Assetwise ALIM Linear Referencing Services 1.0
Infrastructure Guide

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Issue: 1.0

Submitted by:
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Disclaimer

This guide provides instructions for building a basic "out of the box" environment to which the AWLRS application can be deployed. **It is intended only as a guide**; each individual customer site may have their own rules regarding the configuration of components such as IIS in which case the instructions given here may need to be adapted accordingly.

You must **ensure** that you have **adequate licensing** for all 3rd party software required such as **Windows Server** and **Oracle.** If you are unsure, please contact your Bentley Account Manager.

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1 Database Server

The AWLRS application is dependent upon a fully patched exor core 4700 installation therefore it is assumed that an appropriate database server with an instance of exor core 4700 installed already exists before any attempt to deploy AWLRS is made.

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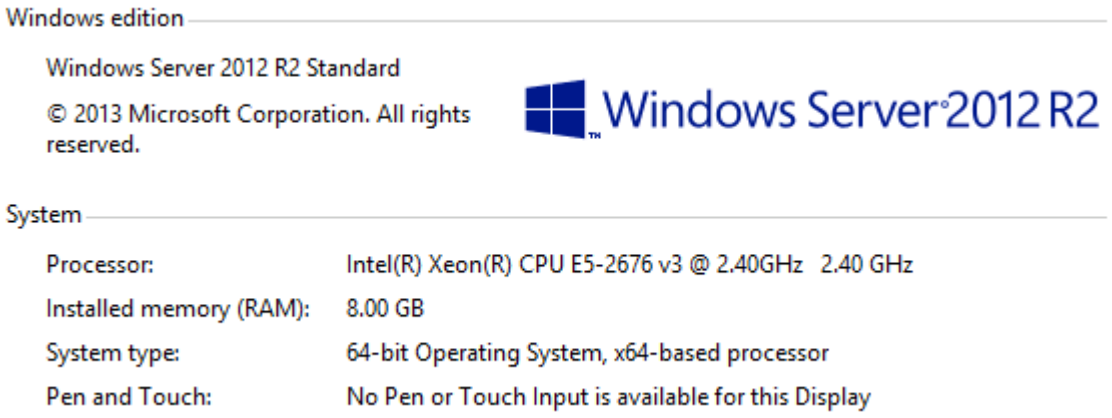
2 Application Server

2.1 Base Server

The application server build should start with clean installation of Windows Server 2012 Release 2.
The following additional assumptions are made:

- The server is fully patched via Windows Update.
- A single static IP address is used.
- Minimum specification for the application server is as follows:
  - 2 CPU Cores
  - 8 GB RAM
  - 1 logical disk (C:) with 50GB of space allocated



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2.2 Staging Folder

The following software components will need to be downloaded to a staging folder on the application server, for example C:\Stage, from this point on this folder will be referred to as <stage>.

2.2.1 Oracle Client Software

Download the following

- Oracle 11g Release 2 Client (11.2.0.4.0) for Windows x64
- 64-bit ODAC 11.2 Release 4 (11.2.0.4.0) Xcopy for Windows x64

From the appropriate Oracle Download site.

NB. Please note that a "My Oracle Support" account may be required to download these components.

2.2.2 MapServer

Download the x64 version of Mapserver (**release-1800-x64-gdal-2-1-3-mapserver-7-0-4.zip**) from the following URL:

http://download.gisinternals.com/sdk/downloads//release-1800-x64-gdal-2-1-3-mapserver-7-0-4.zip

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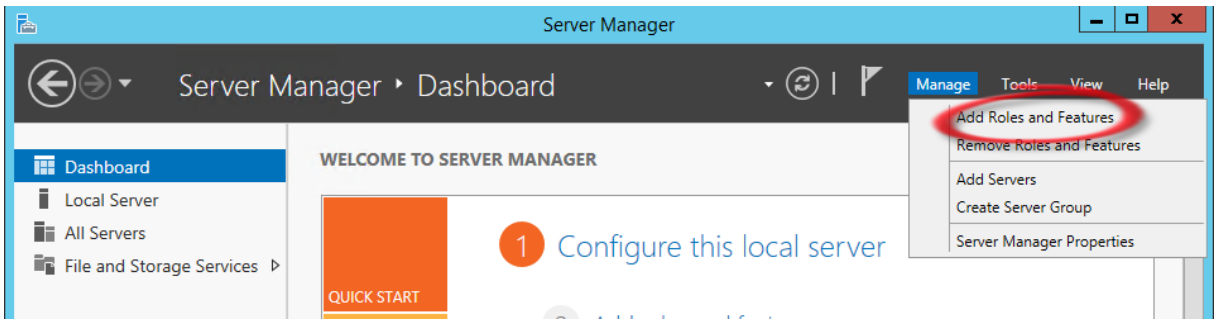
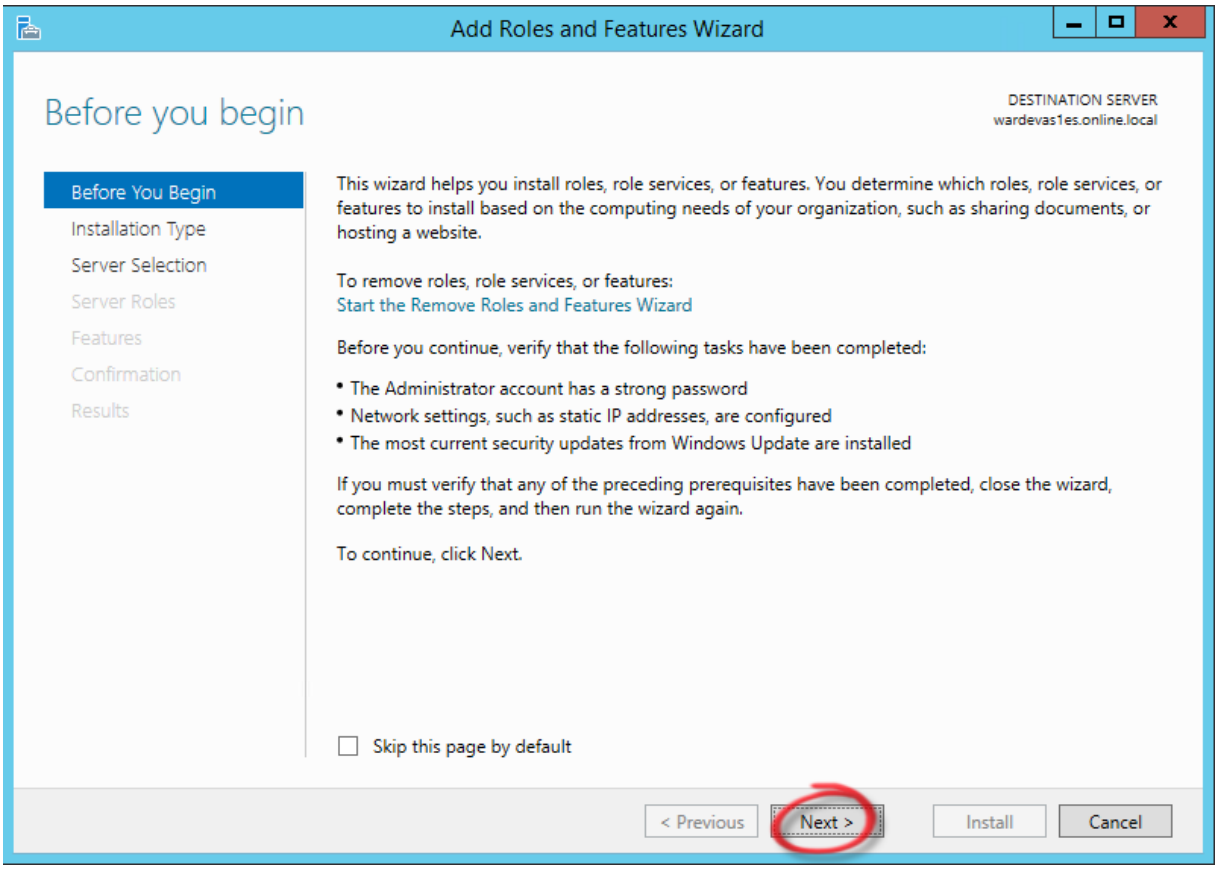
2.3 Install IIS

Open Server Manager and select “Add roles and features” from the “Manage” menu:



If the “Before You Begin” page is shown click on “Next”:



