following (including 'HTTP Redirection') are selected:



- Click **Next**
- Click **Install**

- Afterwards, relaunch the same “Add Roles and Features” wizard
- Expand ‘Web Server ... Web Server ... Application Development’, and tick/select **CGI** (if it is not already selected), so it should look similar to:



- Click Next, Next, Install.

Launch <http://servername> and ensure that the default website appears successfully **before** proceeding to the next stage.

3.7 Other Microsoft Software

Install each the following Microsoft software/components on your application server:

- MS Excel 2010 (32-bit), 2013/2016 (32 or 64-bit) or 2019 (64-bit)
Although it is not strictly 100% necessary to install MS Office on your application server, [the author recommends that you install Microsoft Excel on the application server.](#)
- This is because it makes testing immediately after the installation (plus throughout the future lifetime of the Controller system) very easy

After installing MS Office, please patch to the latest Microsoft Office patch version.

- Microsoft Visual C++ 2010 SP1 Redistributable Package (x64)
Launch the file “[vc_redist_x64.exe](#)” and perform a default install.

This file is currently downloadable from here:

<http://www.microsoft.com/en-gb/download/details.aspx?id=13523>

3.8 Database client software

IMPORTANT NOTE: Controller server contains mostly 64-bit code. However, a small portion - the COM+ subsystem - is still 32-bit.

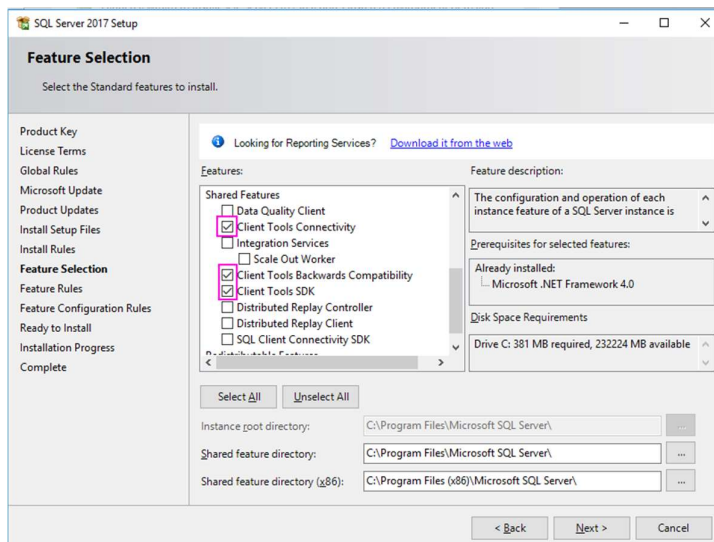
- Therefore Controller requires **both** the **32-bit and 64-bit versions** of the required pre-requisite third-party database client software
- Luckily, SQL and DB2 database clients contain both the 32-bit and 64-bit versions in one package.
- However, if using **Oracle** you will need to manually install **both** packages separately.

Depending on which database platform you are using (SQL, Oracle or DB2), you will need to perform the steps listed below:

OPTION #1 – Microsoft SQL

If using **SQL 2017** as your database server:

- Insert **SQL 2017 (x64)** media and launch **setup.exe**
- Choose 'Installation' – 'New SQL Server stand-alone installation...'
- In the 'Feature Selection' screen, as a minimum tick the following:
 - Client Tools Connectivity
 - Client Tools Backwards Compatibility
 - Client Tools SDK



- Accept all the default values during the wizard

TIP: To make future administration potentially more convenient later, the author recommends to then:

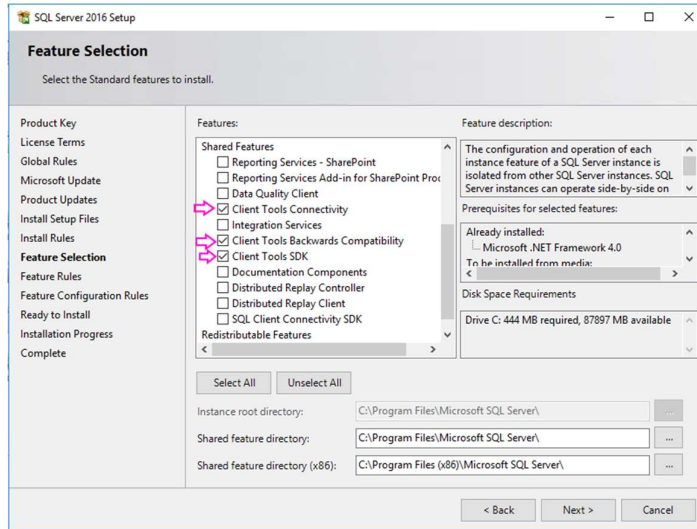
- Browse to this website: <https://go.microsoft.com/fwlink/?LinkId=531355>
- Download the latest version of "SQL Server Management Studio (SSMS)" from the link. Double-click on the file ("SSMS-Setup-ENU.exe") and perform a default installation

~~~~~

If using **SQL 2016** as your database server:

- Insert **SQL 2016 (x64)** media and launch **setup.exe**

- Choose 'Installation' – 'New SQL Server stand-alone installation...'
- In the 'Feature Selection' screen, as a minimum tick the following:
  - Client Tools Connectivity
  - Client Tools Backwards Compatibility
  - Client Tools SDK



- Accept all the default values during the wizard

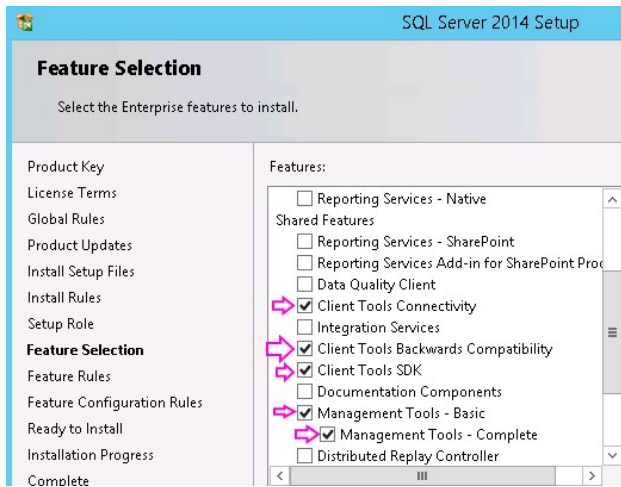
TIP: To make future administration potentially more convenient later, the author recommends to then:

- Browse to this website: <https://go.microsoft.com/fwlink/?LinkId=531355>
- Download the latest version of "SQL Server Management Studio (SSMS)" from the link. Double-click on the file ("SSMS-Setup-ENU.exe") and perform a default installation

~~~~~

If using **SQL 2014** as your database server:

- Insert **SQL 2014 (x64)** media and launch **setup.exe**
- Choose 'Installation' – 'New SQL Server stand-alone installation...'
- In the 'Feature Selection' screen, as a minimum tick the following:
 - Client Tools Connectivity
 - Client Tools Backwards Compatibility
 - Client Tools SDK
 - Management Tools – Complete

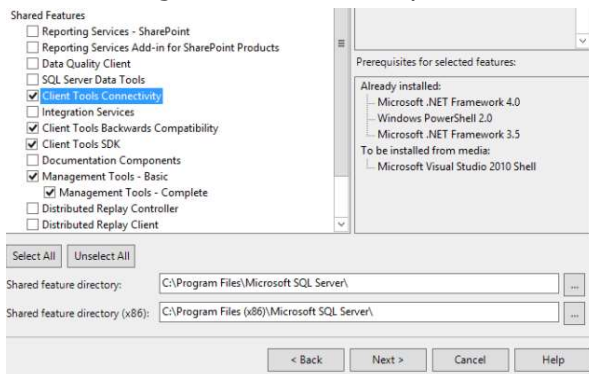


- Accept all the default values during the wizard

~~~~~

If using **SQL 2012** as your database server:

- Insert SQL 2012 (x86 and x64) media and launch setup.exe
- Choose 'Installation' – 'New SQL Server stand-alone installation...'
- In the 'Feature Selection' screen, as a minimum tick the following:
  - Client Tools Connectivity
  - Client Tools Backwards Compatibility
  - Client Tools SDK
  - Management Tools – Complete



- Accept all the default values during the wizard
- After the product has finished installing, download latest service pack (for example SP1 for **64-bit** = **SQLServer2012SP1-KB2674319-x64-ENU.exe**) from Microsoft
- Double-click to upgrade the client tools to SP1, then reboot application server

~~~~~

If using **SQL 2008** as your database server:

- Insert SQL 2008 (x86, x64, ia64) media and launch setup.exe
 - If necessary, this will automatically download .NET 3.5 SP1 from the internet and install it
- Afterwards, choose 'Installation' – 'New SQL Server stand-alone installation...'
- In the 'Feature Selection' screen, as a minimum tick the following:
 - Client Tools Connectivity

- Client Tools Backwards Compatibility
- Client Tools SDK
- Management Tools – Complete
- Accept all the default values during the wizard
- After the product has finished installing, download latest service pack (for example SP2 for **R2 64-bit** = `SQLServer2008R2SP2-KB2630458-x64-ENU.exe`) from Microsoft
- Double-click to upgrade the client tools to SP2, then reboot application server
- If you are **not** going to publish Controller data to **Data Marts** (see blue box above) then you can skip the next step:
 - If you **do** have the SQL 2005 cd-rom media, then simply perform the same steps (see above) to install the SQL **2005** 'Workstation components, Books Online and development tools', and (as a best practice) patch to SQL 2005 **SP4**.
 - If you do **not** have the SQL 2005 cd-rom installation media, then download and install the components (e.g. "Microsoft SQL Server 2005 Backward Compatibility Components" = "`SQLServer2005_BC.msi`")
 - see IBM Technote 1472432 for more details).

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**OPTION #2 – Oracle**

If using **Oracle 12c** as your database server (Controller 10.4.1 supports Oracle 12.1.0.2.0 **Release 1** Enterprise edition):

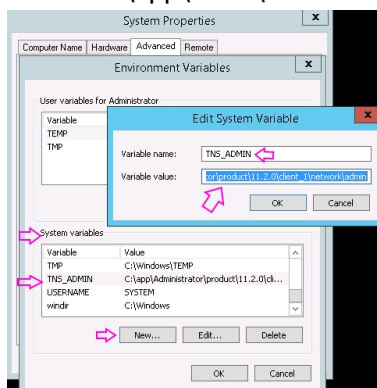
- **Firstly**, download the latest patchset version of the Oracle 12C **release 1 64-bit** client. At the time of writing:
  - The latest version is 12.1.0.2.0
  - This is currently available from here: <http://www.oracle.com/technetwork/database/enterprise-edition/downloads/database12c-win64-download-2297732.html>
  - Specifically, you need to download "**winx64\_12102\_client.zip**".
- Extract this file ("**winx64\_12102\_client.zip**") onto the Controller application server, and run '**setup.exe**'
- **VITAL:** During the client installation wizard, select a full '**Administrator**' install option:



- Typically choose all the default options for the other wizard choices.

**TIP:** After the install has finished, check that it has installed all the expected components, by looking at the size of the "C:\app" folder (or wherever you have installed it to). The total size should be approximately **1.41Gb**.

- Now create/edit your **TNSNAMES.ORA** file.
  - By default, this is located here:  
C:\app\client\Administrator\product\12.1.0\client\_1\network\admin
  - Ensure that it contains entries on how to connect to your Oracle database server(s)
- Next you need to create a '**System** Variable' (on your Controller application server) called '**TNS\_ADMIN**' to point to the location of your TNSNAMES.ORA file.
  - By default, the value would be:  
C:\app\client\Administrator\product\12.1.0\client\_1\network\admin





TIP: Before continuing, due to a bug in Oracle (<https://community.oracle.com/thread/3653584>) you will probably need to rename the registry key "HKLM\Software\Oracle" to "HKLM\Software\Oracle.OLD".

- **Secondly**, download the latest patchset version of the Oracle 12C release 1 **32-bit** client. At the time of writing:
  - The latest version is 12.1.0.2.0
  - This is currently available from here: <http://www.oracle.com/technetwork/database/enterprise-edition/downloads/database12c-win64-download-2297732.html>
  - Specifically, you need to download "**winnt\_12102\_client32.zip**".
- Extract this file ("**winnt\_12102\_client32.zip**") onto the Controller application server, and run '**setup.exe**'
- **VITAL:** During the client installation wizard, select a full '**Administrator**' install option:



- The author recommends that you install this software to a SEPARATE folder (from the 64-bit client)
  - For example, install it into the folder: C:\app\_**32**\Administrator
- After the install has finished, check that it has installed all the expected components, by looking at the size of the "C:\app\_32" folder (or wherever you have installed it to). The total size should be approximately **1.41Gb**.

IMPORTANT: Finally, undo the registry key renaming that you did earlier.

- In other words, rename the registry key "HKLM\Software\Oracle.OLD" to "HKLM\Software\Oracle".



**OPTION #3 – DB2**

If using **DB2 11.1** as your database server:

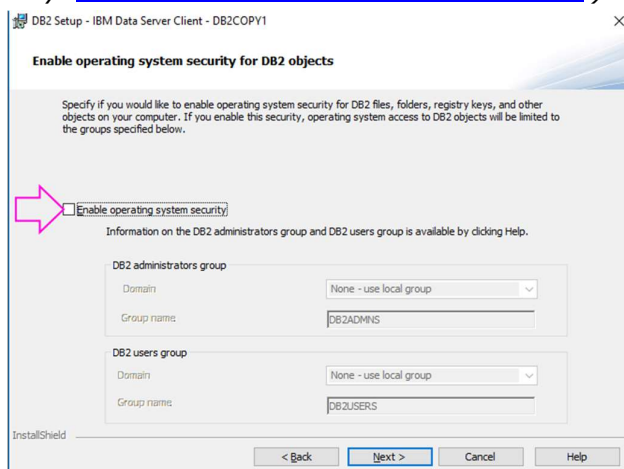
Controller 10.4.1 comes bundled with a 'restricted license' version of IBM DB2 ("DB2 Advanced Workgroup Server Edition Server Authorized User Single Install V11.1").

- Therefore, you can download the relevant DB2 installation files from the same location that you downloaded the Controller 10.4.1 media.

[Alternatively, if you have a separate license for DB2 server, you can choose to obtain the DB2 software from elsewhere].

Assuming that you want to use the 'bundled' version of DB2, first install DB2 11.1:

- Open the folder for 'CNB89ML' (containing the extracted files for 'DB2\_AWSE\_AUSI\_Svr\_11.1\_win\_86-64.zip').
- Extract the ZIP file to a folder
- Double-click on <location> \setup.exe
- Click "Install a Product"
- Underneath "IBM Data Server Client Version 11.1" click **"Install New"**
- In the Wizard, choose **'I Accept'** then click **"Next"**
- Choose install type **"Custom"** then click **"Next"**
- Choose the default ("Install IBM Data Server Client on this computer and save my settings in a response file") and click **"Next"**
- Accept the default installation folder (or choose a new directory) as required, and choose **"Next"**
- Ensure that **"English"** is selected and click **"Next"**
- Inside the "DB2 copy name" accept the default (**"DB2COPY1"**) then click **"Next"**
- Click **"Next"**
- Accept all the defaults **\*except\*** inside the **"Enable operating system security for DB2 objects"** **untick** the option **"Enable operating system security"** (see here for why: <https://www-01.ibm.com/support/docview.wss?uid=swg21504470>):



- Click **"Finish"**
- Click **"Next"**, then **"Finish"**
- Close the final DB2 screen.