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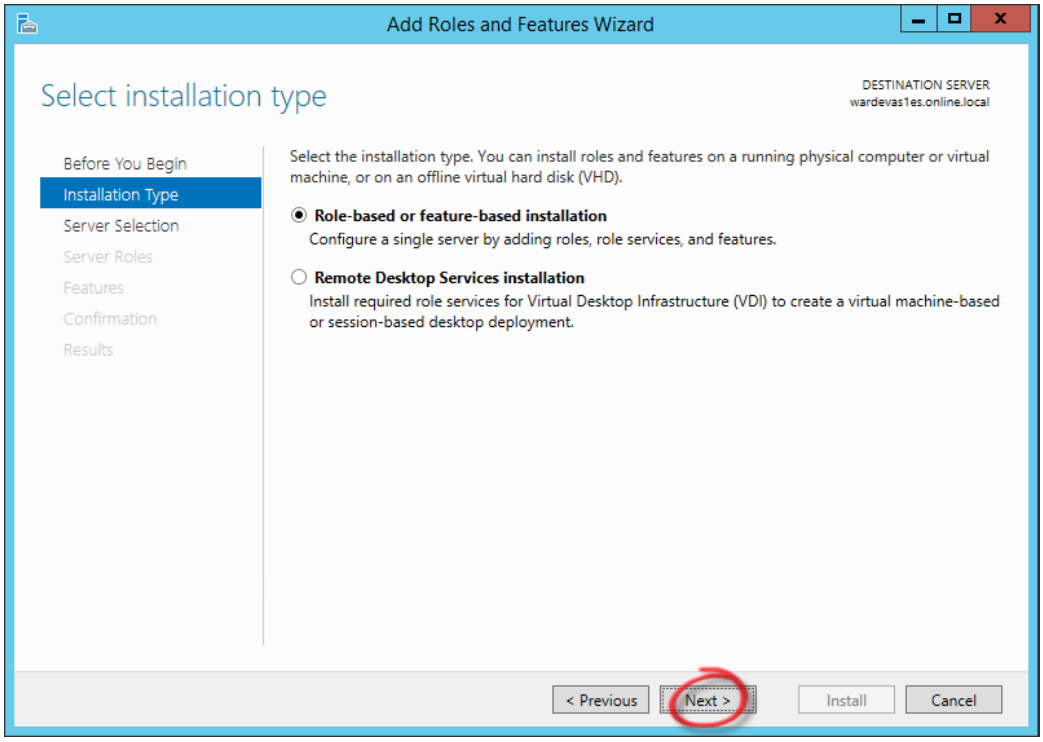
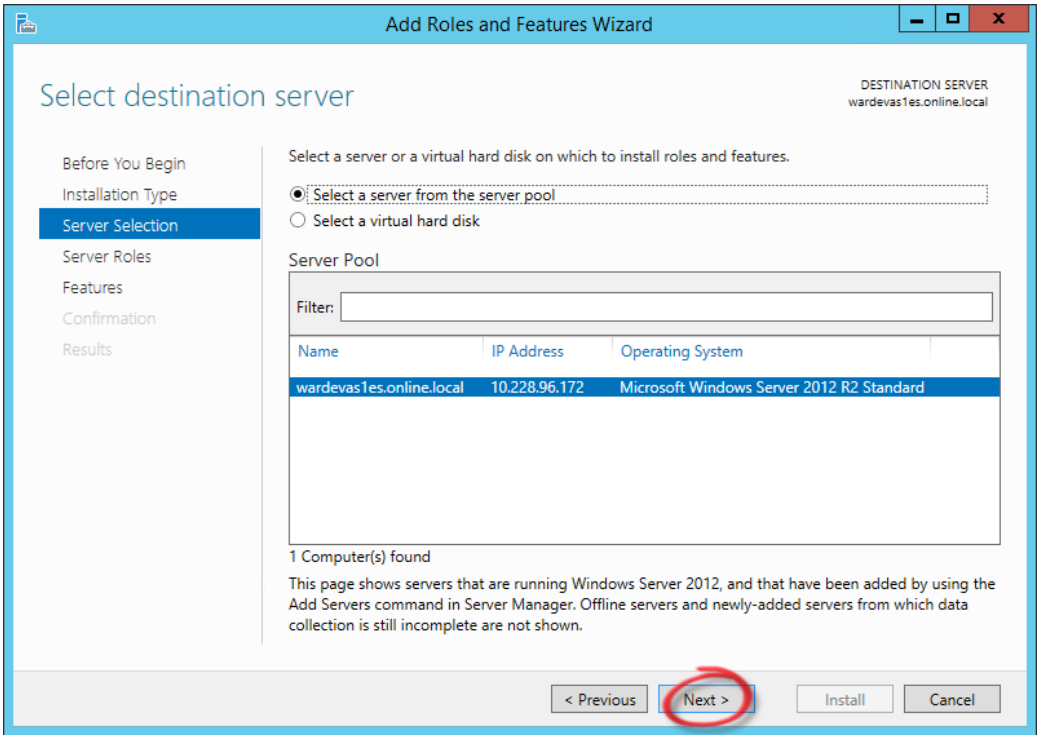
Make sure that “Role-based or feature-based installation” is selected and click on “Next”:



Accept the default “Select a server from the server pool” and the server being configured from the server pool and click on “Next”:



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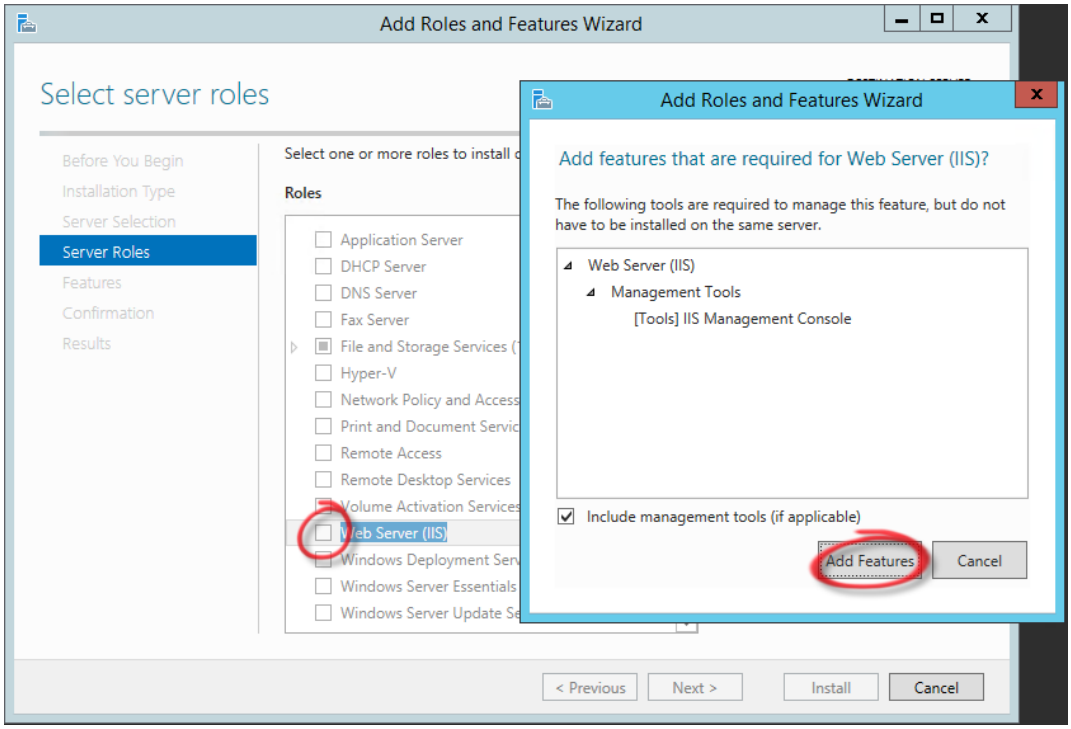
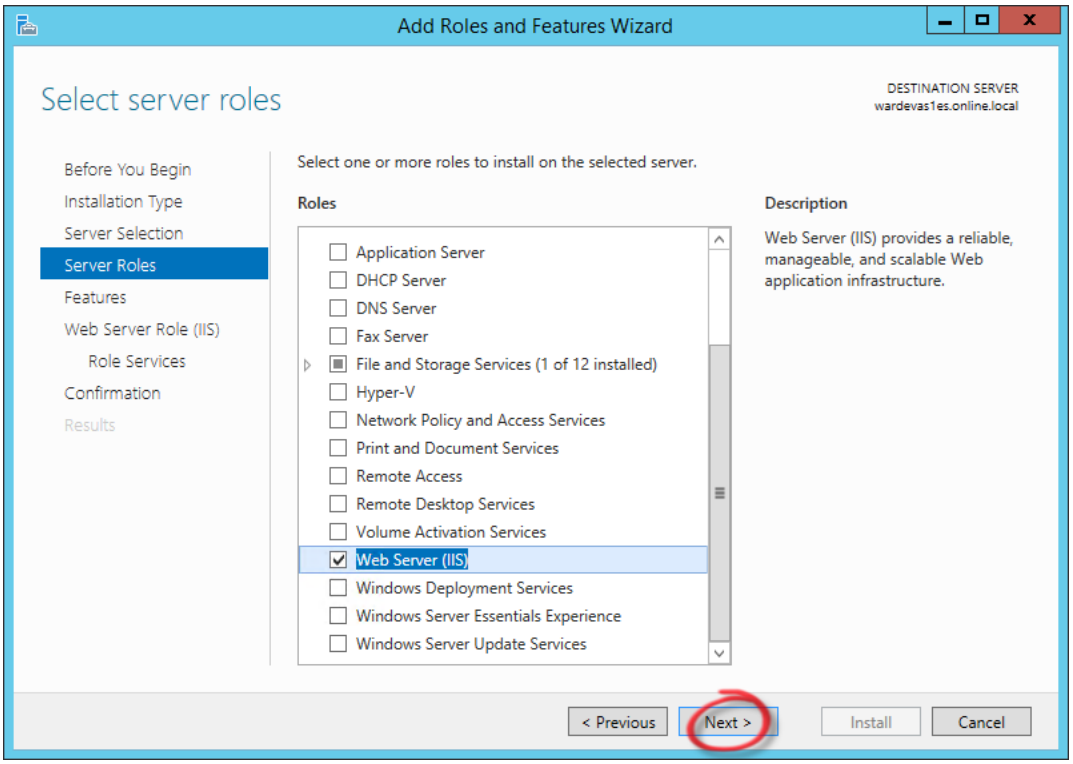
Scroll down the list of Server Roles and select “Web Server (IIS)”, click on “Add Features” in the window that pops up to confirm the addition of the IIS Management Console:



Click on “Next”:



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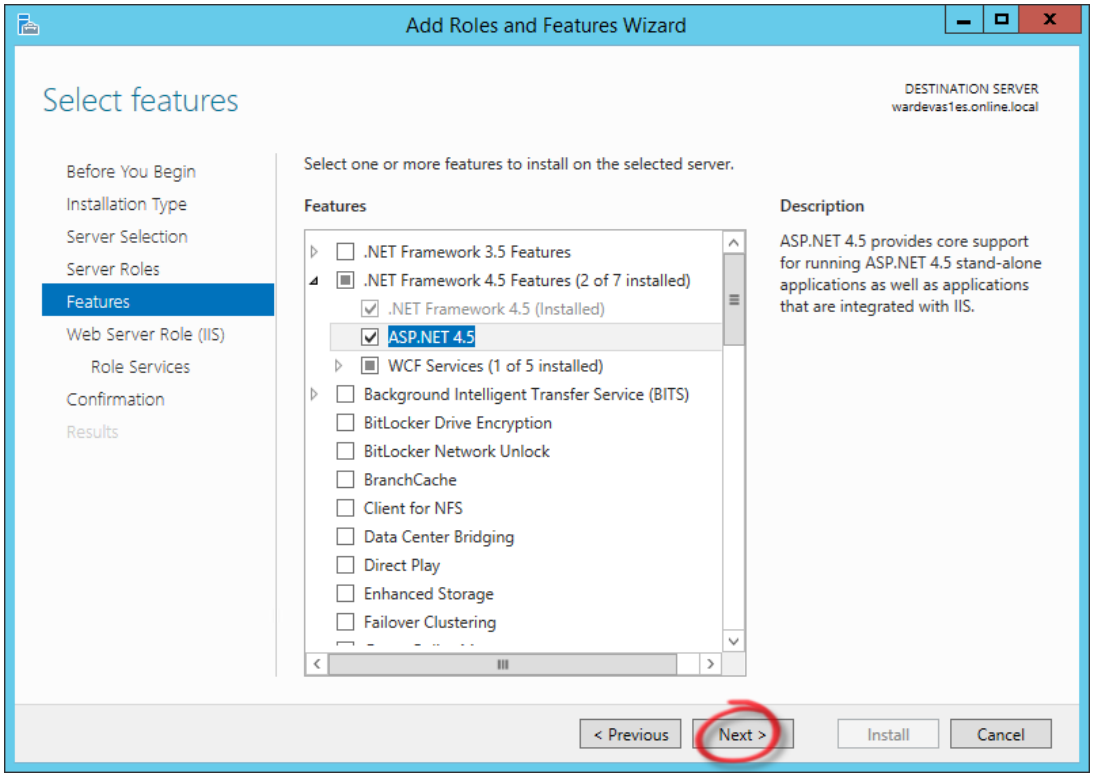
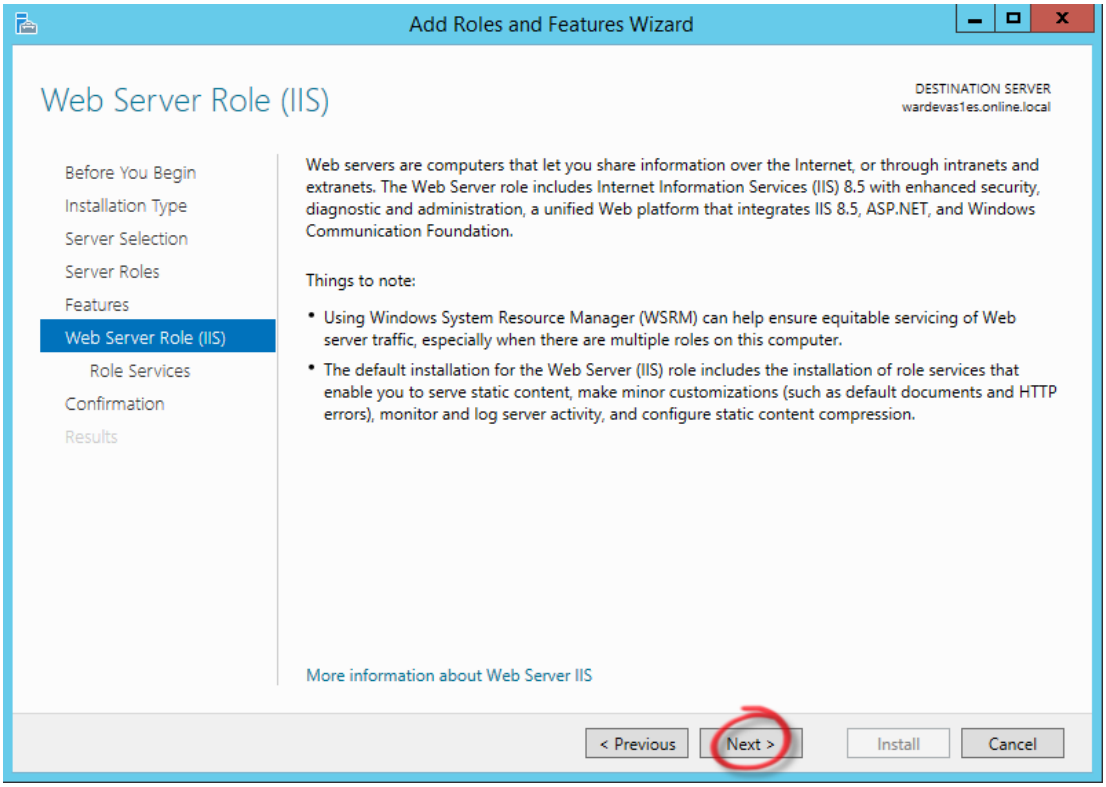
Select “ASP.NET 4.5” from the list of Features and click on “Next”:



Click on “Next” to continue to “Role Services”:



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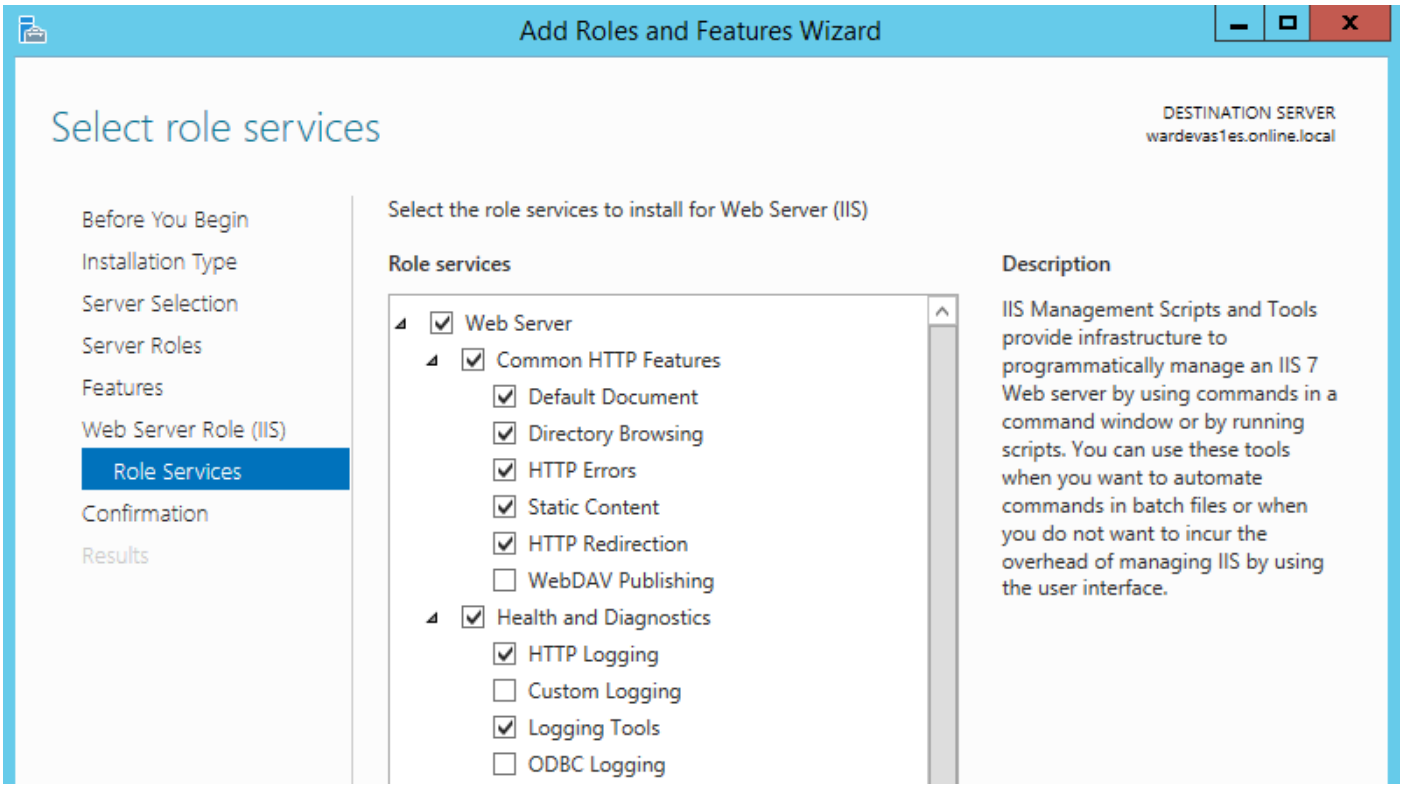
Ensure that the following Role Services are selected in addition to the defaults (Click on "Add Features" if any popups are displayed as you select the Role Services from the list) then click on "Next":

- HTTP Redirection
- Logging Tools
- Request Monitor
- Dynamic Content Compression
- Basic Authentication
- Client Certificate Mapping Authentication
- Digest Authentication
- IIS Client Certificate Mapping Authentication
- IP and Domain Restrictions
- URL Authorization
- Windows Authentication
- .Net Extensibility 4.5
- ASP
- ASP.NET 4.5
- CGI
- ISAPI Extensions
- ISAPI Filters
- Server Side Includes
- IIS Management Scripts and Tools



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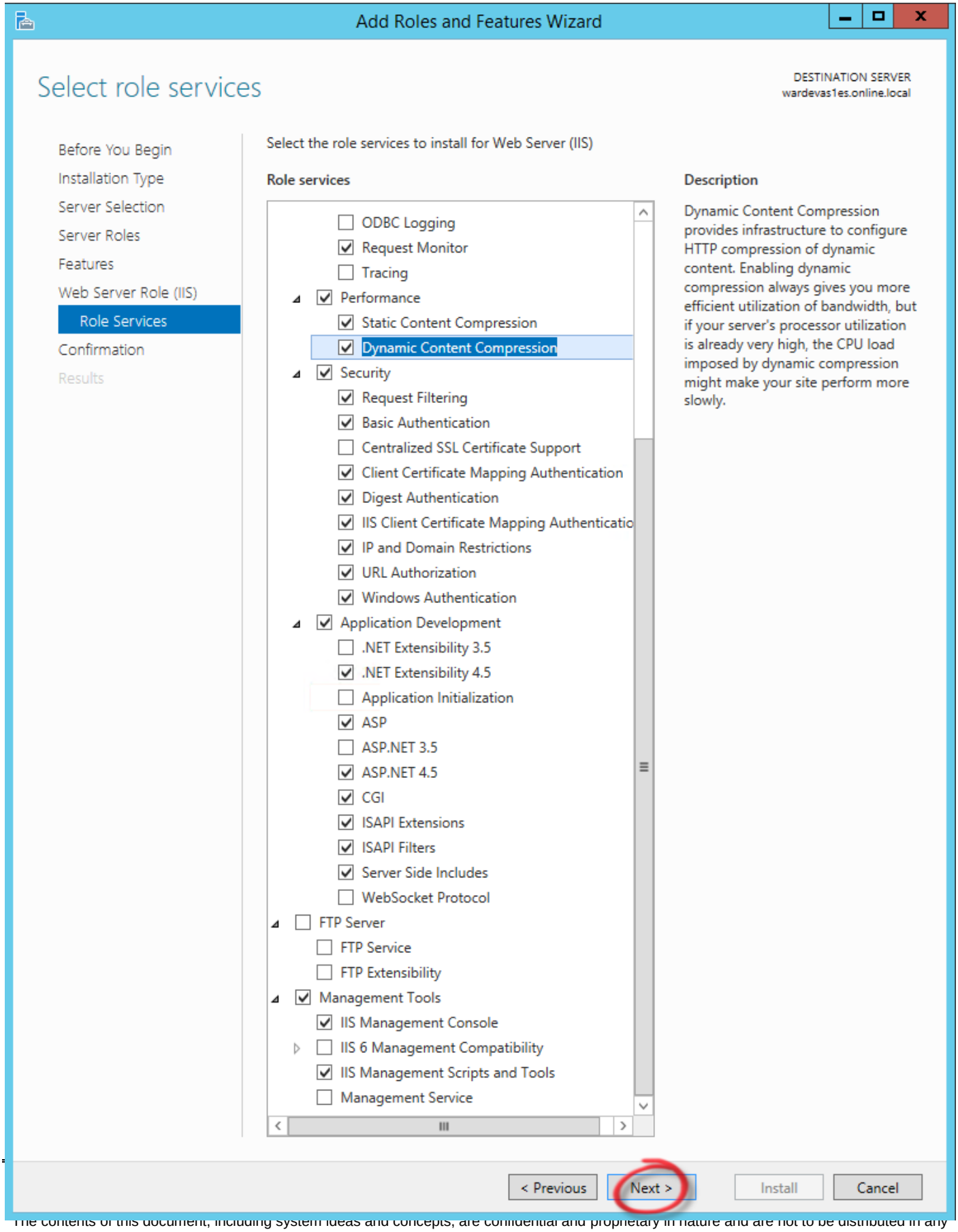

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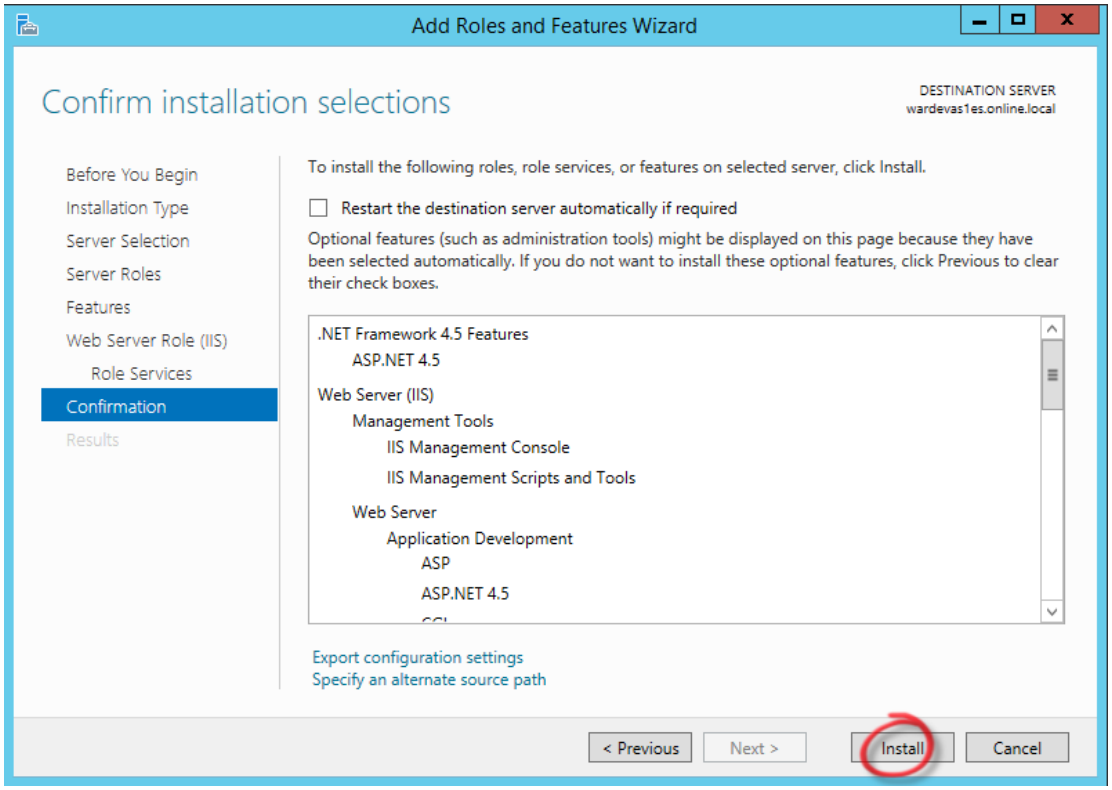
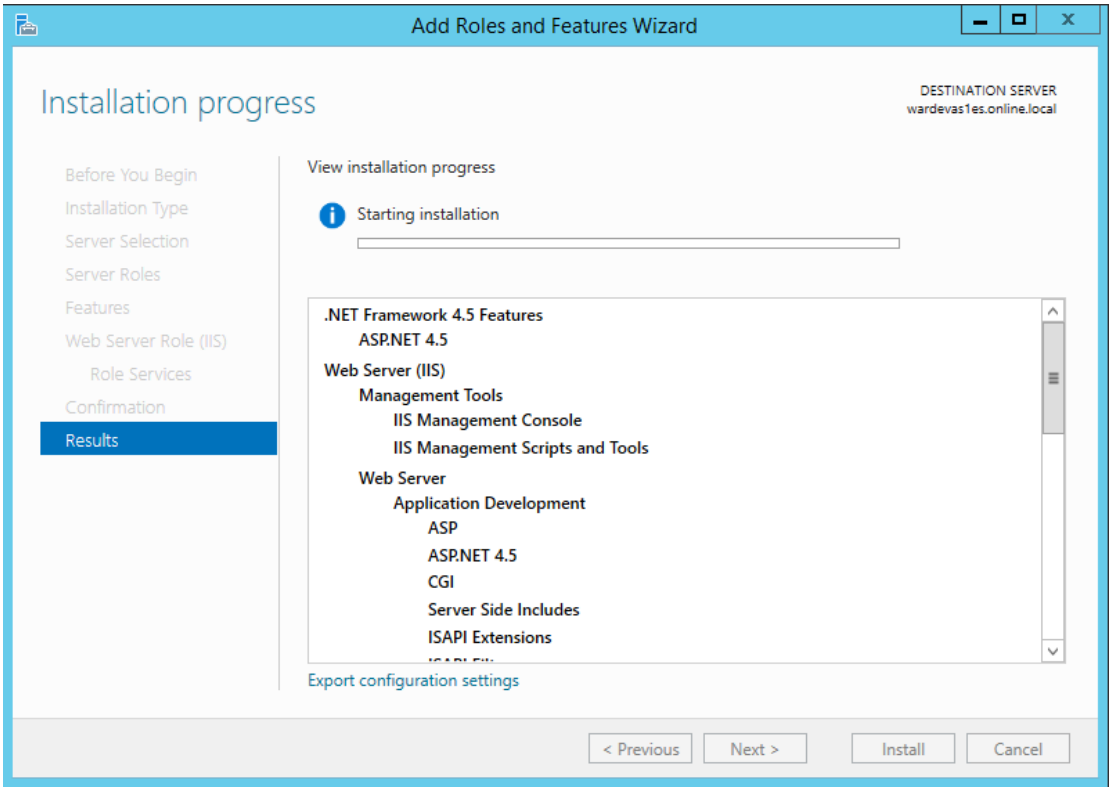
Check the list of Roles and Features to be installed then click on “Install”:



The installation will start, it may take a few minutes to complete:



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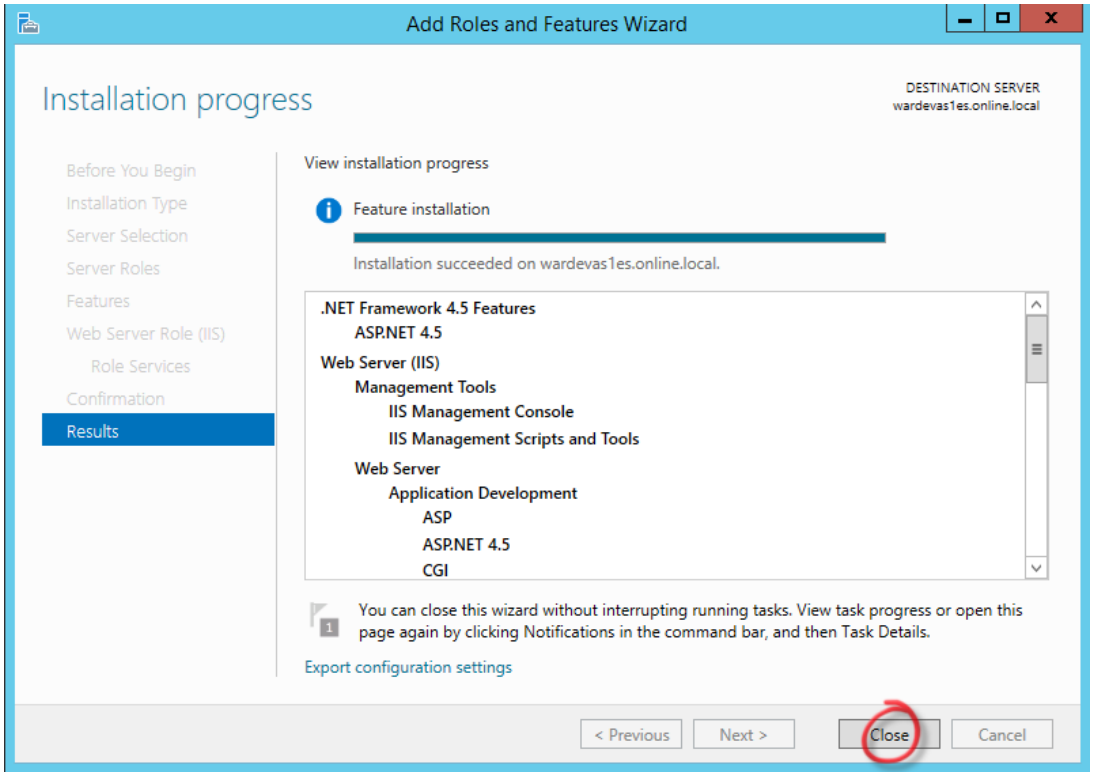
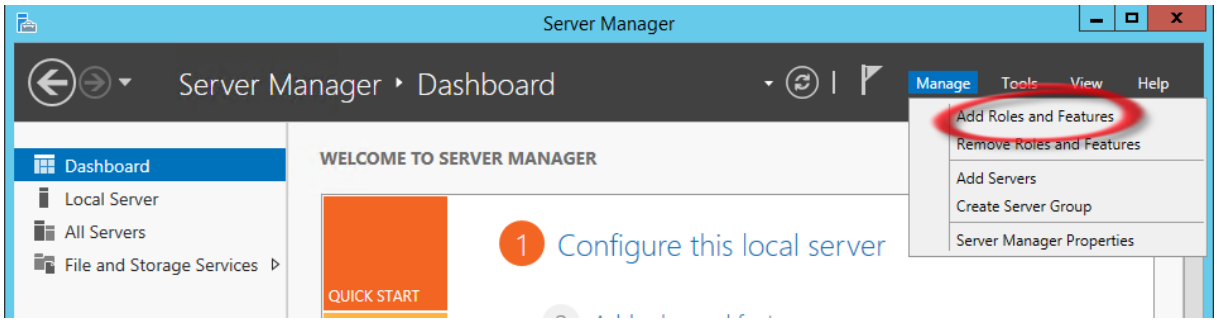
Once the installation is complete click on “Close”