Next, choose which DB2 Fix Pack (patch) to upgrade to.

- At the time of writing, the latest DB2 11.1 patch is “**Mod 4 Fix Pack 4 iFix001**”
  - This is the file “v11.1.4fp4a\_ntx64\_universal\_fixpack”
- For more details, see here: <https://www-01.ibm.com/support/docview.wss?uid=swg27007053>

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If using **DB2 10.5** as your database server:

- **Warning:** DB2 10.5 will soon (April 30th 2020) no longer be supported by IBM.

First install DB2 10.5 RTM:

- Open the folder for 'CIWN9ML' (containing the extracted files for 'DB2_10.5.0.3_limited_Win_x86-64.exe').
- Double-click on <location>**setup.exe**
- Click "Install a Product"
- Underneath "IBM Data Server Client Version 10.5" click "Install New"
- In the Wizard, click "**Next**"
- Choose install type "**Custom**" then click "**Next**"
- Choose the default ("Install IBM Data Server Client on this computer and save my settings in a response file") and click "**Next**"
- Accept the default installation folder (or choose a new directory) as required, and choose "**Next**"
- Ensure that "**English**" is selected and click "**Next**"
- Inside the "DB2 copy name" accept the default ("**DB2COPY1**") then click "**Next**"
- Click "**Next**"
- Accept all the defaults **except** inside the "**Enable operating system security for DB2 objects**" **untick** the option "**Enable operating system security**" (see Technote 1504470 for why)
- Click "**Finish**"
- Click "**Next**", then "**Finish**"
- Close the final DB2 screen.

Next, choose which DB2 Fix Pack (patch) to upgrade to.

- At the time of writing, FP10 is the latest version.
 - Therefore, FP10 is recommended by the author.
 - All DB2 client versions can be freely downloaded from here: <http://www-01.ibm.com/support/docview.wss?uid=swg27016878>

Finally, patch the DB2 10.5 client to that chosen Fix Pack:

- Open the patch folder, for example:
 - If using FP3a, this is the folder: 'CN2XMML'
 - If using FP5, this is the folder that you have extracted "v10.5fp5_ntx64_universal_fixpack.exe" to.
- Stop all DB2-related **Windows services**
- Double-click on <location>**setup.exe**
- Click "Install a Product"
- Inside the "IBM Data Server Client Version 10.5 Fix Pack X" section, click "Work with Existing":
- Choose all the default options, during the installation wizard.

~~~~~

### 3.9 Adobe Acrobat Reader

Strictly speaking, you do not need to install Adobe Acrobat Reader on your application server. However, to make testing easier, the author recommends that you install a modern/recent version (e.g. latest version of Adobe XI).

### 3.10 Other Miscellaneous Windows settings

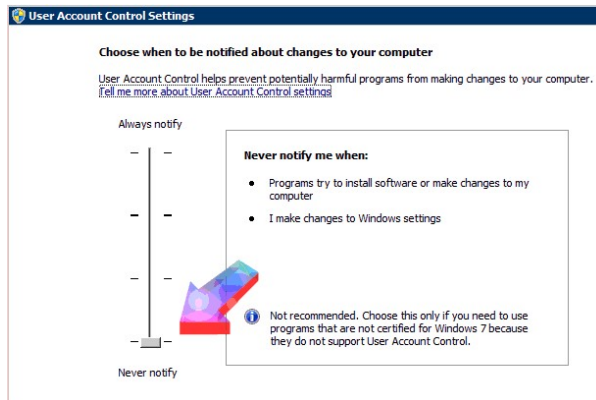
Ensure that all servers (e.g. SQL, Application#1, APP#2, Citrix #1, Citrix#2) are members of the **same domain**

- If they are not in the same Windows domain, then this will cause problems when using advanced functionality (for example MSAS Data Mart publishes, and also using Optimise2/ERO)

### 3.11 Windows UAC

Disabling UAC is **not strictly necessary** (either on the server or the client device). However, to make the installation much easier (fewer prompts during the software install/configuration) the author typically **disables** the Windows **UAC** prompts before continuing (you can re-enable UAC once everything is installed/working):

- Start - Settings - Control Panel
- Click "User Accounts- User Accounts"
- Click "Change User Account Control settings"
- Change slider setting to "**Never notify**"
- Click OK



### 3.12 Enable the Windows policy 'Do not forcefully unload the user registry at user logoff'.

Some customers (RARE) want to run a Windows service under a non-system user account.

- In general the author does not recommend doing this. Instead, he generally prefers all Windows services to run under the Local System account.

If you do run services under a 'real' (non-system) username, then to stop various error messages (for example <https://www-01.ibm.com/support/docview.wss?uid=swg21497069>) it is **VITAL** that you should:

- Launch the group policy editor (click "Start - Run" then type "**gpedit.msc**")
- Navigate "Computer Configuration -> Administrative Templates -> System-> **UserProfiles**"
- Double-click on "Do not forcefully unload the user registry at user logoff"
- Change the setting from "Not Configured" to "**Enabled**".

### 3.13 Best practices before proceeding

- (1) Ensure that your application server has a fast (ideally **gigabit**, but as a *minimum* 100Mb Full Duplex) **network** connection to/from the database server
- (2) As a precaution, **try testing the network connection** (between the application servers and the database server), to make sure that there are no unexpected bottlenecks. For guidance on this, see here: <http://www-01.ibm.com/support/docview.wss?uid=swg21347841>
- (3) Check your **Windows Regional Settings**, before installing any software.
  - Typically, ensure that your server has been installed with the appropriate setting for your country (e.g. English (UK)) as default regional options/language/keyboard.
  - These regional settings choices should be consistent (the same) between the various servers (Database, Application server and Citrix servers) involved. [Having a mixture of Regional Settings increases the likelihood of experiencing application issues].

## 4 Recommended Server System Settings

---

### 4.1 Create a Controller System Windows domain user

Some Controller system components (mainly, "ERO / Optimise2") run best under a Domain User account, so now:

- Create a Windows (Active Directory) domain user (e.g. DOMAIN\Controller\_system)
  - Ensure that the user's password is **not** set to expire

~~~~~

Optional: In many customer environments, it makes installation (and future troubleshooting work) easier if you make this 'Controller system' user to be a user account which can logon to the server(s). Therefore, consider adding this Domain User to the local "administrators" group that resides on the server (s).