Focus will return to the Server Manager window once again select “Add roles and features” from the “Manage” menu:



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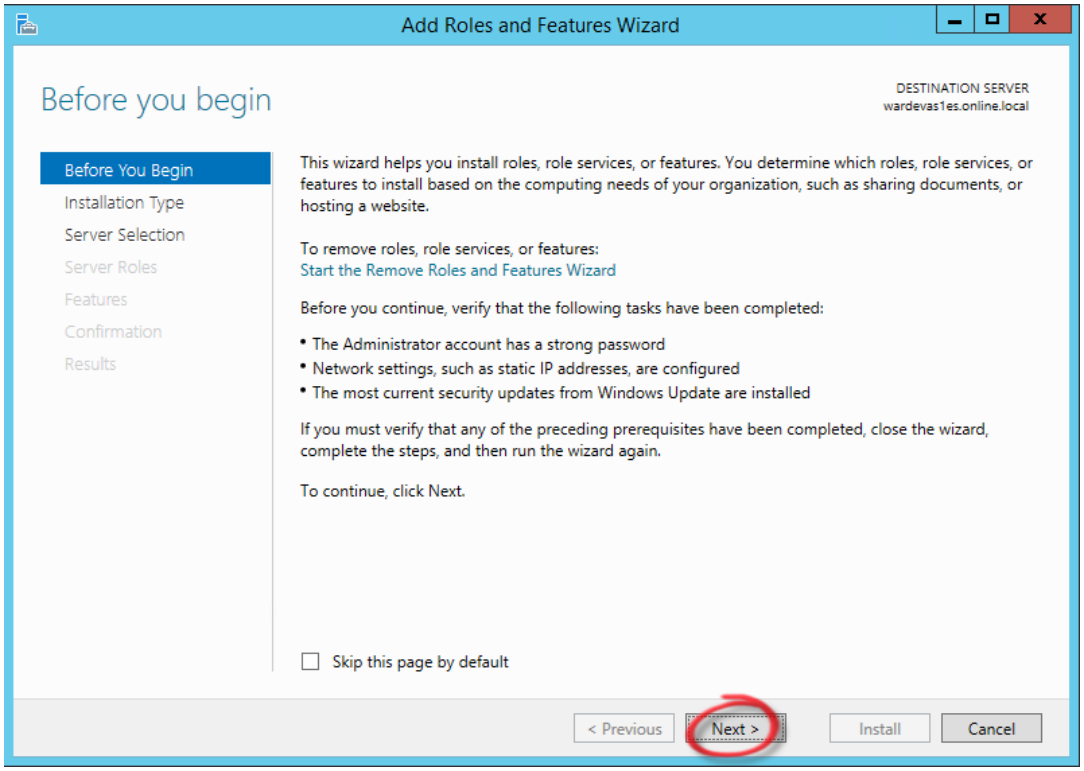
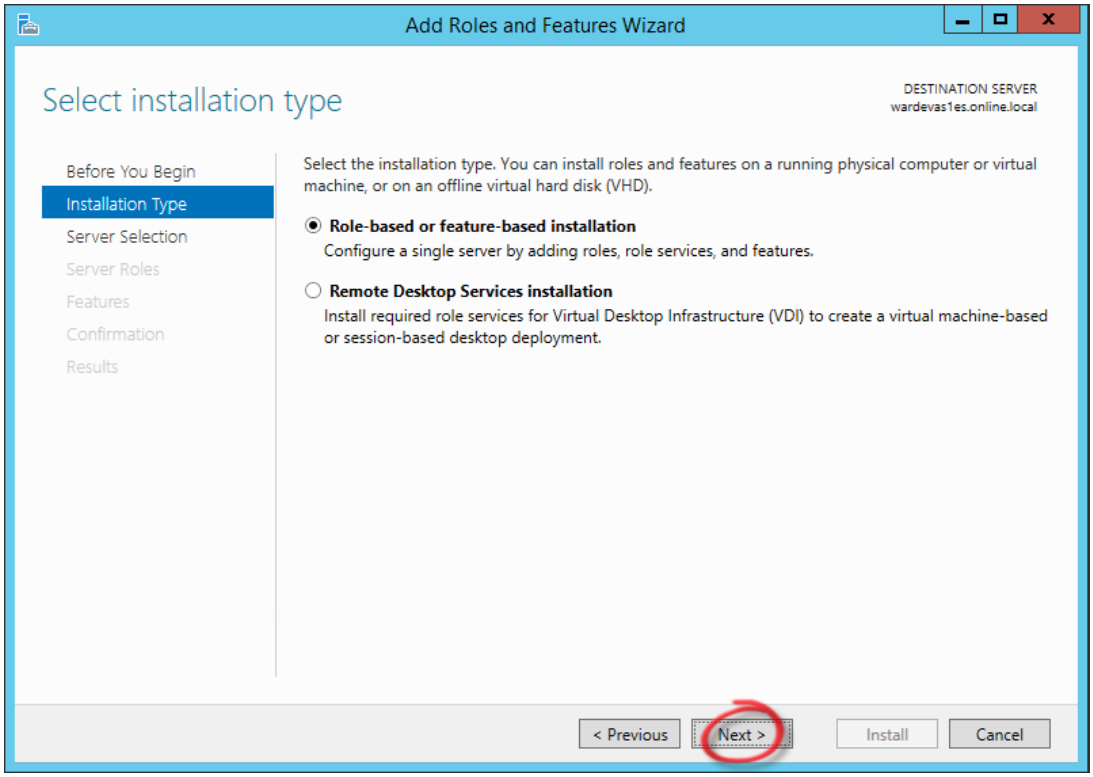
If the “Before You Begin” page is shown click on “Next”:



Make sure that “Role-based or feature-based installation” is selected and click on “Next”:



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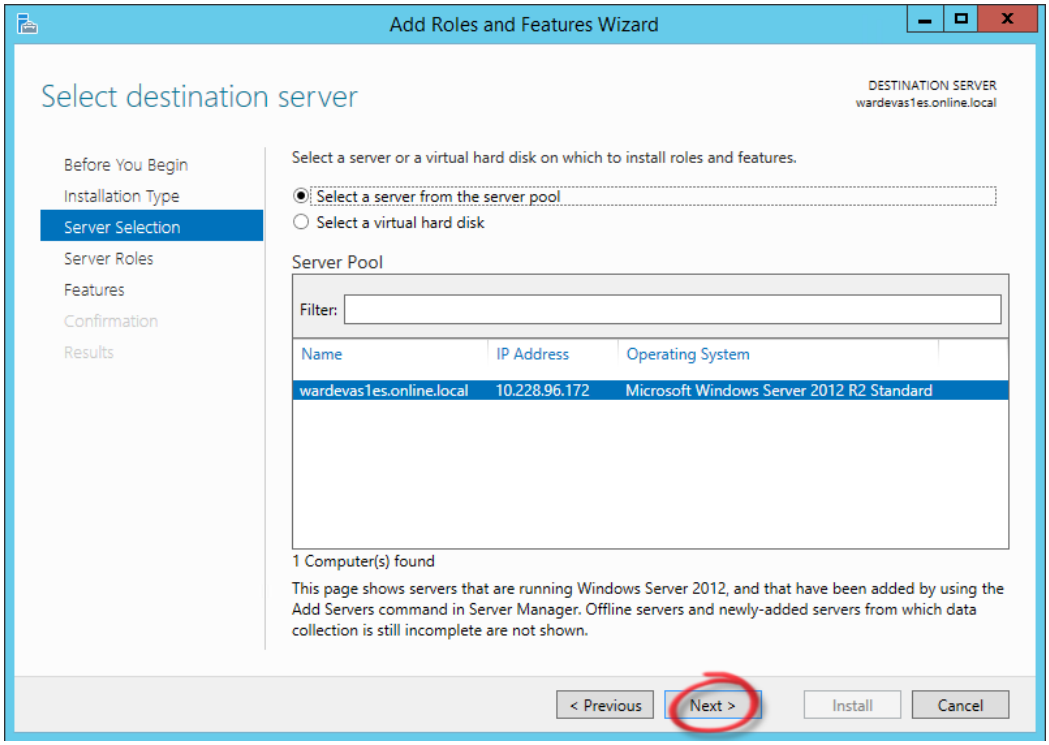
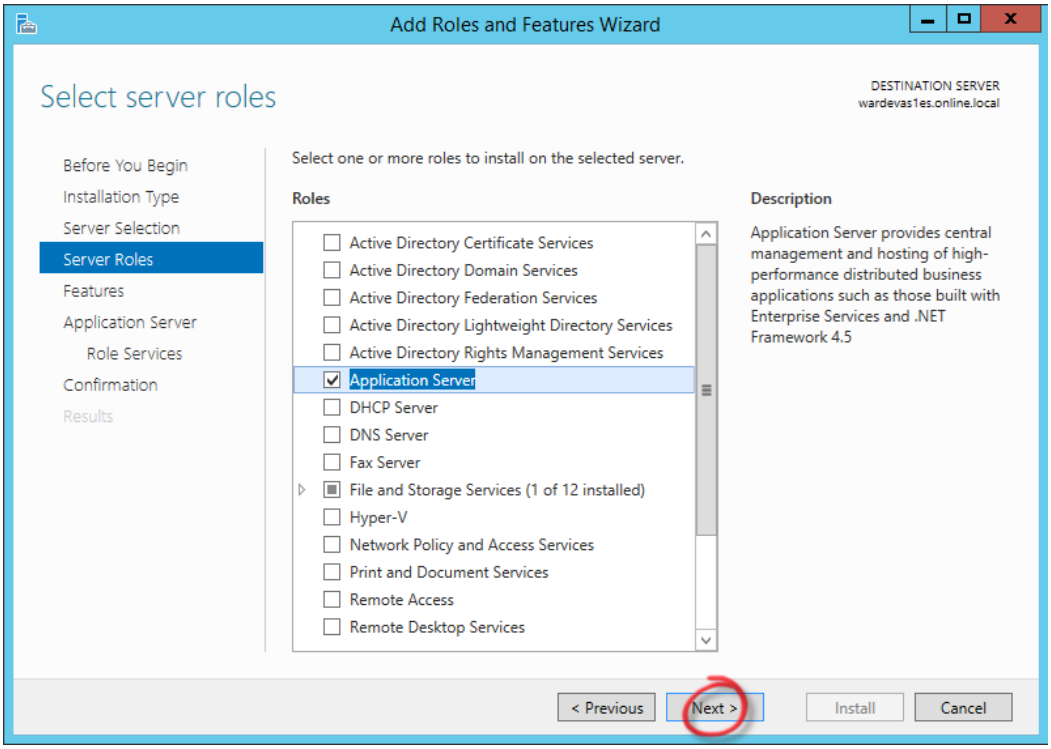
Accept the default "Select a server from the server pool" and the server being configured from the server pool and click on "Next":