- Specifically, right-click on "My Computer", and choose "Manage"
- Expand "Local Users and Groups - Groups"
- Open up "Administrators" and add the domain user here
- Ensure that the customer does not have a policy (e.g. an AD Group Policy) which periodically automatically removes non-recognised accounts from the local "Administrators" group

~~~~~

### 4.2 Allow Cognos CGI/ISAPI extensions – optional (required if using CA 'gateway' feature for SSO)

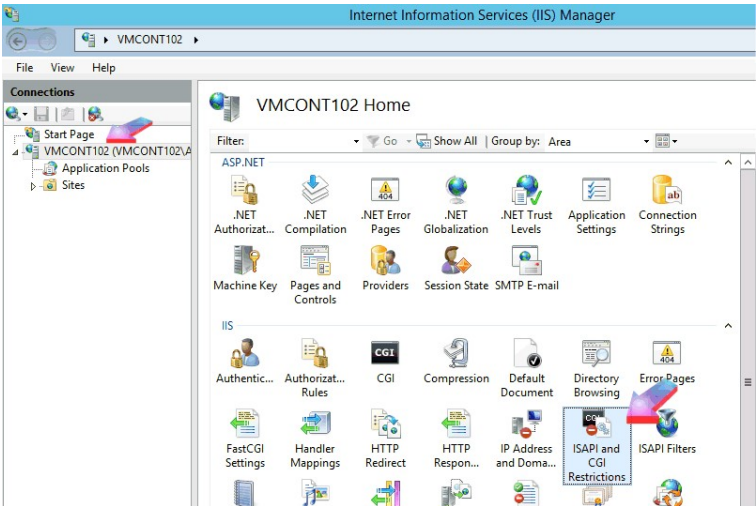
IBM no longer actively supports Cognos BI. Therefore (although Controller will work with some versions of Cognos BI) customers should use Cognos Analytics (CA) server with Controller 10.4.1.

If you choose to use CA's optional 'gateway' feature (which is necessary for some features, for example Single Sign On - see later) then you must choose to either use CGI or ISAPI (see later section for more details).

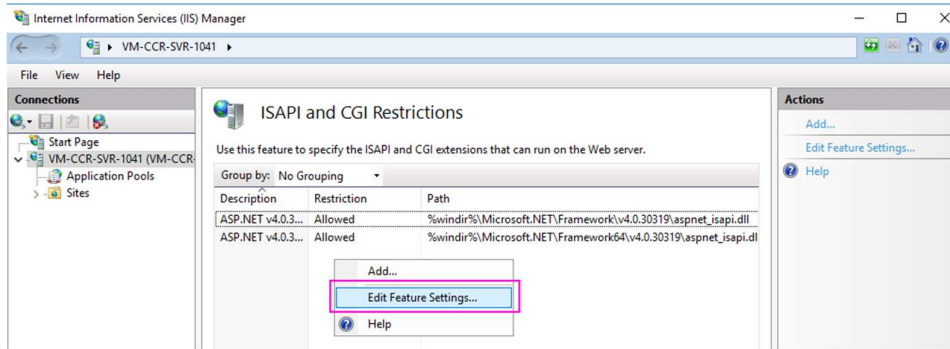
- By default, both CGI and ISAPI are disabled in IIS.
- Therefore, after you have chosen which one to use (default = CGI) you must enable the relevant extension by using either of the following methods ('quick' or 'slow'):

Quick and easy method:

- Open the IIS administrative Manager tool, highlight your server, and open '**ISAPI and CGI Restrictions**'



Right-click on the white background, and choose 'Edit Feature Settings'



- Tick the relevant box (either "Allow unspecified **CGI** modules" or "Allow unspecified **ISAPI** modules") depending on which technology you intend to use.
  - If unsure, simply tick both:



- Click OK.

Slower/More precise method:

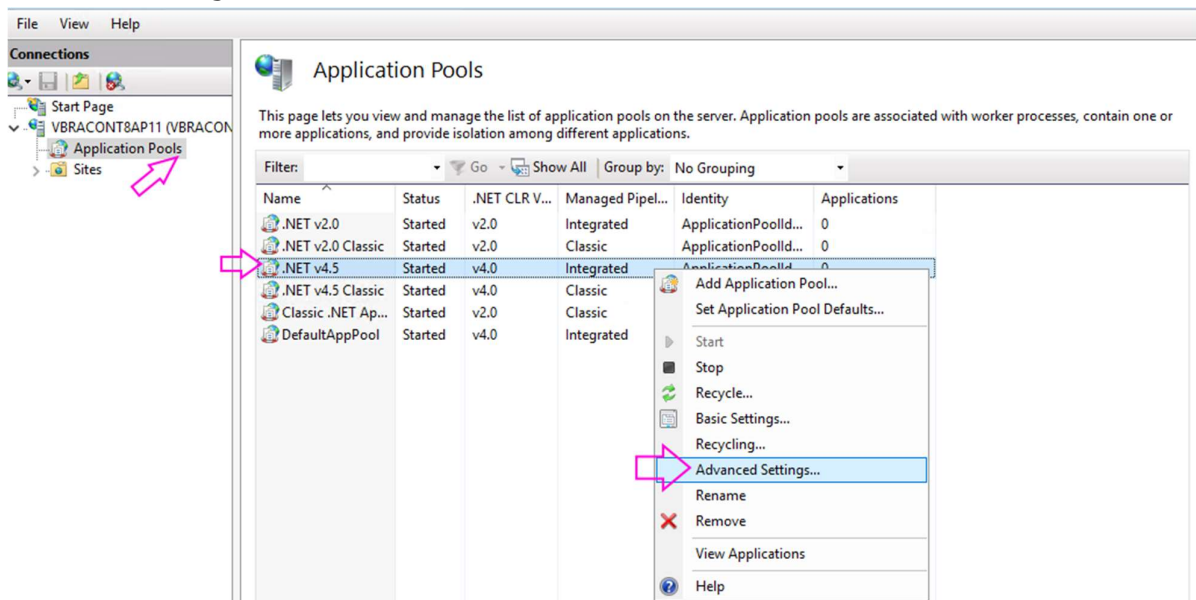
If you need to have more precise security control, you could instead do the following (**after** installing CA server):

- Right-click on the white background, and choose 'Add'
- Inside the "Add ISAPI or CGI Restriction" box, create a new Webserver extension
- For example, call the 'Description' either '**Cognos.cgi**' or '**cognosisapi.dll**' (depending on your needs)
- Inside the 'ISAPI or CGI path' configure it to allow the relevant file, which (by default) is either:
  - C:\Program Files\ibm\cognos\analytics\cgi-bin\**cognos.cgi**
  - Or C:\Program Files\ibm\cognos\analytics\cgi-bin\**cognosisapi.dll**
- Make sure that "Allow extension path to execute" is ticked

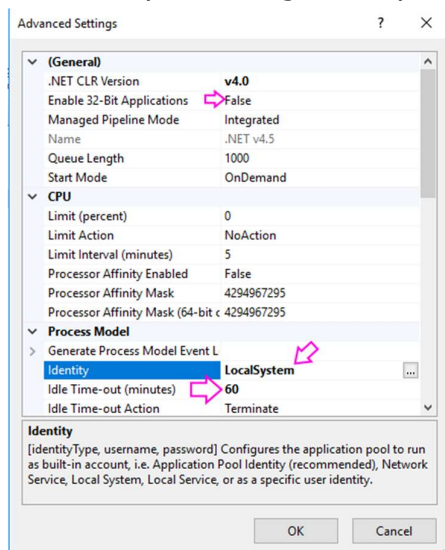
### 4.3 Optimise IIS website 'Application Pool' settings

Inside IIS Manager, open the section 'Application Pools'

- Right-click on **'.NET v4.5'** (make sure you choose the **'Integrated'** version) and choose **'Advanced Settings'**



- Make sure that "Enable 32-bit Applications" is set to **"False"**
- Under 'Process Model', change the setting for **'Idle Time-out (minutes)'** from the default (20) to **600**
  - TIP: This is longer than previous document's recommendations (60). This is due to intermittent problems that can sometimes appear in some environments.
- Also, modify the setting "Identity" to be **"LocalSystem"**:

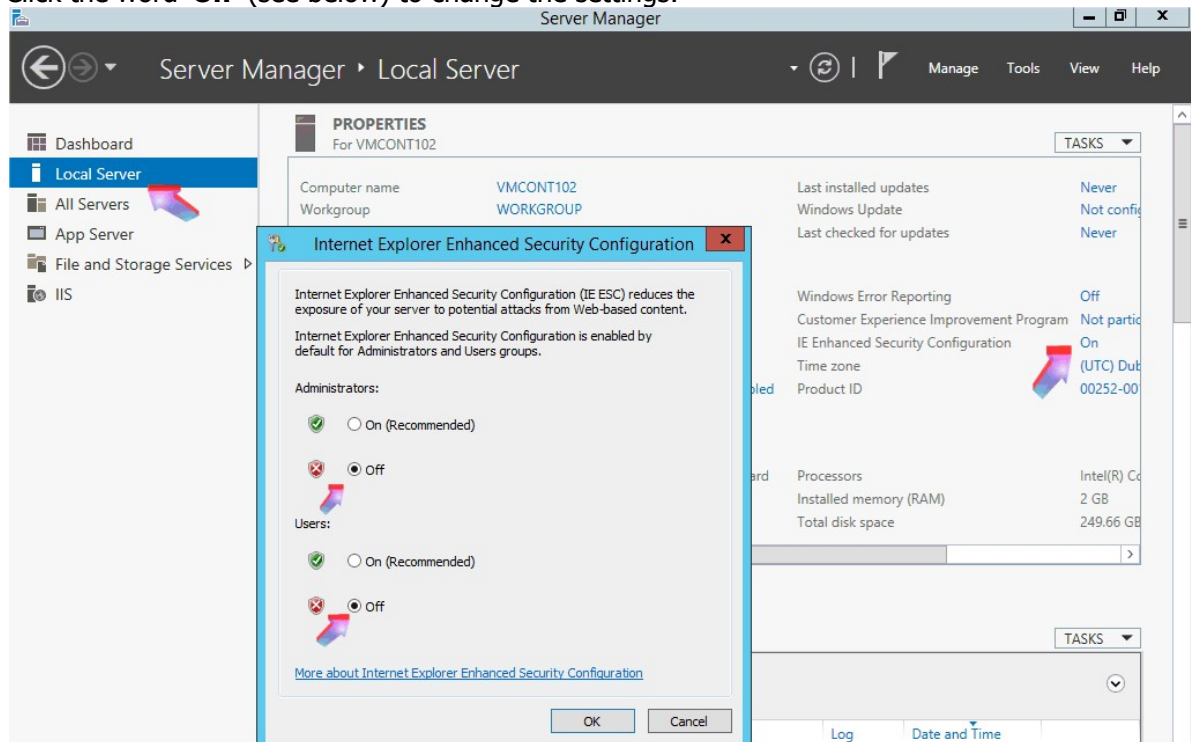




#### 4.4 Disable Internet Explorer Enhanced Security Configuration

The author recommends that (for the initial installation/testing phase) IEESC is disabled. The customer may choose to re-enable it after the testing phase is complete.

- Right-click on 'My Computer' and choose 'Manage'
- Highlight "**Local Server**" (at the top of the screen), and then locate the setting 'IE Enhanced Security Configuration'
- Click the word '**On**' (see below) to change the settings:

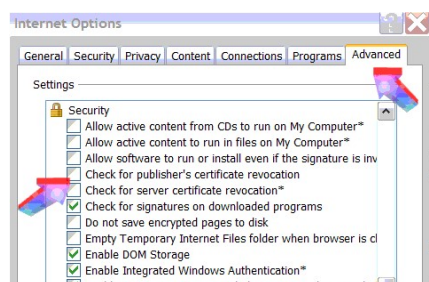


- Ensure that 'Internet Explorer Enhanced Security Configuration' is configured to be '**Off**' for **both Administrators and Users**.

#### 4.5 Disable Internet Explorer's publisher certificate revocation checking

If your application server cannot connect to the internet, then you will receive large delays when you attempt to run the Controller .NET software. To solve this, launch Internet Explorer, and click 'Tools – Options'.

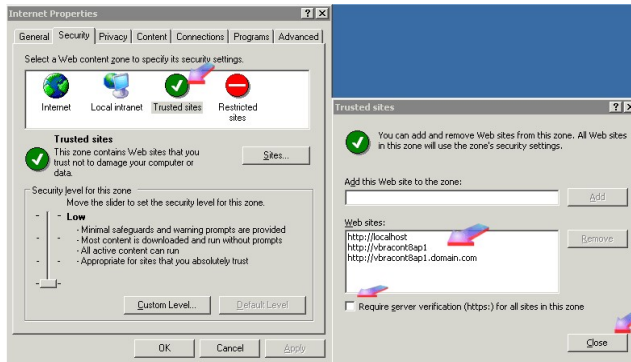
- Click 'Advanced' tab and UNTICK "Check for publisher's certificate revocation":



#### 4.6 Add servers to Trusted Sites zone in IE

**Important:** It is VITAL to ensure that communication between the application servers is not blocked by Internet Explorer. Therefore, you MUST perform the following steps:

- Launch Internet Explorer, and click 'Tools – Options'
- Click 'Security', select 'Trusted sites' and click 'sites' button:



- Untick the box 'Require server verification...' and add all the addresses for all the separate Controller servers (e.g. report server, gateway etc.) in here

**TIP:** In case you need it later, it is recommended you add both the NetBIOS and FQDN names:

In other words, if you have 3 Controller application servers, add the following:

- <http://controllerAPP/> , <http://controllerapp.domain.com/>
- <http://controllerREP/> , <http://controllerREP.domain.com/>

Finally (for example see here: <http://www-01.ibm.com/support/docview.wss?uid=swg21347295> ) you must:

- Open the Internet Options, Security tab
- Change the security level for the "Trusted sites" from the default "Medium" to "**Medium-Low**"

## 5 Database Preparation

**TIP:** The following section assumes you are using Microsoft SQL. If you are using a different database platform, please refer to the author's companion documentation:

- Oracle: <http://www-01.ibm.com/support/docview.wss?uid=swg21346962>
- DB2: "Installing & Configuring IBM DB2 10.5 for use with Cognos Controller 10.2 - Support Proven Practice" plus the following guidance:
  - ContentStore: <http://www-01.ibm.com/support/docview.wss?uid=swg21667225>
  - Main Database: <http://www-01.ibm.com/support/docview.wss?uid=swg21570572>

### 5.1 Default Collation Setting for SQL server

**Important:** It is vital that you read and understand this section. Using the 'wrong' database collation for the Controller application repository database will cause problems in the future.

Controller should work with **almost** any case-insensitive server collation setting. NOTE: **We do not recommend using "uppercase preference"** (for example SQL\_Latin1\_General\_Pref\_CP1\_CI\_AS) because:

- no testing has been performed with "uppercase preference" collation settings
- we believe that it can *potentially cause errors with alphanumeric keys*. Since alphanumeric keys are used extensively in Controller, I would take this as a strong warning not to use it.

However, you cannot transfer a database from one SQL server (to a different SQL server) if the 2 servers have *different* server default collation settings.

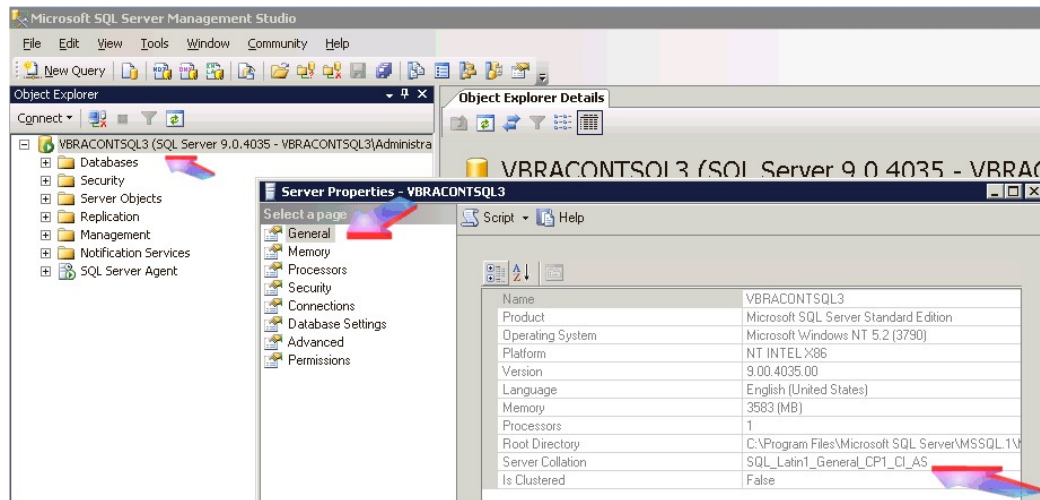
- This is because the Controller database *\*must\** match the collation setting of the TEMPDB database, so that it can transfer information correctly. For more information, see IBM Technotes #1345692 & 1347234.

Since the customer will want to transfer their database between customer ⇔ Cognos Support and ⇔ IBM Cognos consultant, it is *essential* that they are aware that **each SQL server** (that they transfer the database to/from) **must have the same collation setting for its TEMPDB database** (also known as having the same 'default' collation setting).

Therefore (if at all possible) you should **try your best** to ensure that your SQL server has the IBM Cognos 'preferred' (most tested/used) collation settings of:

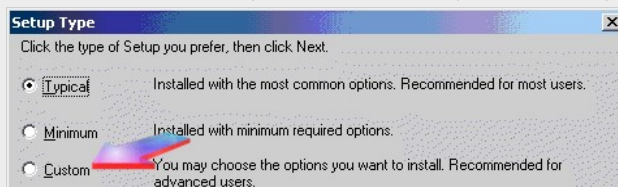
- either: Latin1\_General\_CI\_AS
- or: SQL\_Latin1\_General\_CP1\_CI\_AS

TIP: You can check what your SQL server's default collation setting is, by using the 'SQL Server Management Studio' tool. Right-click on server, and click "properties" – see below for an example:

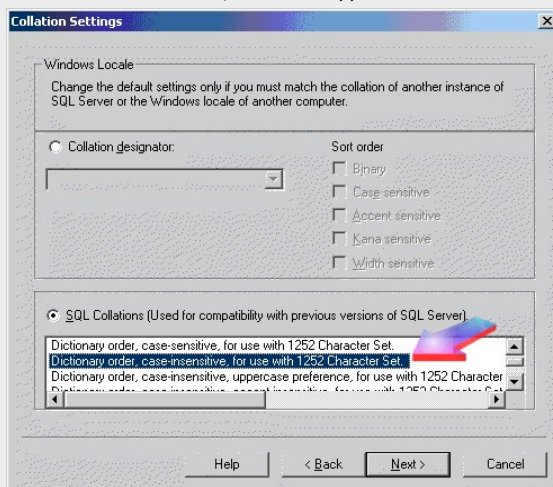


TIP: If you yourself are installing the Microsoft SQL server, then you may decide that you want to use IBM Cognos' customer's most popular collation ("SQL\_Latin1\_General\_CP1\_CI\_AS").

To achieve this, you need to ensure that you choose a "custom" install. During the installation wizard, you choose a 'custom' installation of SQL (see below for an example for SQL 2000)



During the wizard, when you reach the "collation settings" screen, choose "dictionary order, case-insensitive, for use with 1252 Character Set", which will appear similar to the following:



## 5.2 Upgrade SQL Server to latest Service Pack

Naturally, after installing SQL Server it is standard best practice to immediately patch it to the latest Microsoft service packs.

At the time of writing, the author recommends:

- SQL 2008 R2:
  - Install **SP3** by downloading and running the relevant file (for example "SQLServer2008R2SP3-KB2979597-x64-ENU.exe" for 64-bit version).
- SQL 2012:
  - Install **SP4** by downloading and running the relevant file (for example "SQLServer2012SP4-KB4018073-x64-ENU.exe" for 64-bit version).
- SQL 2014:
  - Install **SP2** by downloading and running the relevant file (*for example* "SQLServer2014SP2-KB3171021-x64-ENU.exe").
- SQL 2016:
  - Install **SP1** by downloading and running the relevant file (for example "SQLServer2016SP1-KB3182545-x64-ENU.exe" for 64-bit version).
- SQL 2017:
  - Install **CU16** by downloading and running the relevant file (for example "SQLServer2017-KB4508218-x64.exe") from here: <https://www.microsoft.com/en-us/download/details.aspx?id=56128> .

## 5.3 Post-install SQL Server Optimisations

- Maximum server memory (in MB)



**Important:** – For performance reasons, it has been found that it is best to re-configure your SQL server to NOT use all the server's RAM.

- Instead, modify the SQL memory setting "**Maximum server memory (in MB)**" to be less than the total of RAM in the server.
  - For example, in a **16Gb** RAM server, it is suggested to change the value to **12288** (which equates to **12Gb**).
- For more details, see here: <https://www-01.ibm.com/support/docview.wss?uid=swg21498586>

- SQL Server parallelism

Some customers can **greatly** benefit from changing their SQL "**Max Degree of Parallelism**" setting (see Technotes 1595955, 1590091, 1347497 & 1634615 for example).

There is a balance to be had between speeding up tasks (such as consolidations) and stopping the system getting overloaded by large/complex processes. As a general guide, the author recommends:

- For **underpowered** (below recommended specifications) SQL servers with only **2 or 3 CPUs** (CPU cores) - change the value to **1**
- For SQL servers with **4 to 7 CPUs** - change the value to **2 or 3**
- For SQL servers with **8 to 12 CPUs** - change the value to **3 or 4**
- For SQL servers with **12 to 16 CPUs** - change the value to **4 or 5 or 6**.

General Performance Tips:

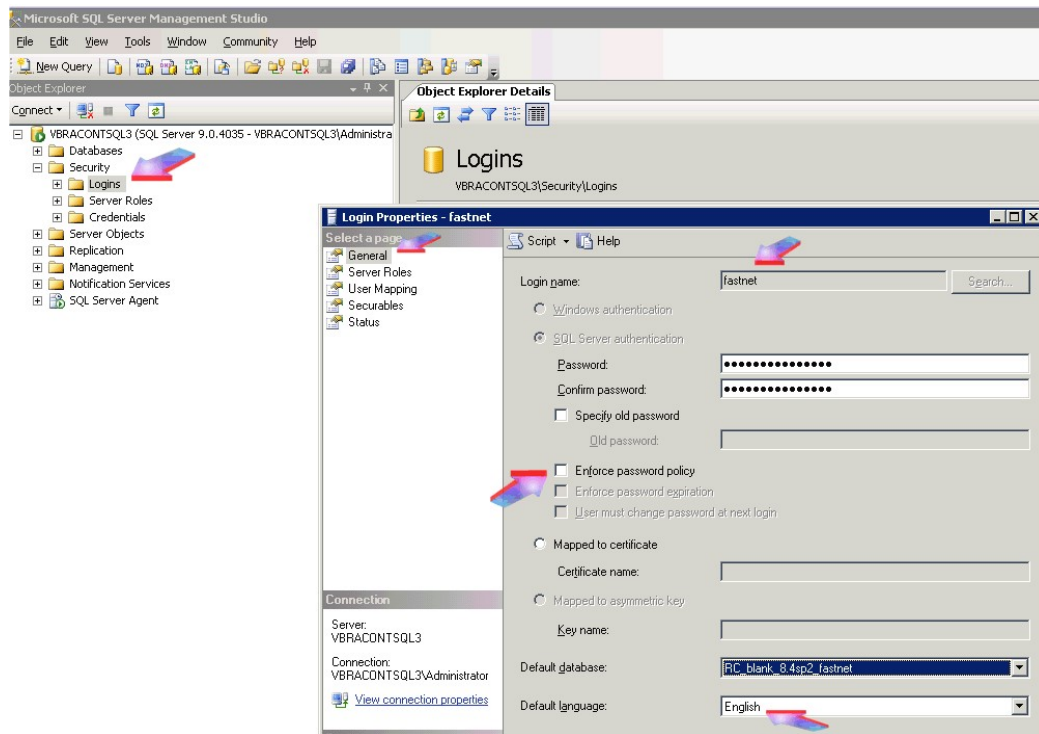
Finally, there are several general ways to improve SQL performance, including:

- Ensure that system/TEMPDB, DATA and LOGS are on separate arrays, for maximum performance
- Change the default storage location for the DATA/LOG files on the SQL server at this point, to save time in the future.
- Ideally, the SQL server should be running on a server dedicated to this task only.

## 5.4 Controller SQL login user and database creation

**TIP:** For instructions on how to move existing Controller databases (from an old Controller version) to a new SQL server, see here: <https://www-01.ibm.com/support/docview.wss?uid=ibm10795804>

- Create blank SQL database(s) for Controller “application” repository (i.e. financial data)
  - Most customers have a need for ‘live’, ‘test’ and ‘training’ databases
  - Best practice: call these `ControllerLIVE`, `ControllerTEST` and `ControllerTRAIN` respectively
- **Create blank SQL database** for Controller “Cognos BI **ContentStore**” (i.e. report server configuration data)
  - Best practice: call this `ControllerContentStore`
- Create SQL login
  - To enable SQL logins, you must ensure that your SQL server is set to ‘mixed-mode’ authentication
  - By convention, Cognos recommends using the SQL login called “fastnet”, although any name could be used (although cannot start with a number e.g. “1cognos” since get errors with certain processes e.g. DBMAINT).

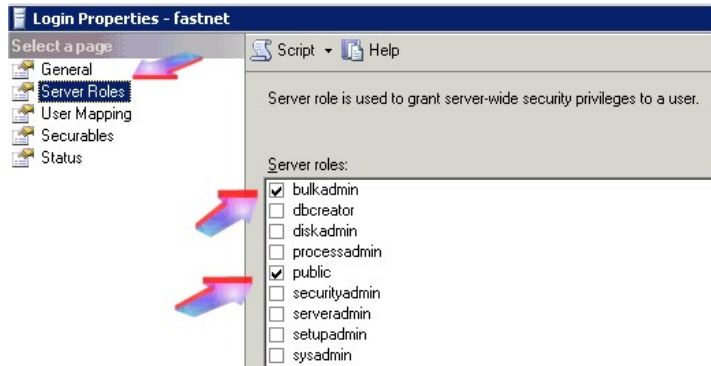


### Important:

- The password for “fastnet” cannot contain any ‘&’ characters.
- For most situations, do **NOT** tick the ‘Enforce password policy’ checkbox
- Also, ensure that this SQL login (e.g. “fastnet”) has its “default language” set to “English”. Otherwise you may get strange issues, such as standard reports having incorrect decimal characters.

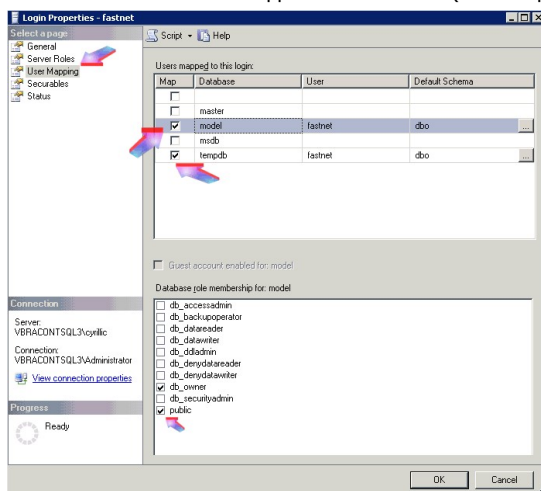


- Give SQL login database access rights
  - Click on "server roles" and ensure that **ONLY** the roles "public" and "bulkadmin" (known in previous versions of SQL as "bulk-insert administrators") are ticked
    - For your information, the 'bulkadmin' is required for "Optimise2" (ERO) to work



**VITAL:** Do *\*not\** give the SQL login (for example 'fastnet') 'sysadmin' rights.  
See Technotes such as #1347546 for why not.

- Ensure that 'fastnet' is given "dbowner" rights to the following databases:
  - tempdb** – required since Controller extensively uses this database
  - model** – required since SQL will occasionally recreate tempdb from a copy of 'model', e.g. whenever SQL is restarted
  - all Controller application databases (for example **ControllerLIVE**, **ControllerTEST**, **ControllerTRAIN** etc.)



**Information:** The SQL login 'fastnet' requires 'dbowner' rights to the database **tempdb** to allow the ERO ("Enhanced Report Optimisation" – also known as "Optimise2") feature to work.

[By default SQL will allow the user "fastnet" read /write access to TEMPDB (regardless of whether we use Optimise2 or not). However, the reason why the Controller SQL login specifically needs dbowner rights is because of a confirmed Microsoft limitation of their SQL product, where 'BULK INSERT' (which is the technique behind Optimise2), requires dbowner rights].



## 5.5 Create an Optimise2 (a.k.a. "Advanced Excel Link" or "E.R.O." – Enhanced Reporting Optimisation) share

In most circumstances, it is easiest to place this share on the SQL server:

- Create a folder on the SQL server (e.g. called "D:\Optimise2") and share it (for example as the name "Optimise2\$")
- Modify the share and NTFS permissions of it so that the Controller service account user (for example domain\controller\_system) has full control rights
- For more information, see here: <http://www-01.ibm.com/support/docview.wss?uid=swg21347048>

## 5.6 Optional - Restore other databases (if necessary)

You may already have a Controller database to restore (for example sent from the application consultant). Use the SQL Management Studio tool to restore the database. After restoration, you will have to remove orphaned users ('synchronise SQL logins') by:

- launch Query Analyser
- change database to one you have just restored
- run the following script (update\_user.SQL):

```
EXECUTE sp_change_users_login 'Update_One', 'fastnet', 'fastnet'
GO
```

NOTE: change \*both\* the users 'fastnet' and 'fastnet' for the name of the SQL login that you have chosen to use (for example 'cognos').

TIP: For more details, see here: <https://www-01.ibm.com/support/docview.wss?uid=ibm10795804>

## 5.7 Create Database Maintenance Plans

**Important:** It is VITAL that, for performance and stability reasons, your SQL server has a Database Maintenance plan configured. See Technote 1347569 for more information.

**SQL:** The author's best practices are:

- Create a database maintenance plan (e.g. called "Controller databases") which:
  - Optimises/re-indexes/update\_statistics once a week (e.g. every Sunday morning at 4am)
  - Backs up the database nightly
  - Backs up the transaction logs nightly
- In addition, it is HIGHLY recommended that:
  - You configure an \*additional\* new maintenance job, which merely "update the statistics" every night
    - This will speed up certain operations inside Controller

See here for full details of how to achieve the above: <http://www-01.ibm.com/support/docview.wss?uid=swg21396973>

**Oracle:** To create a basic maintenance plan (to automatically update Oracle statistics and indexes) see here : <http://www-01.ibm.com/support/docview.wss?uid=swg22001776>

- TIP: For more best-practice hints & tips, see here: <http://www-01.ibm.com/support/docview.wss?uid=swg21346962>

**DB2:** The author's best practices are explained here: <http://www.ibm.com/support/docview.wss?uid=swg21981728>

## 6 Installation of Controller Server

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**IMPORTANT:** Be aware of the fact that (from version 10.3.1 onwards) the Controller server installation wizard no longer includes a Cognos BI 'runtime' component

- Controller 10.3.0 (and earlier versions) were bundled with a version of Cognos BI (runtime engine) as part of the installation wizard. In other words, by installing Controller you also (by default) installed a portion of Cognos BI that was enough to provide Standard Report and Cognos CAM authentication functionality.
- Controller 10.3.1 (and later versions) do not have Cognos BI runtime bundled within the Controller server installation wizard.

Therefore, the Controller 10.4.1 RTM software download bundle (<https://www-01.ibm.com/support/docview.wss?uid=ibm10870844>) includes a link to download Cognos Analytics (CA) server version 11.0.13 "Limited Use" version. Customers are expected to install CA separately, for example either:

- In a different folder (on the same server where Controller server is installed)
- Or on a separate (dedicated to CA-only) application server.

### 6.1 Download the Controller 10.4.1 RTM, CA and PA software from the IBM website

Instructions for how to download 10.4.1 are found here: <https://www-01.ibm.com/support/docview.wss?uid=ibm10870844>

TIP: Typically, most customers will only need to download the following components:

- (1) 'Main' **Controller** server software
  - **CC0URML** = Controller 10.4.1 Microsoft Windows Multilingual
  - This is the file: cntrl\_10.4.1\_win\_ml.tar.gz.tar.gz
- (2) **Cognos Analytics** (replacing the old BI component) Server
  - **CNV2WML** = Cognos Analytics Server Limited Use 11.0.13 Microsoft Windows Multilingual
  - This is the file: ca\_11.0.7\_win\_ml.exe
- (3) **Planning Analytics** (replacing the old TM1 component) Server
  - **CNWN1ML** = Planning Analytics 2.0.6 Microsoft Windows Multilingual
  - This is the file: pa\_2.0.6\_win\_ml.tar.gz

**TIP:** Because Planning Analytics (TM1) is very memory intensive, for most customers the author recommends that customers have a 'dedicated' (PA only)

### 6.2 Download any preferred/recommended (post 10.4.1 RTM) Interim Fix Packs

The author recommends downloading the latest patch in order to benefit from the latest bug-fixes.

- **See here for the latest patch versions:** <https://www-01.ibm.com/support/docview.wss?uid=ibm10888079>
- If necessary, contact IBM Support for details on how to download the latest patch version

### 6.3 Obtain a suitable JDBC driver

Some Controller functions use JDBC connectivity to access the Controller databases. Controller does not ship with a JDBC driver in the software itself, so you must download a suitable JDBC driver from the relevant database provider's website.

For example:

| Database Server | Description      | Filename                         |
|-----------------|------------------|----------------------------------|
| Microsoft SQL   | JDBC driver      | sqljdbc4.jar                     |
| Oracle          | JDBC thin driver | varies*<br>(example: ojdbc5.jar) |
| IBM DB2         | DB2 driver       | db2jcc.jar                       |

TIP:

- sqljdbc4.jar
  - see here: <http://www-01.ibm.com/support/docview.wss?uid=swg21500432>
- Oracle OJDBC JAR file
  - There are several different possible file names/versions (for example **ojdbc5.jar**).
  - For full details, see: <http://www-01.ibm.com/support/docview.wss?uid=swg21988891>
- db2jcc.jar
  - Assuming you have installed the DB2 10.5 client in the default location, then you can find this (on the Controller application server) here: C:\Program Files\ibm\SQLLIB\java

## 6.4 Controller Server Software installation

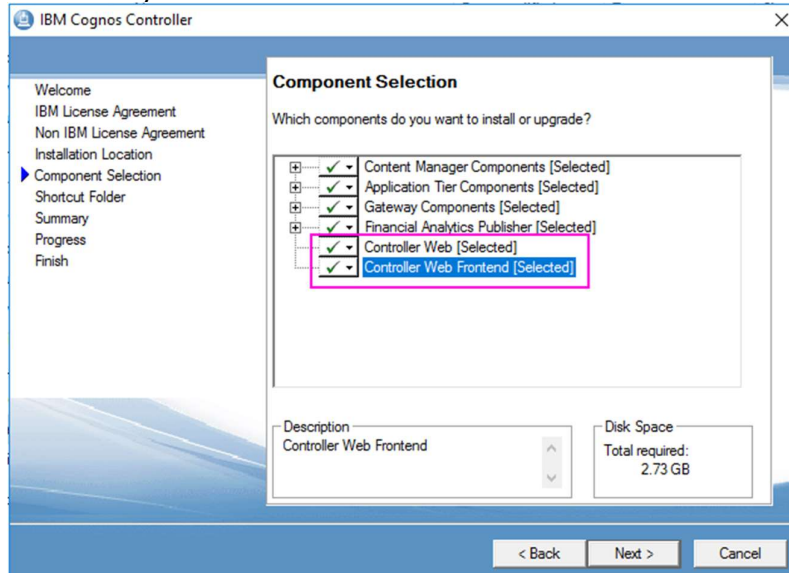
**TIP:** The following assumes that there is only 1 application server (combined Controller and CA), with all Controller/CA components installed and running on this server.

Logon to the Controller Application Server and extract the installation media (cntrl\_10.4.1\_win\_ml.tar.gz) to a sensible folder location. Afterwards, launch the install routine from the folder.

- Double-click on: ...winx64h\issetup.exe

During the install, you are asked several questions. Typically choose the following :

- (English) **Next**
- "I Agree", **Next**
- "I Agree", **Next**
- <default installation location C:\Program Files\IBM\cognos\ccr\_64> **Next ("Yes")**
- Make sure you tick **both** of the "Controller Web" items:



- Next
- "IBM Cognos Controller - 64" **Next**
- Next

The install will start (56 components):



After it has completed, click the **Finish** button.

## 6.5 Install/apply required Controller Interim Fix / Fix Pack

At the time of writing, there are no Interim Fix packs for 10.4.1.

- See here for the latest patch versions: <https://www-01.ibm.com/support/docview.wss?uid=ibm10888079>

## 6.6 Cognos Analytics (CA) Server installation

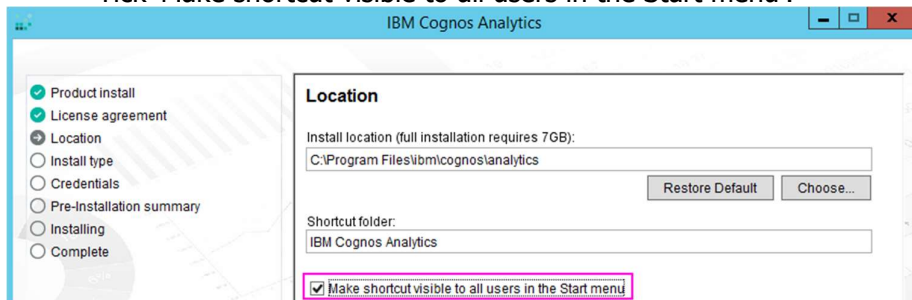
**IMPORTANT:** Some features/functionality (for example SSO) require the CA gateway components to be installed. However, by default the gateway is NOT installed. Therefore please follow the instructions carefully, to install the gateway component (as a precaution, in case you need to use it later).

- Double-click on: ca\_server\_var\_win64\_11.0.13.exe
- Click **Next**,
- Choose 'IBM Cognos Analytics (IBM Bundler Edition)':

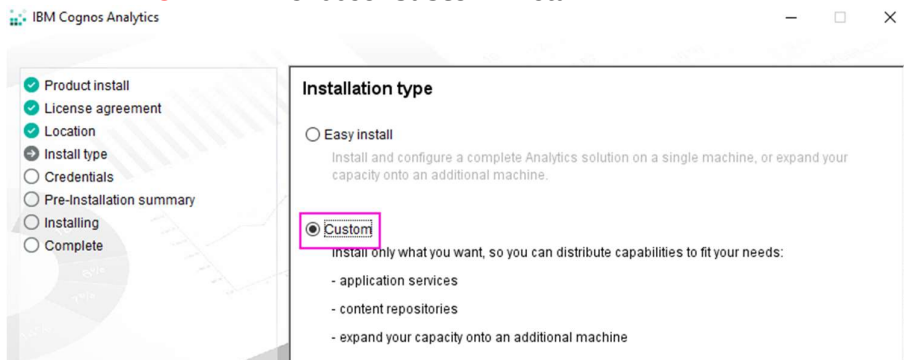
☒ IBM Cognos Analytics ( IBM Bundler Edition )

The easy-to-use yet powerful application that integrates reporting, modeling, analysis, dashboards and events so you make effective business decisions.

- Choose 'I Accept', Next
- Choose the default installation folder (C:\Program Files\ibm\cognos\analytics)
- Tick 'Make shortcut visible to all users in the Start menu':

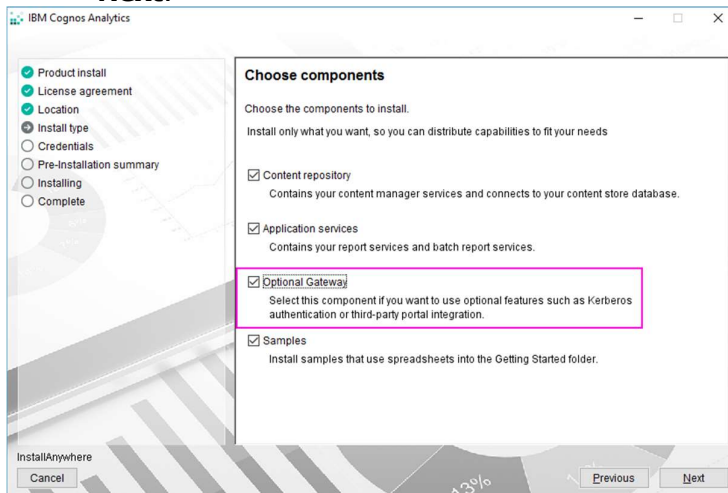


- Click Next, Yes
- **IMPORTANT:** Choose '**Custom**' install:



- Choose 'First Install' then Next

- **IMPORTANT:** Tick '**Optional Gateway**' so that all components are selected, then **Next:**



- Click 'Install'

## 7 Configuration of Controller Server

### 7.1 Copy required JDBC drivers onto server

Copy the JDBC driver(s) (see earlier in this document for more details) into the Controller '**Integration**', '**Lib**' and '**ccr\_64**' folders, plus the Cognos Analytics '**lib**' folder.

TIP: By default, the folders are located here:

1. C:\Program Files\ibm\cognos\ccr\_64\server\Integration
2. C:\Program Files\ibm\cognos\ccr\_64\server\FAP\lib
3. C:\Program Files\ibm\cognos\ccr\_64
4. C:\Program Files\ibm\cognos\analytics\webapps\p2pd\WEB-INF\lib

TIP: The JDBC driver filenames are:

- For **SQL**, the JDBC file is **sqljdbc4.jar**
- For **Oracle**, there are several different possible file names/versions (for example **ojdbc5.jar**). For full details, see <http://www-01.ibm.com/support/docview.wss?uid=swg21988891>
- For **DB2**, the JDBC file is **db2jcc.jar**

## 7.2 For Oracle Only - Configure 'ccr-system-properties.properties' file



If using Oracle, then you need to specify the location of the TNSNAMES.ORA file in the **ccr-system-properties.properties** file in the ...**Server\integration folder**.

For Oracle 11G, by default the location of the TNSNAMES.ORA file is usually the directory:

C:\app\Administrator\product\11.2.0\client\_1\network\admin

Therefore, in the case of a default Oracle 11G rel2 client install, you need to modify the file as follows:

```
# Oracle Network admin directory path, the location of the TNSNAMES.ORA file oracle.net.tns_admin=
C:\app\Administrator\product\11.2.0\client_1\network\admin
```

The screenshot shows a Windows Explorer window with the address bar set to 'Local Disk (C:) > Program Files > ibm > cognos > ccr\_64 > server > integration'. The file list includes:

| Name                       | Date modified    | Type            | Size     |
|----------------------------|------------------|-----------------|----------|
| antlr-3.2.jar              | 21/05/2014 20:26 | JAR File        | 875 KB   |
| ccr-common.jar             | 21/05/2014 20:26 | JAR File        | 3,911 KB |
| ccr-dbTypes                | 21/05/2014 20:26 | PROPERTIES File | 4 KB     |
| ccr-integration.jar        | 21/05/2014 20:26 | JAR File        | 38 KB    |
| ccr-integration-server.jar | 21/05/2014 20:26 | JAR File        | 45 KB    |
| ccr-system-properties      | 21/05/2014 20:26 | PROPERTIES File | 1 KB     |

A pink arrow points to the 'ccr-system-properties' file. Below the Explorer window, a Notepad window titled 'ccr-system-properties - Notepad' shows the following content:

```
#
# BI and PM: ccr
#
# (C) Copyright IBM Corp. 2004, 2009. All Rights Reserved
#
# The source code for this program is not published or
# otherwise divested of its trade secrets, irrespective of
# what has been deposited with the U.S. Copyright Office.
# =====
# IBM SOURCE CODE HEADER END
# User defined System properties

# Oracle Network admin directory path, the location of the TNSNAMES.ORA file
# oracle.net.tns_admin=C:\oracle\product\10.2.0\client_1\NETWORK\ADMIN
oracle.net.tns_admin=C:\app\Administrator\product\11.2.0\client_1\network\admin
```

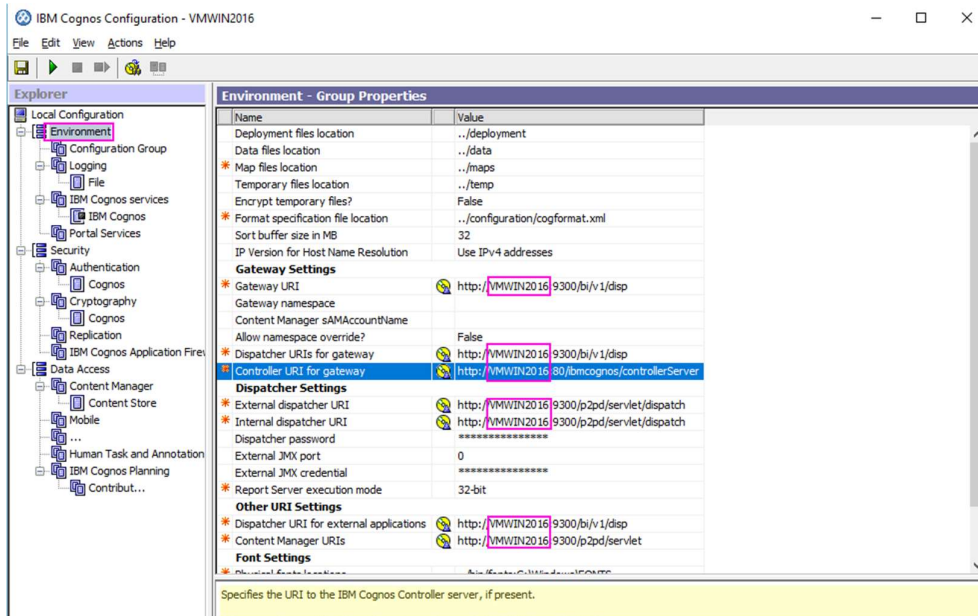
A pink arrow points to the last line of the Notepad window.

### 7.3 Cognos Analytics configuration

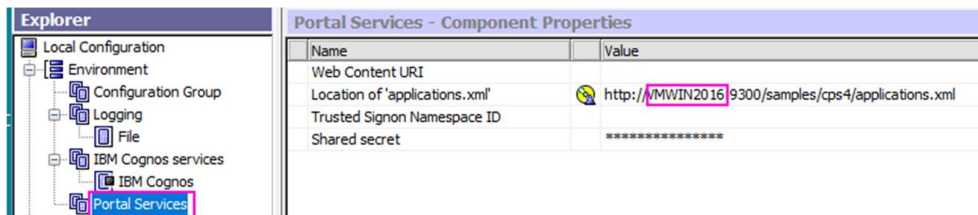
**NOTE:** Cognos Analytics will work OK without using IIS, so (for now) we will not configure IIS to interact with CA.

- If you choose to use SSO, then you must configure IIS later.
- See here for details: <https://www-01.ibm.com/support/docview.wss?uid=swg22002465>

- Launch **Cognos Configuration** (Start Menu > IBM Cognos Analytics> Cognos Configuration)
- Navigate throughout Cognos Configuration, and modify **all** the relevant references which (by default) initially refer to "localhost". Change them to the appropriate *rea/servername*, for example:

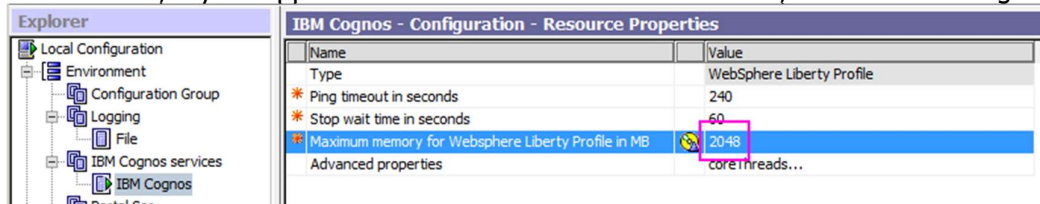


- And:



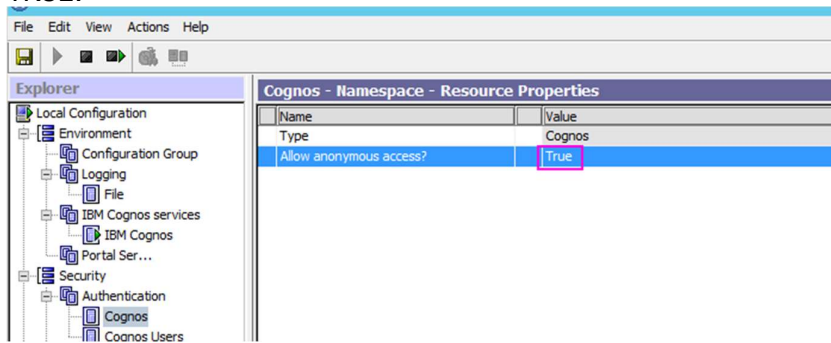
CA's default memory setting is **4096** (4Gb). For most customers, this is ideal.

- However, if your application server has less than 12Gb RAM, consider reducing this to 2048:





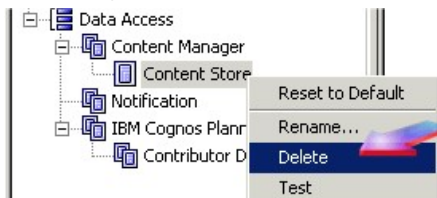
Assuming you are using 'Native' security, make sure that 'Allow anonymous access?' is set to TRUE:



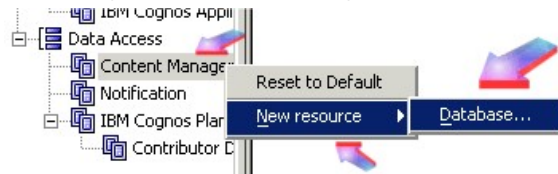
- In the tree control in the left pane, click on the **Local Configuration > Data Access > Content Manager > Content Store** entry

- TIP:** The default contentstore type (for Cognos Analytics) is DB2. Therefore, we shall change this to SQL in the next steps

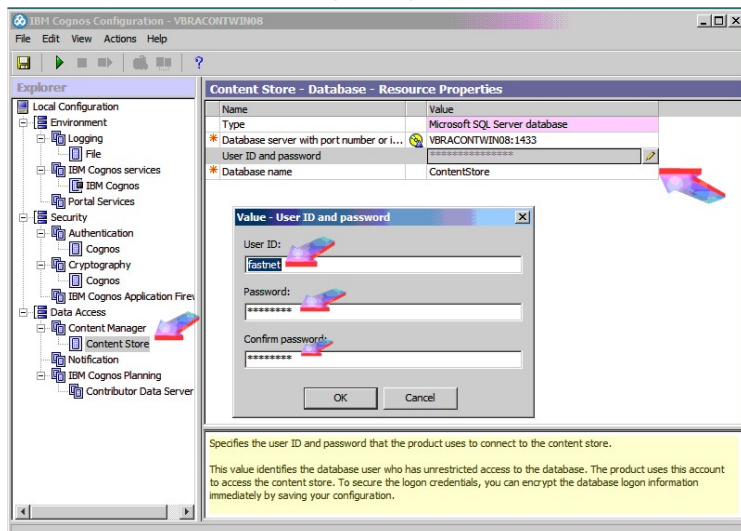
- Right-click on 'Content Store' and choose 'Delete', then click 'yes' to confirm



- Right-click on 'Content Manager' and choose 'New resource' - 'Database'



- Select 'Microsoft SQL Server database'
- Type the name 'Content Store'
- In the right pane, click on the **UserId** and **password**, then on the edit button (it has a **pencil icon**). Enter the user id and password, then click the **ok** button
- Fill in the other entries, to point to your ContentStore database:

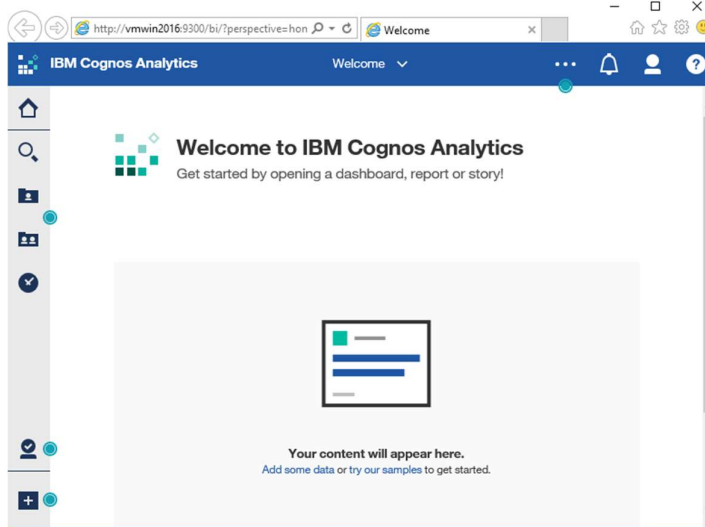


- In the left pane, right click on the **Content Store** entry, and select the **Test** option from the popup menu item. Ensure it is successful (this will take a minute or so)
- In the tree control in the left pane, click on the **Local Configuration**
- Click the **Save** Button, and then the **Start Service** button in the main toolbar (this can take several minutes)

## 7.4 Test Cognos Analytics (Cognos Connection)

Test the following website directly from the application server itself first (before trying on remote client PCs).

- **TIP:** Use the direct CA (non-gateway) URL: <http://<servername>:9300/bi>



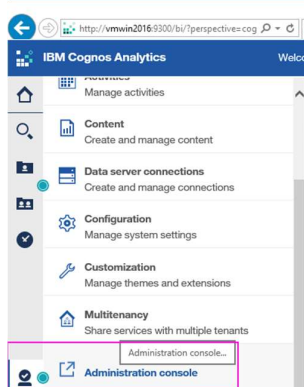
## 7.5 Import the Controller "Standard Reports" Framework Manager model via Cognos Connection

Copy the 'Controller' Framework Manager package to the CA server:

- Copy this file: C:\Program Files\ibm\cognos\ccr\_64\deployment\**Controller.zip**
- To here: C:\Program Files\ibm\cognos\analytics\deployment

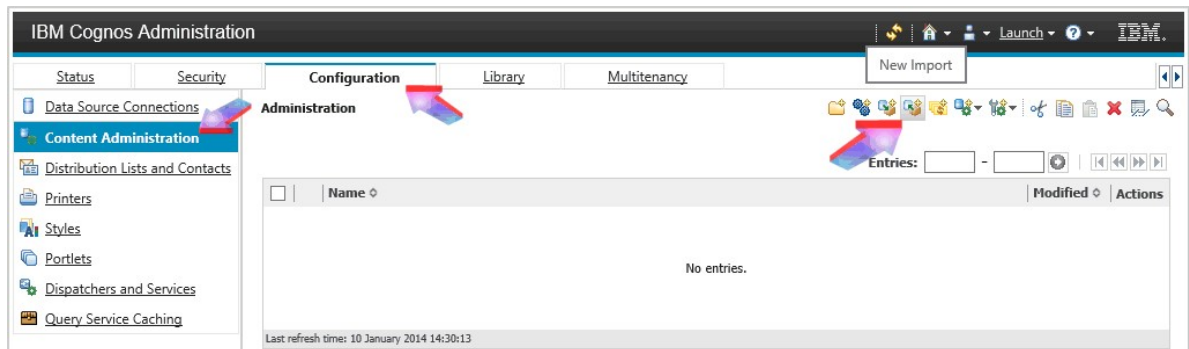
Launch 'Administration Console'

- **TIP:** Either click on this link from the main homepage:

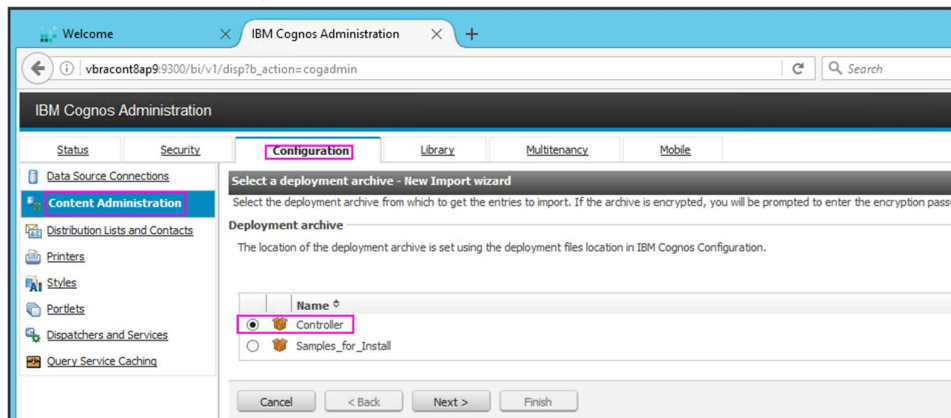


...or launch it directly from [http://<servername>:9300/bi/v1/disp?b\\_action=cogadmin](http://<servername>:9300/bi/v1/disp?b_action=cogadmin)

- Click Administer IBM Cognos content
- Click the **Configuration** tab
- Click Content Administration
- Click '**New Import**' button:



- Select the "Controller" entry, then click **Next** then **Next**



- Tick the **box** next to the **Controller** entry, and click **Next**

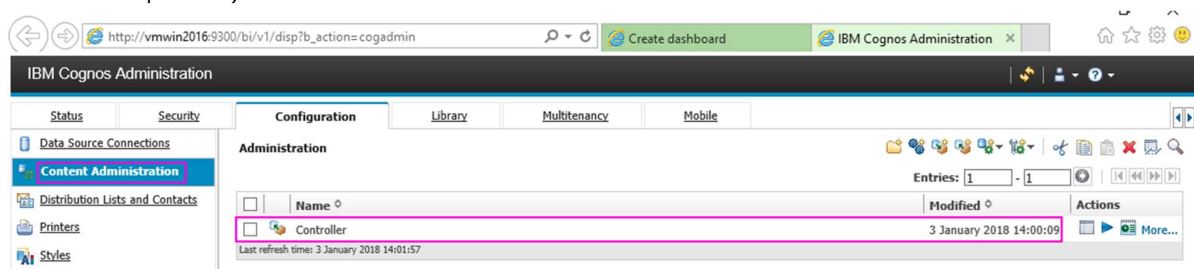
#### Public folders, directory and library content

Change the target name of packages and folders if you do not want to overwrite them in the target with packages and folders from the deployment archive. Disable the packages or folders if you do not want users to access them in the target after the import.

Entries: 1 - 1

| <input checked="" type="checkbox"/> | ... | Name       | ... | Target name | <input type="checkbox"/> Disable after import | <input type="checkbox"/> In target content | Modified |
|-------------------------------------|-----|------------|-----|-------------|-----------------------------------------------|--------------------------------------------|----------|
| <input checked="" type="checkbox"/> |     | Controller |     | Controller  | <input type="checkbox"/>                      |                                            |          |

- Click **Next**, then **Next** then **Finish**
  - Click **Run**, then **OK**
- To test that the above was successful, click on the 'Content Administration'. You should see a Controller folder (see example below):

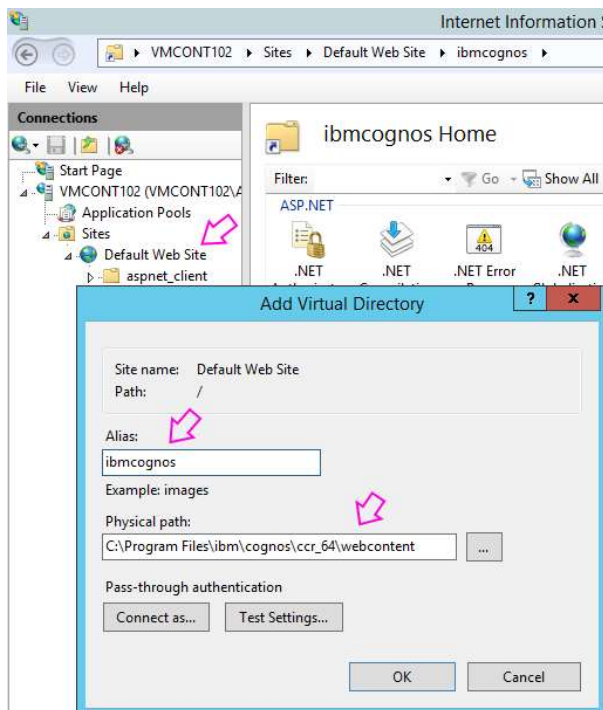


- TIP:** For performance reasons, you should **NOT** have the Report Server service (i.e. the Windows service called "IBM Cognos") running on the same server as your database server (for example Microsoft SQL). However, if you *do* (e.g. this is a very small demo/test server) then you may get an issue after a reboot, where the Cognos BI service does not successfully (automatically) start
      - This is caused by the SQL "ContentStore" database not being available when the "IBM Cognos" Windows service tries to start
  - There are many different ways to solve this. See IBM Technote 1347377 for more details.

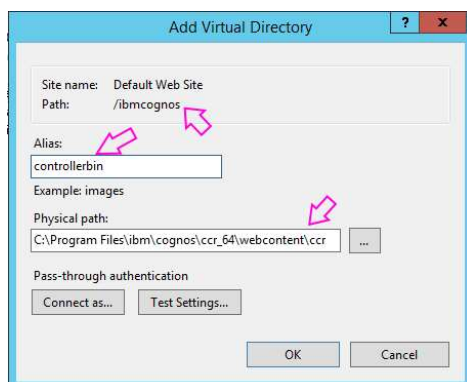
## 7.6 'Controller Core' IIS configuration

Add the Controller IIS virtual directories

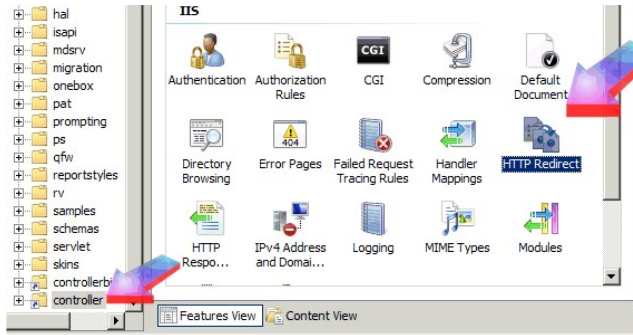
- Add the **ibmcognos** virtual directory
  - Launch IIS Manager
  - In the tree control in the left pane expand (machine name) > Web Sites > **Default Web Site**
  - Right click the **default web site**
  - Choose 'Add Virtual Directory'
  - Enter **ibmcognos** in the Alias
  - In the 'Physical path' browse to the **(Controller\_installdir)\webcontent** path (for example **C:\Program Files\ibm\cognos\ccr\_64\webcontent** and click **Next**
  - Click OK



- Add the **controllerbin** virtual directory
  - Launch IIS Manager
  - In the tree control in the left pane expand (machine name) > Sites > **Default Web Site**
  - Right click the **ibmcognos** virtual directory and choose 'Add Virtual Directory'
  - Enter **controllerbin** in the Alias edit field
  - Browse to the **<CCR\_installdir>\webcontent\ccr** path (typically C:\Program Files\ibm\cognos\ccr\_64\webcontent\ccr) and click **OK**



- Add the **controller** virtual directory – **Optional** – only necessary if deploying the 'web client' (not 'local client'). This is very rare!
  - Right click the **ibmcognos** virtual directory and choose 'Add Virtual Directory'
  - Enter **controller** in the Alias edit field
  - Browse to the <installdir>\ccrdir path (typically C:\Program Files\ibm\cognos\ccr\_64\ccrdir) and click **OK**
  - Highlight the new virtual directory (**controller**) and then click "HTTP Redirect":



- Tick the "redirect request to..." box, and enter /ibmcognos/controllerbin/ccr.exe



Use this feature to specify rules for redirecting incoming requests to another file or URL.

- ✓ Redirect requests to this destination:

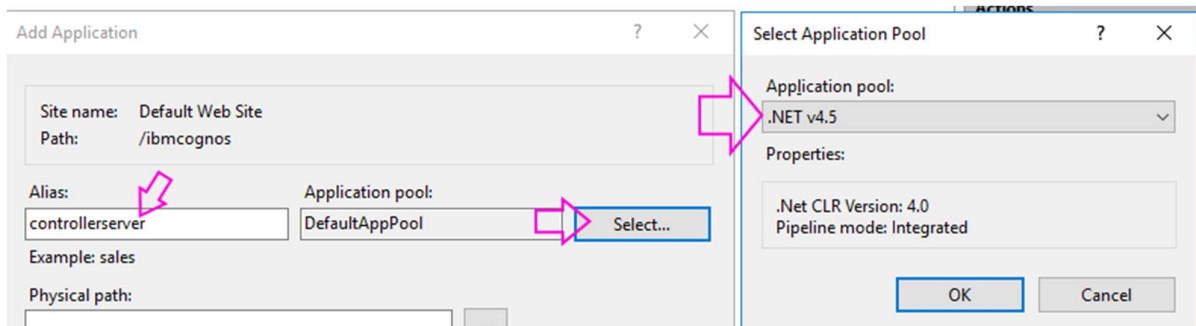
/ibmcognos/controllerbin/ccr.exe

- Click **Apply** button (top right corner)

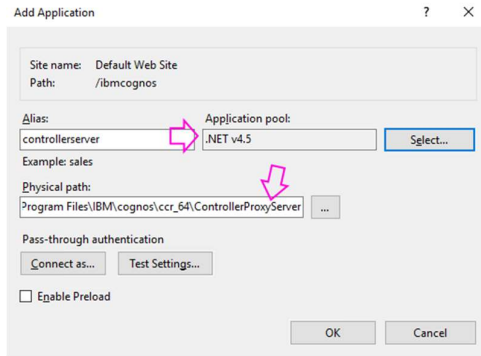
**TIP:** The section above controls where the client's web browser redirects when they click the 'Controller' link inside Cognos Connection. Therefore, in the very **unlikely/rare** scenario where the Client Distribution Server is configured to be on a **different** server, you should redirect to a different server.

- For example: <http://CTRLsvrCDS/ibmcognos/controllerbin/ccr.exe>

- Add the **controllerserver** application
  - Right click on the **ibmcognos** entry, select **Add Application** from the popup menu
  - Enter **controllerserver** in the Alias edit field
  - Change the 'Application Pool' to be ".NET v4.5":



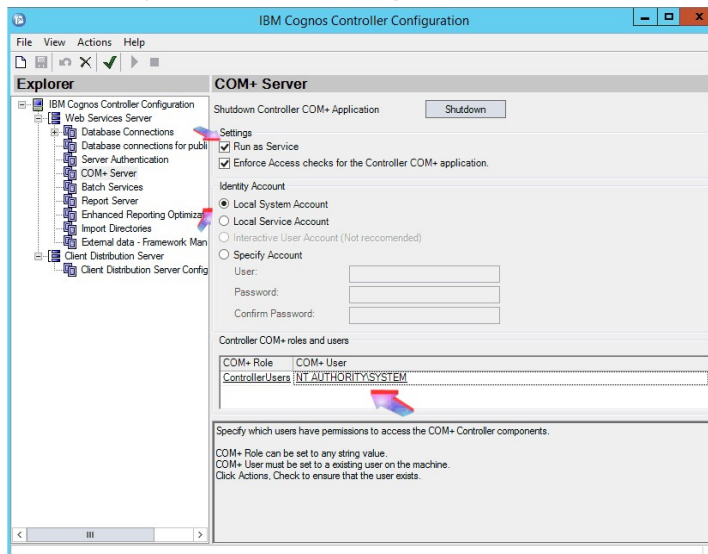
- Browse to the (CCR\_installdir)\ControllerProxyServer path and click **OK**



## 7.7 Controller Configuration utility

Launch **Controller Configuration** (Start Menu > IBM Cognos Controller - 64 > Controller Configuration)

- Configure **COM+ Server**
  - In the tree control in the left pane, expand Cognos Controller Configuration > Web Services Server > COM+ Server
  - In the right pane, make sure that **"Run as a Service"** is ticked
  - Make sure that "Enforce Access checks for the Controller COM+ application" is ticked
  - In "Identity Account" choose **"Local System Account"**:



- In the **Controller COM+ roles and users**, if there are no entries (see above for what it should correctly look like) then add the relevant entries manually by doing the following:
  - Click in the 'white' area, and then click the **New** button ('white page' icon) from the main tool bar
  - In the COM+ Role, enter a suitable name, such as "controllerUsers"
  - In the COM+ User, enter **NT AUTHORITY\SYSTEM** as the user (see above picture)
  - Click on **"SAVE"** icon (top left corner)

- Configure Database connections
  - In the tree control in the left pane, expand IBM Cognos Controller Configuration > Web Services Server > **Database Connections**
  - Click the **New** button in the main tool bar
  - In the right pane, enter the following information:
    - Datasertype: **SQL Server** (TIP: you can simply double-click on this cell to change it)
      - **Name:** default (for example)
  - TIP: usually the name of the server and/or purpose is used to help identify the database e.g. “**default**” and “**controllertest**”)

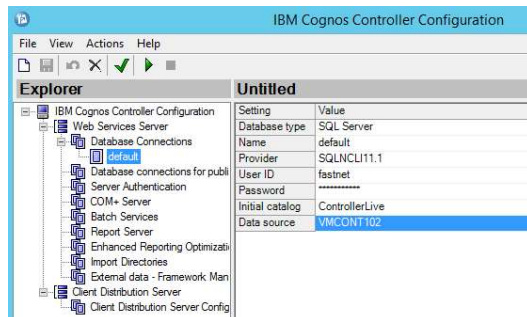
**IMPORTANT:** The 'database connection' names are **case-sensitive**. Therefore, if you want to disable 'SelectDB' (so that users do not have the choice of databases when they launch the Controller client) then your main (live) database connection name must **not** be called 'Default'. Instead, it should be 'default' with **all characters lowercase**!

- For more information, see here: <http://www-01.ibm.com/support/docview.wss?uid=swg21364826>

- Provider:
  - This depends on what database **client** you have installed on your Controller application server:

| Database client            | Provider          |
|----------------------------|-------------------|
| SQL 2008                   | SQLNCLI10.1       |
| SQL 2012, 2014, 2016, 2017 | SQLNCLI11.1       |
| Oracle                     | OraOLEDB.Oracle.1 |
| DB2                        | IBMDADB2.DB2COPY1 |

- NOTE:
  - **User ID:** The user ID used in the Create Controller Database step (e.g. **fastnet**)
  - **Password:** The Password used in the Create Controller Database step
  - **Initial catalog:** The name of the database created previously step (e.g. **ControllerLive**)
  - **Data source:** The name of the database server

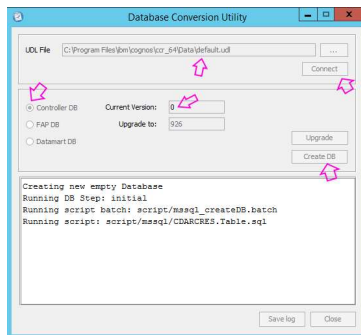


- Click the **save** button in the main tool bar

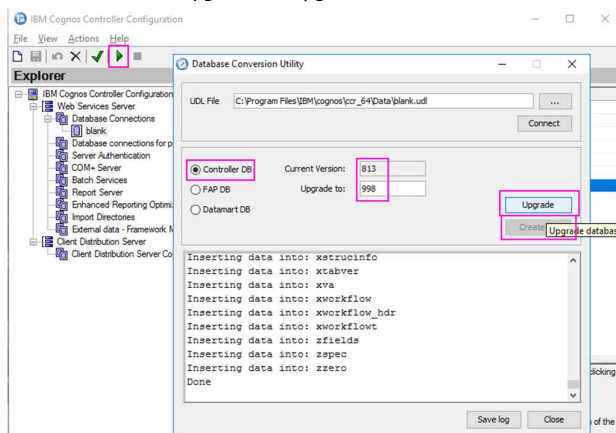


At this point you can populate your new/blank database with some Controller tables/information. In other words, assuming you have created a connection to a new/blank database, then:

- Open the section "Database Connections" and highlight the new database (for example called "default")
- Click the Run (green "play") button in the main tool bar
- Ensure that the "UDL File" is pointing to the relevant database connection (for example: C:\Program Files\ibm\cognos\ccr\_64\Data\default.udl)
- Ensure that "Controller DB" is selected
- Click "Connect"
- Because this database is a brand new 'blank' database, the "Current Version" will be set to zero (0).
  - Therefore, click "Create DB":



- When the script has finished running, it will say "Done", and the version displayed will be 813
- Now click on "Upgrade" to upgrade the database from the current version (813) to the latest (998):

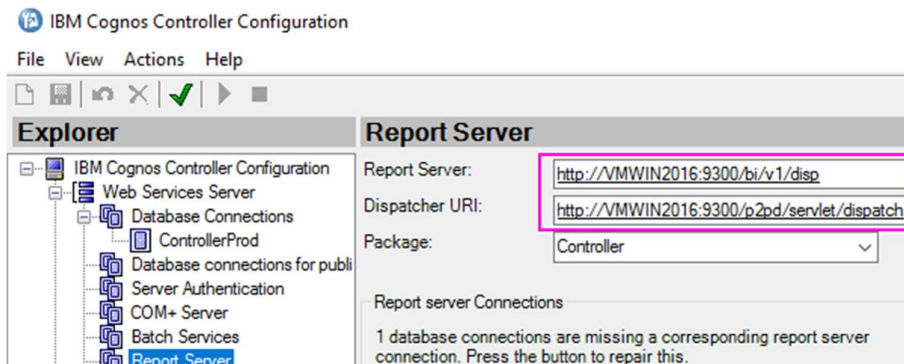


When finished, there will be a message saying "DB succesfully upgraded to version: 9xx"

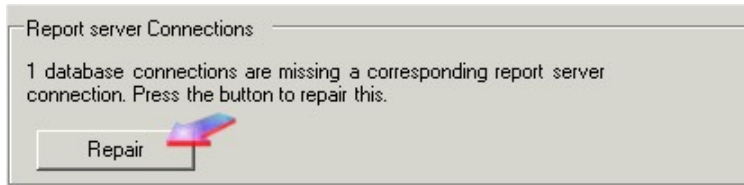
- Click Close.



- Configure Report Server
  - For small installations (where customer only using CA for Controller-only use) typically the CA server is installed on the same box as the Controller application server. Alternatively (typically when CA is used for non-Controller work) customer will have a “distributed” installation where there is a separate CA report server.
    - In the tree control in the left pane, expand Cognos Controller Configuration > Web Services Server > **Report Server**
    - Because we are currently using the built-in CA website (not IIS gateway) your settings should be similar to:
      - **Report Server** = <http://servername:9300/bi/v1/disp>
      - **Dispatcher** = <http://servername:9300/p2pd/servlet/dispatch>



- Ensure that **Controller** is the package name
- Click on the “**save**” icon at the top-left corner of “Controller Configuration”
- At this stage, you *should* see the following message, and you should click **Repair**.

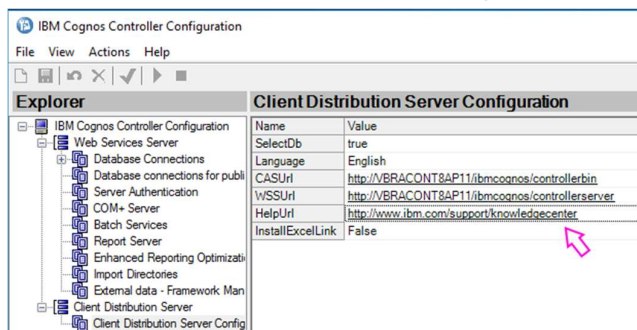


If you do not see that message, then click the green 'tick' button (to force it to appear).

**TIP:** This step ensures that the system reports can work (handled by the Cognos Analytics server).

- Clicking on the Repair button creates a connection (“data source”) between Controller and CA reporting services. **This step** (pressing the repair button) **has to be done again whenever you create a new database connection in the future.**

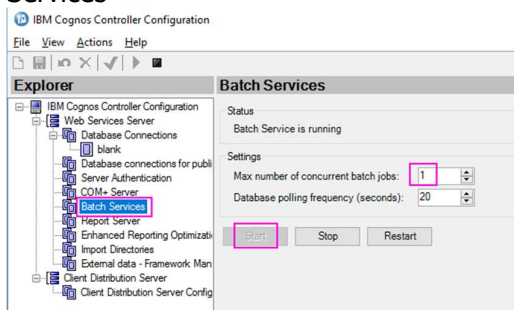
- Configure Client Distribution Server Config
  - Historically, this section was for users who launch the old 'web client' (<http://server/ibmcognos/controllerbin/ccr.exe>). This is rarely used by customers nowadays (instead, most customers now install/use the 'local' client CCRLocalClient64.MSI).
  - However, in some environments (some configurations) other Controller processes (for example Controller Web) will use the settings (for example WSSUrl value) contained in this section.
  - Therefore (as a precaution) it is wise to fill in this section.
    - Change **SelectDB** to the preferred value
      - If using old 'web client' then generally set this to **"true"** (so that all users can see all database by default)
      - If using 'local' client (CCRLocalClient64.MSI) then this setting is irrelevant
    - Ensure that all end user's PCs can resolve the URLs that are specified
      - Typically this means changing the NetBIOS names (e.g. MYSERVER) into FQDN names (e.g. MYSERVER.companyname.com)



- The settings (CASUrl, WSSUrl and HelpUrl) defined here are the ones that the 'web client' client PCs will attempt to use, so it is vital that they are correct
  - NOTE: The value for 'HelpUrl' has changed (compared to Controller 10.2.1 and earlier)
- After making changes, you must click the **'save'** icon

## 7.8 Enable Batch service(s)

Inside 'IBM Cognos Controller Configuration', open 'Web Services Server' and then 'Batch Services'



**IMPORTANT:** Unless the customer has exceptional needs, you should **only** have a maximum of **1 concurrent batch jobs running** (no more) – for more details, see here: <https://www-01.ibm.com/support/docview.wss?uid=swg21370901>

- Press 'Start' to start the batch service.

## 7.9 Enable Optimise2

Optimise2 (also known as "ERO") is an option that users can enable to speed up their Excel-link reports.

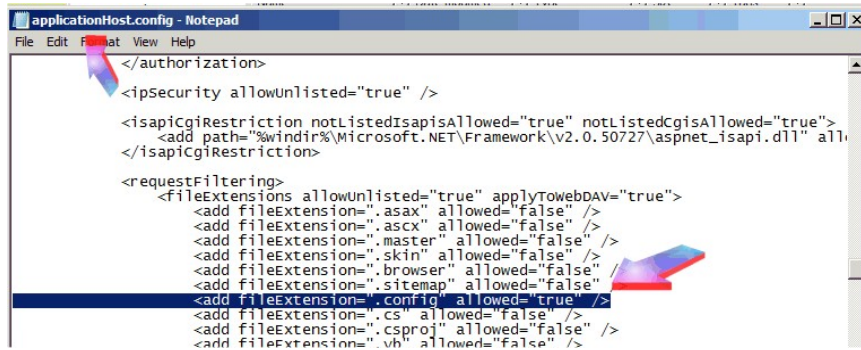
- Historically it has been incredibly useful (speeds up some reports massively). However, with recent versions of Controller it is less necessary.
  - See here for details why: <https://www-01.ibm.com/support/docview.wss?uid=swg21970627>

- However, the author still thinks it is worth configuring the application server and database server to allow ERO/Optimise2 to work (just in case).
  - Instructions are here: <https://www-01.ibm.com/support/docview.wss?uid=swg21347048>

### OPTIONAL – Only if you are deploying the 'web' version of the Controller client

**Very rarely**, customers may choose to not deploy the 'local' Controller client (CCRLocalClient64.MSI) but instead ask users to run the 'web client' (<http://servername/ibmcognos/controllerbin/ccr.exe>). In this \*rare\* environment, you must:

- Open the folder C:\Windows\System32\inetsrv\config
- Launch Notepad.exe and edit the file applicationHost.config
- Search for 'requestFiltering' section
- Modify the value for '.config' to 'true':



- In other words, modify the line to read: <add fileExtension=".config" allowed="true" />

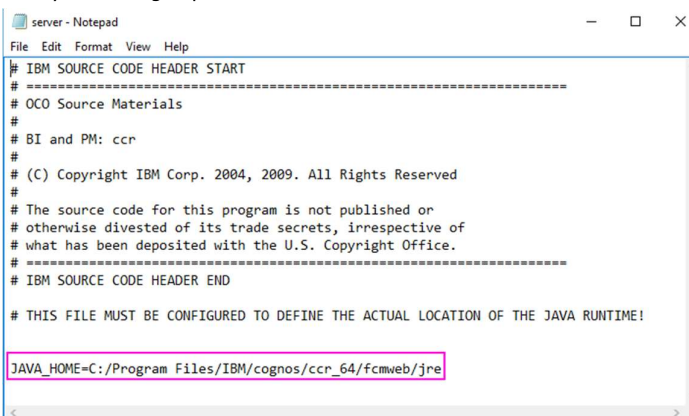
## 7.10 'Controller Web' configuration

Controller Web only supports **Microsoft SQL** and **DB2** (not Oracle databases).

- It was first introduced in Controller 10.3.0. However, the installation instructions have changed since those older versions.
- For up-to-date instructions on how to configure it, see here: <https://www-01.ibm.com/support/docview.wss?uid=ibm10791535>
- However, for the sake of convenience, the instructions are also below:

### PART ONE - Configuring the backend

- Browse to the following folder: C:\Program Files\IBM\cognos\ccr\_64\fcweb\wlp\etc\
- Open the following file inside NOTEPAD: **server.env**
- Modify the setting to point to the relevant JRE folder



- TIP: By default, this means alter the relevant line to look like:  
JAVA\_HOME=C:/Program Files/IBM/cognos/ccr\_64/fcweb/jre
- Synchronize Controller Web with the current/existing 'database connection' UDL files by performing the following:
- Right-click on the 'Start' menu, and choose **'Command Prompt (Admin)'**

- Type a command similar to: `cd C:\Program Files\IBM\cognos\ccr_64\fcweb`
- Type the following command : **SyncDBConf.bat ..\Data wlp\usr\shared\config\datasources**
- You should get a success message similar to:

```
C:\>cd C:\Program Files\IBM\cognos\ccr_64\fcweb
C:\Program Files\IBM\cognos\ccr_64\fcweb>SyncDBConf.bat ..\Data wlp\usr\shared\config\datasources
Found 1 udl files in ..\Data
Datasources updated.
C:\Program Files\IBM\cognos\ccr_64\fcweb>
```

- Browse to this folder: `C:\Program Files\IBM\cognos\ccr_64\fcweb\wlp\usr\servers\fcweb`
- Open the following file inside NOTEPAD: **com.ibm.cognos.fcweb.properties**
- Search for the following line: **ccrwsUrl=@CCRWS\_PATH@/ccrws.asmx**
- Modify it to be something similar to:  
**ccrwsUrl=http://myserver.companyname.com/ibmcognos/controllerserver/ccrws.asmx**

```

Modify the relevant line, to read: loginMode=NATIVE

### CLASSIC and BI SERVER ###

# @TOKEN@ elements below must be transformed during deployment to match actual installation.
# Login mode can be set to NATIVE or CAM.

ccrwsUrl=@CCRWS_PATH@/ccrws.asmx
biUrl=@BI_PATH@
biDispatchEndpoint=@BI_DISPATCH_PATH@
loginMode=NATIVE
```

- Optionally** you can change the available memory:
  - Locate the file **jvm.options** in the folder: `C:\Program Files\IBM\cognos\ccr_64\fcweb\wlp\etc\`
  - Change the settings (as required) for: **Xms/Xmx**
- Start (or restart) the Windows service: **IBM Cognos Controller Web**

## PART TWO - Configuring the frontend

- Browse to this folder: `C:\Program Files\IBM\cognos\ccr_64\frontend`
- Open the following file inside NOTEPAD: **config.js**
- Inside the section *'Proxies - target - host'*, locate the following line: **"host": "{hostname}"**,
- Modify it to be something similar to: **"host": "myserver.companyname.com"**,
  - IMPORTANT: This must be the **FQDN** version!
- Inside the section *'expressJs'*, locate the following line: **"host": "{publicInterface}"**, //interface used by Controller Web UI Service
- Modify it to be something similar to: **"host": "myserver.companyname.com"**, //interface used by Controller Web UI Service
  - Save changes
- If your application server is based on Windows 2019 (or later) then you must perform some extra steps (including making a change to the file "install\_service.bat")
  - For full details, see here: <https://www-01.ibm.com/support/docview.wss?uid=ibm10884802>
- Start the service: **IBM Cognos Controller Web UI**

### NOTE:

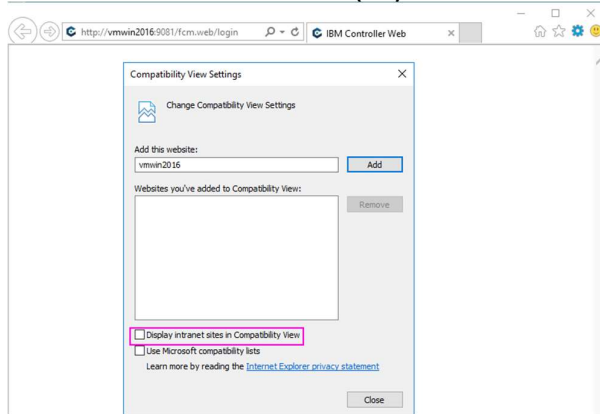
- The URL (to launch Controller Web) has changed from version 10.4.0 onwards
- In the past (old versions) it was necessary to change the TCP port used by Controller Web (to not clash with Cognos Analytics) if CA was installed on the same server. However, **this is no longer necessary**.

- Test by connecting to the website using the correct **FQDN** website name
- Example: `http://myserver.companyname.com:9080/`

NOTE: You may see a white screen when testing directly on the server. This is normally caused by IE using Compatibility Mode

- For more details, see here: <http://www.ibm.com/support/docview.wss?uid=swg22011459>

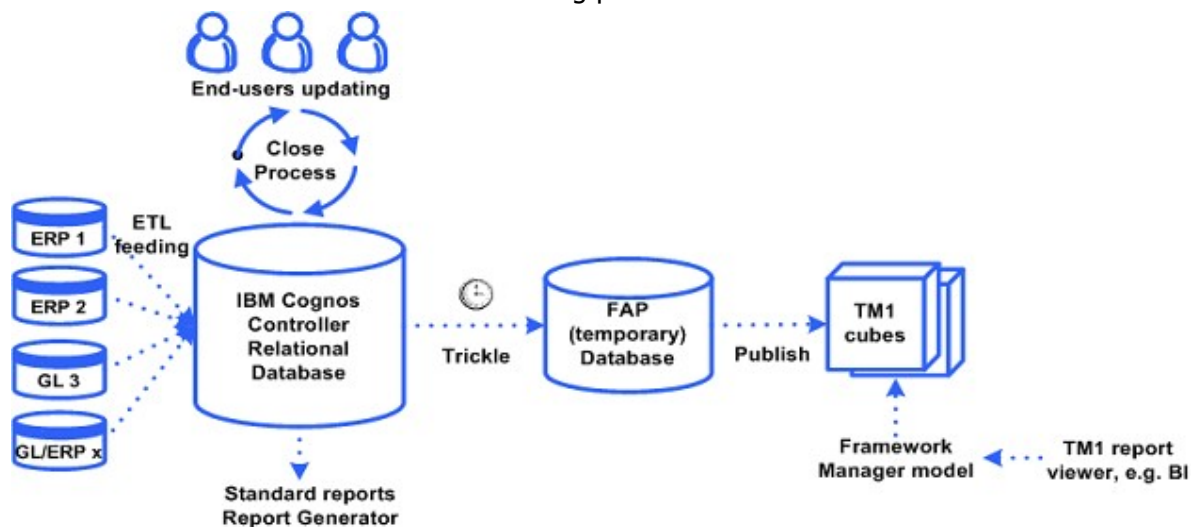
The solution is to untick "Display intranet sites in Compatibility View":



## 8 Install and Configure Financial Analytics Publish (FAP)

Controller's FAP functionality allows the customer to publish Controller financial data into a TM1 cube, for reporting purposes.

Its architecture is best summarised inside the following picture:



The potential benefits of using FAP are so huge, that **it is strongly recommended that all customers install and configure FAP**, as part of their Controller system.

- For details on how to accomplish this, see separate document "Installing & Configuring IBM Cognos Controller 10.2 FAP with TM1 10.2.2" which is available from here: <http://www-01.ibm.com/support/docview.wss?uid=swg21608353>

## 9 Post-install Optimisations

### 9.1 Proactive Server Reboots

- In the author's experience, recent versions of IBM and third-party (MS SQL/Oracle) software have been sufficiently stable (especially with regards to memory leaks) as to make regular/proactive server reboots unnecessary
- ⇒ At this time, the author does **not** recommend scheduling regular/proactive server reboots.

### 9.2 Optional: Enable Email Functionality

End-users can use the email functionality inside Controller for sending things like reports, intercompany balances and export files via e-mail. If you know the email server settings, then you can perform the following:

- Launch Controller
- Maintain – Configuration – General
- Click on "General 3" tab
- Fill in the details (e.g. see example below)

#### NOTE:

- You will not be able to *save* the above changes on a blank database until you first configure some other settings!
  - e.g. click on "Reconcile" and set both the "balance sheet" and "P&L" to an appropriate value (e.g. "1001 – sales")
- Inside the official Controller help file, it may have references to "Outlook". This seems to be a mistake in the help file. Controller is not able to send emails via MAPI. Instead, it only sends via SMTP
- make sure that you have an email address defined for the user (that you have logged in as) in Maintain/Rights/Users:

- you also require a properly configured SMTP server, which "trusts" SMTP messages sent from the users/computer(s)

**TESTING:** The easiest way to test whether the above works is to go into:

- Transfer – Export Structures
- Inside the box, ensure that you type in a valid email address (e.g. see below):

## 10 Testing on Application Server

### 10.1 Install Client Software on the Application Server

For full details, see here: <http://www.ibm.com/support/docview.wss?uid=swg21965917>

However, basic instructions are that you:

- Install **CCRLocalClient64.MSI** (located inside folder ...\\webcontent\\ccr).
- When asked for **WSSUrl** & **HelpUrl**, typically enter values similar to:
  - WSS Url: `http://<servername>/ibmcognos/controllerserver`
  - Help Url: `http://www.ibm.com/support/knowledgecenter`

### 10.2 Launch Controller client and perform basic testing (on application server itself)

The amount of testing that is possible depends on whether you have only “blank” Controller databases, or a fully-populated database.

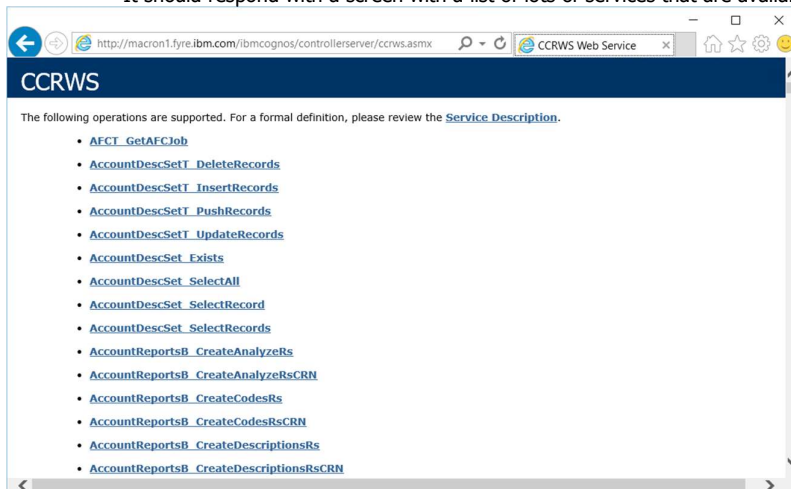
The author suggests that you perform basic tests similar to what he describes in his Technote here:

<https://www.ibm.com/support/pages/node/1074626>

### 10.3 Troubleshooting

One of the most useful tests that you can perform is to test whether your Controller application server (“ControllerProxy Server”, a.k.a. “WS server”) is responding:

- In a web browser, type: `http://<servername>/ibmcognos/ControllerServer/CCRWS.aspx`
- It should respond with a screen with a list of lots of services that are available, similar to:





## 10.4 General Windows (non-Cognos specific) Performance testing

If time permits, it would be ideal if you could check that the application/SQL servers demonstrate good I/O network performance (etc.) by performing tests such as the following:

**TIP:** The author has personally seen many high-performance server environments ruined by using the wrong network card speed (e.g. 'auto-detect' instead of Gigabit).

### File copy test

- Copy a file from a **remote (WAN) client PC** to the front (application) 'gateway' server
  - make sure you have a *minimum* throughput of 256-500kb per sec
    - 1mb is better
    - 10mb is optimal
- Copy a file from each **server** to each *other* server
  - Copy a large file (e.g. 100mb+) from the main application server to database (e.g. SQL) server, **and vice versa**
    - make sure you have a minimum throughput of 10mb
      - (20 when using nic teaming, and 30 with a gigabyte nic)
    - Make sure to test both ways from each physical server, as switch ports can be mis-configured for inbound and outbound per port.
- Check **network cards** - make sure the server NIC is set correctly (e.g. 100mb FD minimum if supported by switch)
  - Controller will benefit if the NIC is set on gigabit (if supported by switch)
- Check "**File and printer sharing**" is set on "Maximise throughput for network applications".
  - To test if **SQL server** is overloaded, use `perfmom` (administrative tools) on the SQL server to check the following average performance counters:
    - Memory: Available Bytes                      not under 5mb; between 5 and 10mb free is normal (add physical memory)
    - Memory: Pages/sec                              not over 20 (ad physical memory)
    - Physical Disk: % Disk time                      not over 55% longer then 10 min. (add or change disk setup)
    - Physical Disk: Avg. Disk Queue Length        not over 2 longer then 10 min. (add or change disk setup)
    - Processor: % Processor Time                   not over 80% longer then 10 min. (add or upgrade cpu's - preferably with large level2 cache like 2mb)
    - System: Processor Queue Length              not over 2 PER PROCESSOR. (add or upgrade cpu's)
    - SQL Server Buffer manager: Buffer Cache Hit Ratio\*    not under 90%; the closer to 99 the better. (add physical memory)
  - \* This performance counter is selectable during SQL server installation.

## 11 Install Client Software on User's PC

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Logon to the end user's PC using a Windows administrative account, and follow the instructions that are here: <http://www.ibm.com/support/docview.wss?uid=swg21965917>

## 12 Basic Testing for each Client PC installation

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Ideally, you could launch Controller as the Administrative user (the one that you installed the software with) first. After the testing, logoff and logon as the "normal" end-user and test as him/herself.

Assuming that Controller worked OK on the application server, it is almost certain that each client PC will be OK, so long as the software is installed as per my best practice document. Therefore, the following 2 simple tests should be enough:

### 12.1 Main Controller program

Launch Controller from URL and login. Click on "Help" – "About Controller" and then "Help" – "System Info" and ensure that the Controller version matches what you expect.

### 12.2 Excel link

Launch Excel. Click on "Help" – "About Controller link" and ensure that the Controller link version matches what you expect.

TIP: If you want more extensive tests (on the client PC) then you can perform tests similar to what he describes in this Technote: <https://www.ibm.com/support/pages/node/1074626>

## 13 Optional - Customising the environment

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**Before continuing, make sure you have fully tested the current (uncustomised / default settings) system.**

- Make sure everything (Controller classic client, Excel link, Standard Reports, Controller Web, FAP) before making any changes.

It will be much more difficult to troubleshoot issues in Controller/Excel/Reports/Web/FAP after you have customised your system (for example with CAM authentication / SSL), so it is wise to test \*before\* making any changes!

### 13.1 Optional – Change security (logon method) from 'Native' to 'Cognos' (also known as 'CAM') authentication

The steps are described here: <https://www-01.ibm.com/support/docview.wss?uid=swg22012534>

### 13.2 Optional – Implement Single Sign On (SSO)

The steps are described here: <https://www-01.ibm.com/support/docview.wss?uid=swg22002465>

**IMPORTANT:** If you have installed Cognos Analytics on the same server as Controller, then (by default) you will have already configured Controller to use the 'ibmcognos' IIS virtual directory. In this scenario, the author recommends that you:

- Use the 'automatic' (batch file) method to configure CA (<http://www-01.ibm.com/support/docview.wss?uid=swg22000097>)
- However, modify the batch file (CA\_IIS.config.bat) before executing it, so that the 'set alias' variable is NOT configured to be 'ibmcognos'
  - Instead, modify 'set alias' to be something unique, for example: **ibmcognosso**

### 13.3 Optional – Configure Controller to use SSL (HTTPS)

The steps are described here: <https://www-01.ibm.com/support/docview.wss?uid=swg22004921>

### 13.4 Optional – Configure Controller to use a CA gateway (t=controller)

This is **very rare** nowadays. The author does not recommend using this unless under exceptional circumstances.

- However, the steps are described here: <https://www-01.ibm.com/support/docview.wss?uid=swg21367311>

### 13.5 Optional – Publish to traditional (non-FAP) Data Marts

This is **very rare** nowadays. In general, the author recommends customers instead publish Controller data to Planning Analytics (previously known as TM1) via FAP.

- However, the steps are described here: <https://www-01.ibm.com/support/docview.wss?uid=swg21347788>