Select "Application Server" from the list of Server Roles and click on "Next":



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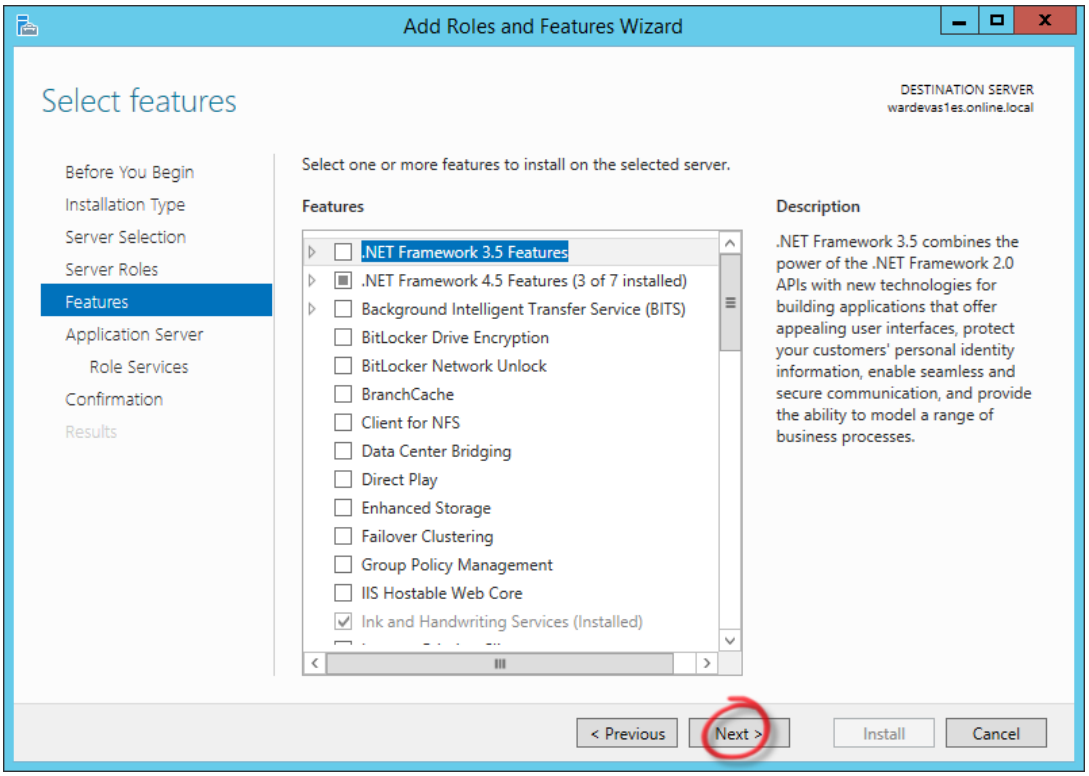
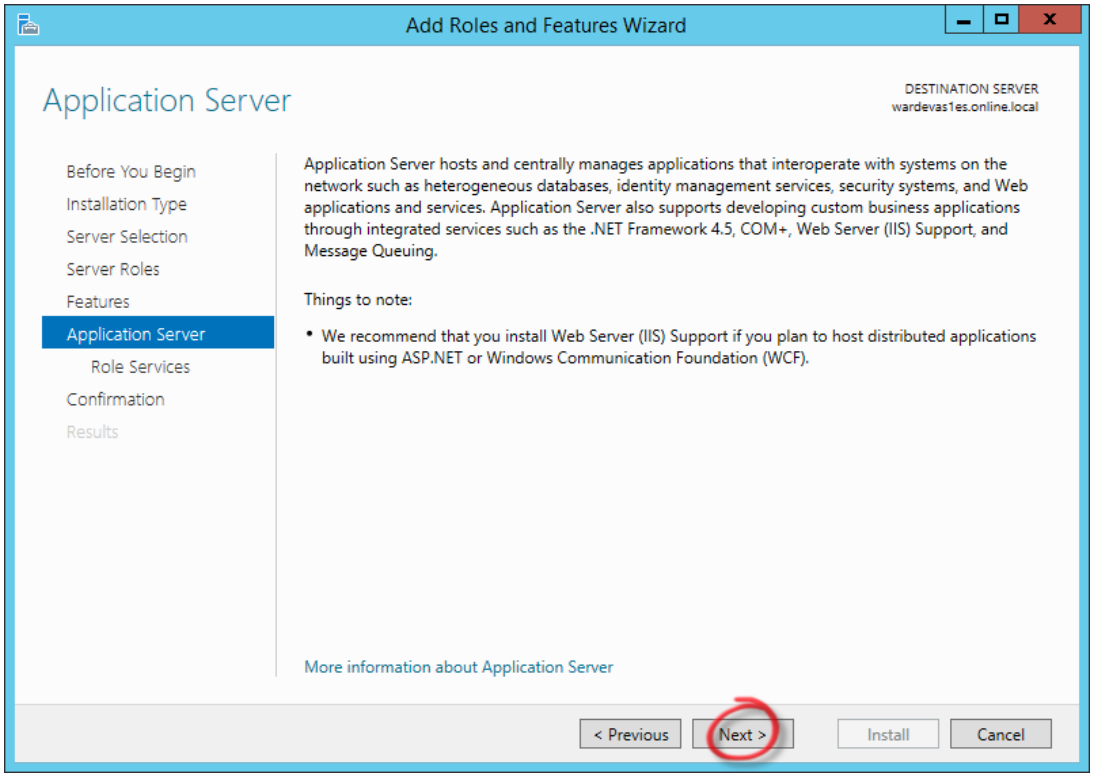
Click on “Next” without making any changes for the “Features” and “Application Server” pages:





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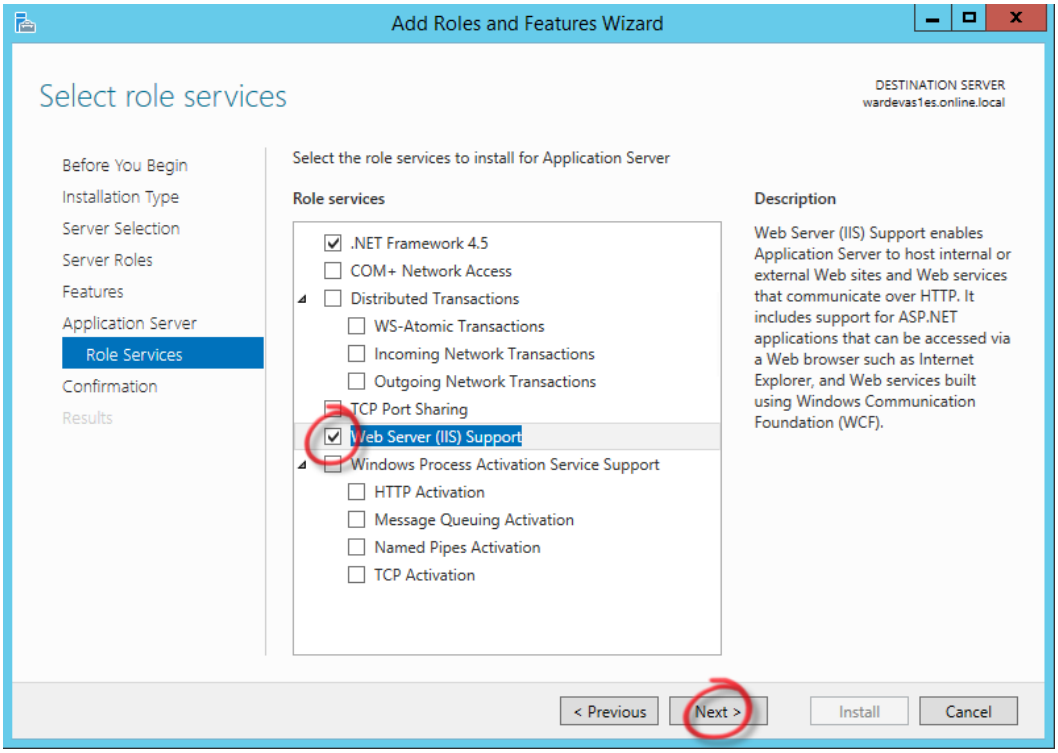
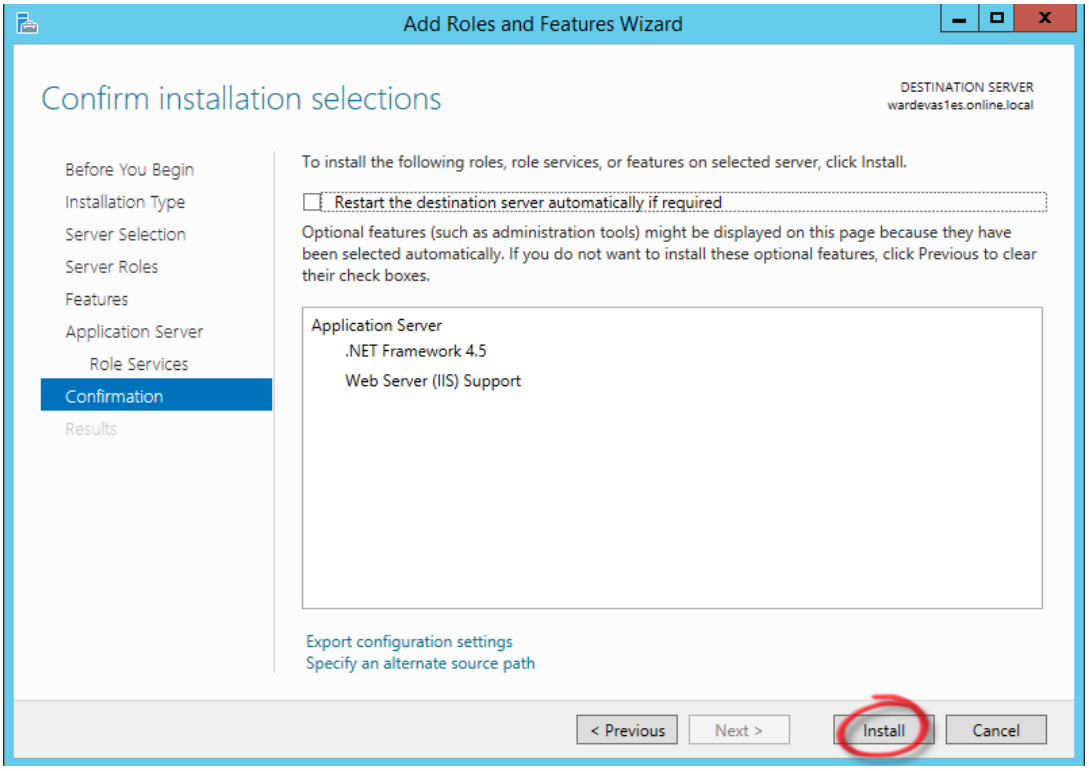
Select “Web Server (IIS) Support from the list of Role Services and click on “Next”:



Click in “Install” to continue:



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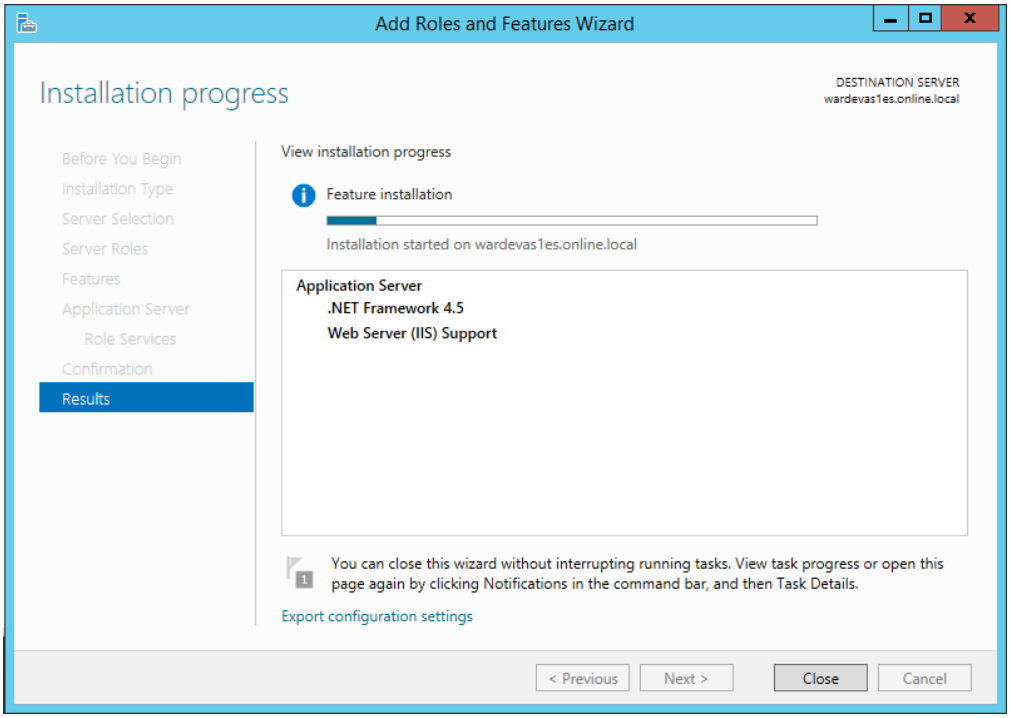
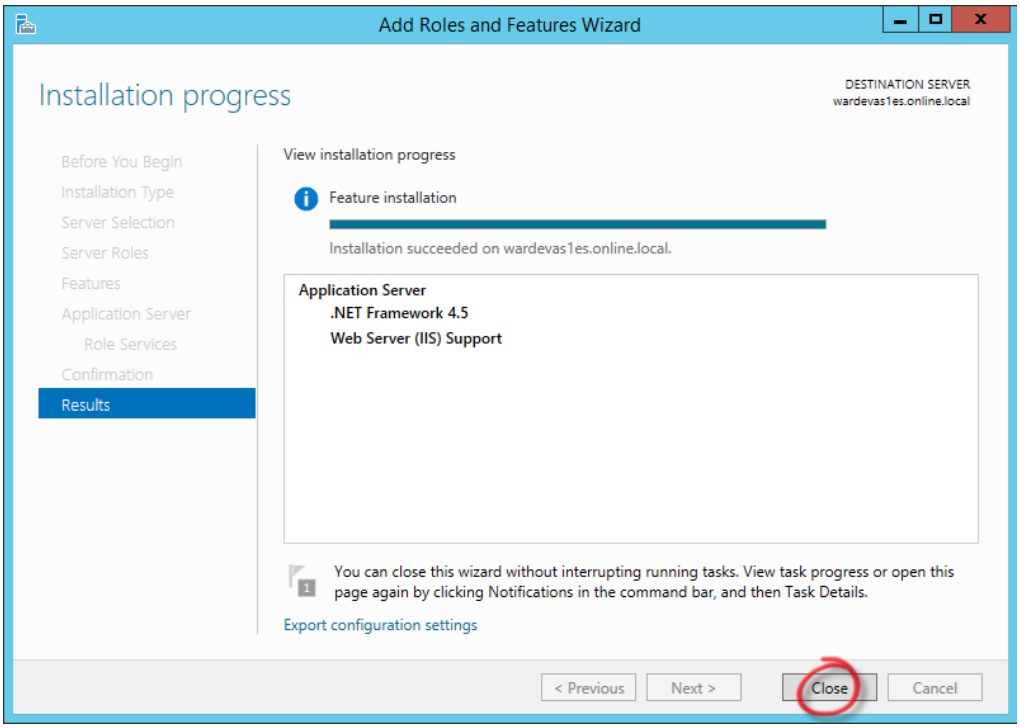
The installation will start, it may take a few minutes to complete:



Once the installation is complete click on “Close”



The IIS Installation is complete, close Server Manager and continue to the next step.

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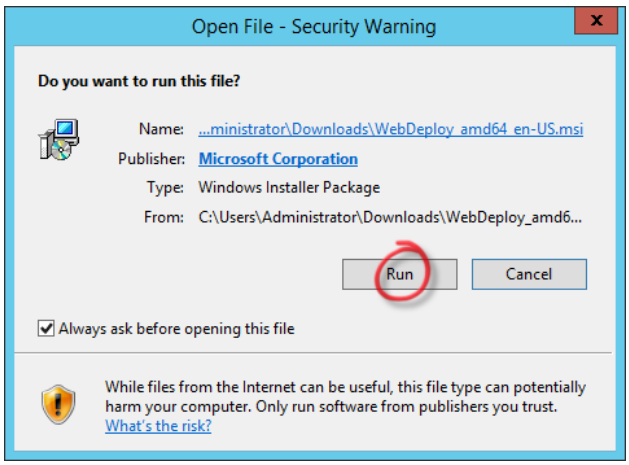
2.4 Install Web Deploy

Using a browser on the **application server**, navigate to the following URL:

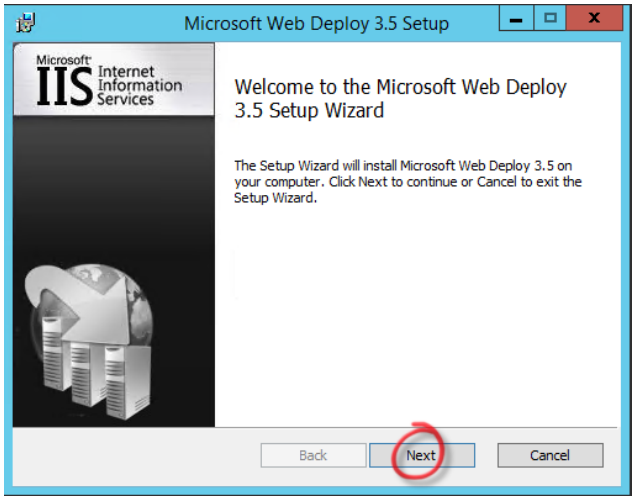
https://www.microsoft.com/en-gb/download/confirmation.aspx?id=39277

This will initiate the download of the file "WebDeploy_amd64_en-US.msi"
Once downloaded, depending on your browser, you may see a pop-up prompt asking for permission to run the file, if not the browse to the download location and double click on the file to execute it.

Select "Run" when prompted:



When the Setup window is displayed click on "Next":



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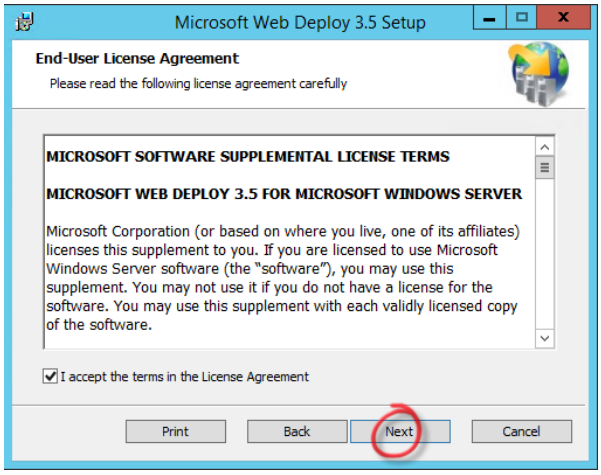
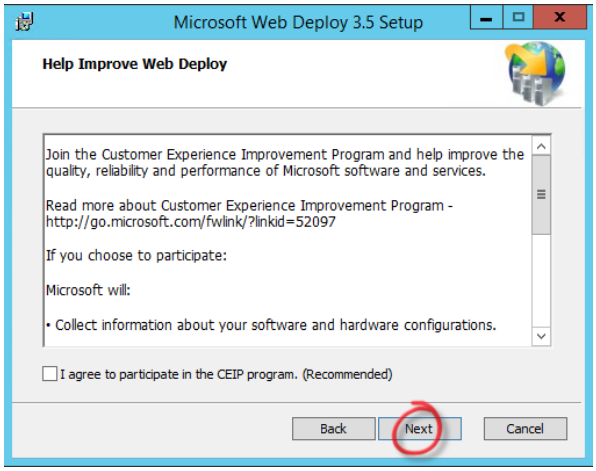
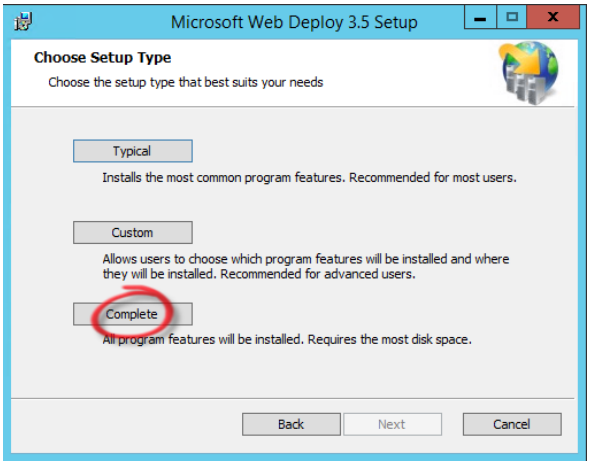
Tick the box to accept the terms of the license agreement and click on “Next”:



Tick the box if you wish to participate in the CEIP program and click on “Next”:



Click on “Complete” to perform a full install:



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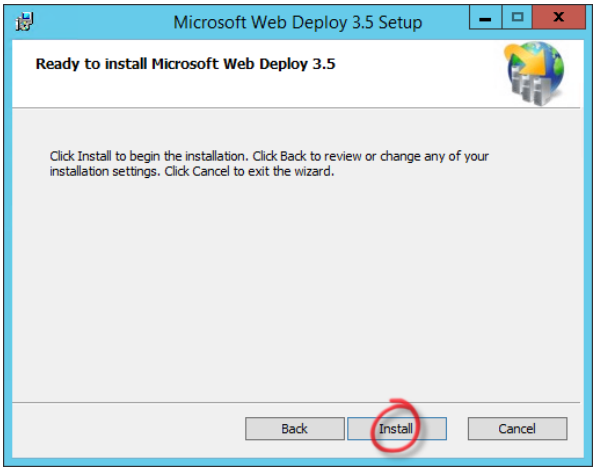
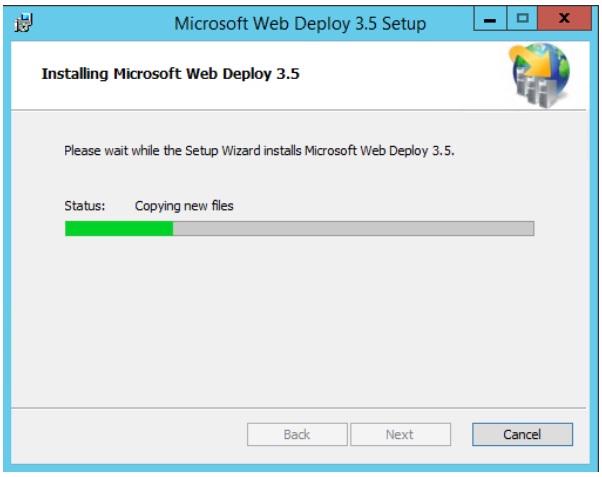
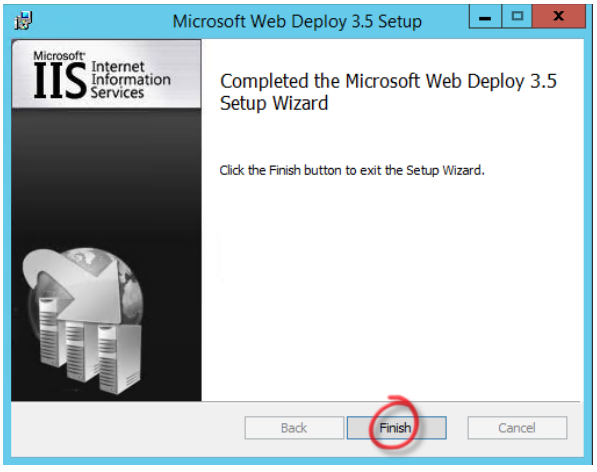
Click on “Install”:



The installation will begin:



Click on “Finish” to complete the installation:



The Web Deploy installation is now complete.

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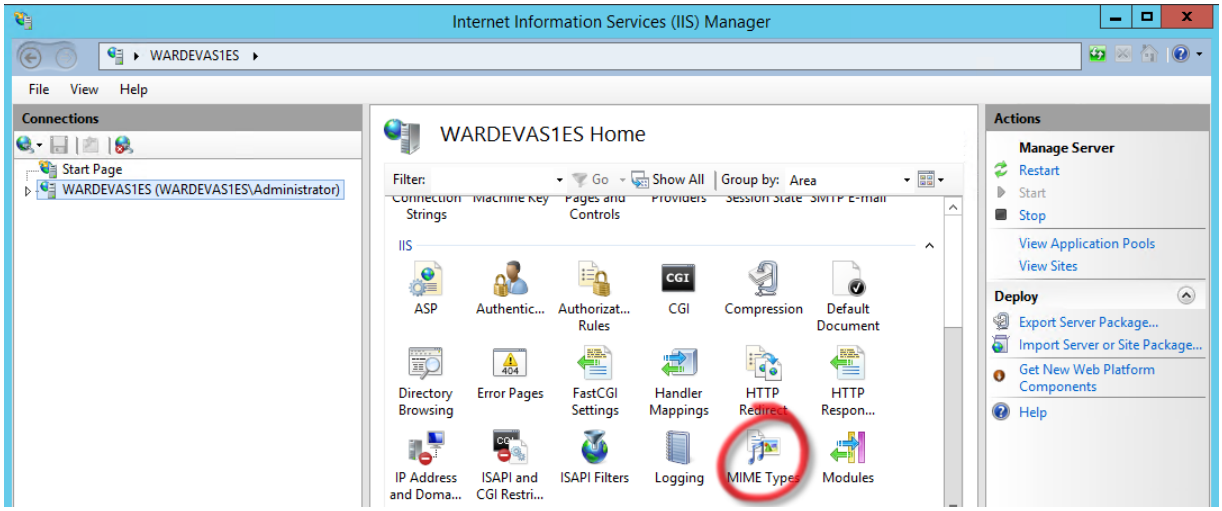
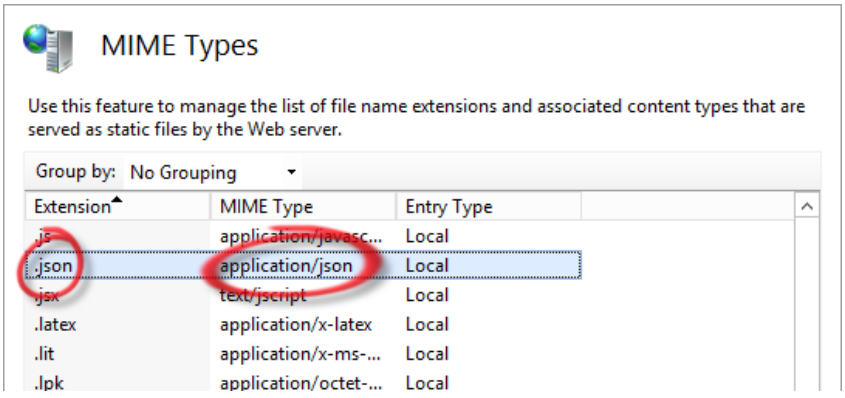
2.5 Configure MIME Type

The AWLRS Web Api returns some content to the AWLRS Application as json files so a MIME Type for the ".json" extension is required.

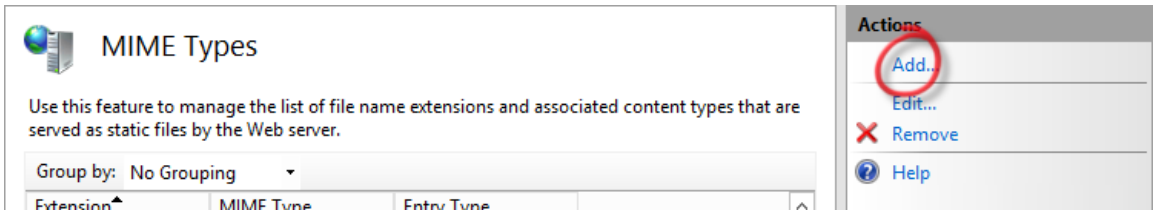
On the **application server** run the Internet Information Services (IIS) Manager application, select the server in the left-hand side and double click the "MIME Types" icon in the central panel:



Check that the list of MIME Types has an entry for the extension ".json" as shown below:



If there is no entry then click "Add" in the "Actions" panel on the right-hand side:



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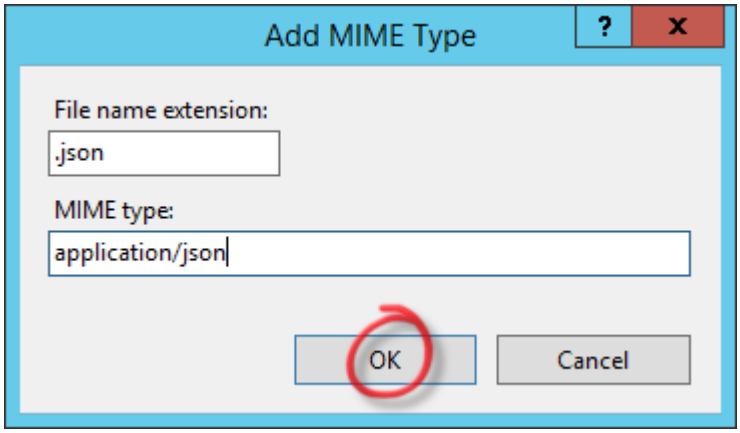
Enter the following values and click on “OK”:
File name extension: .json
MIME type: application/json



Exit IIS Manager.

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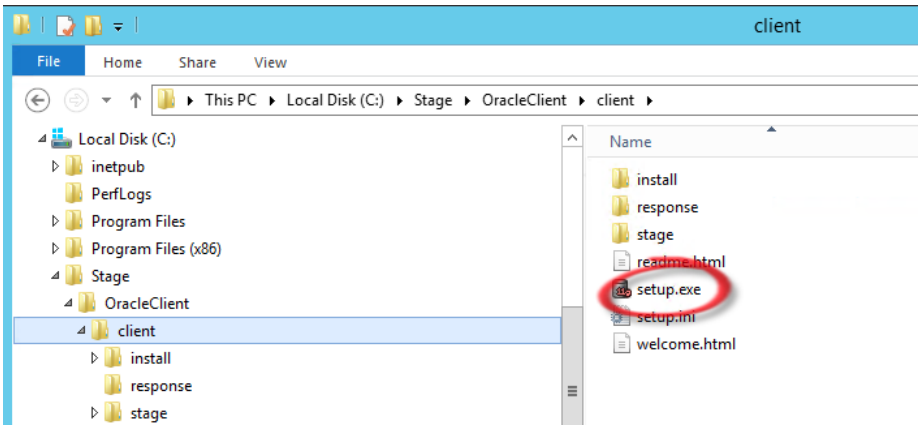
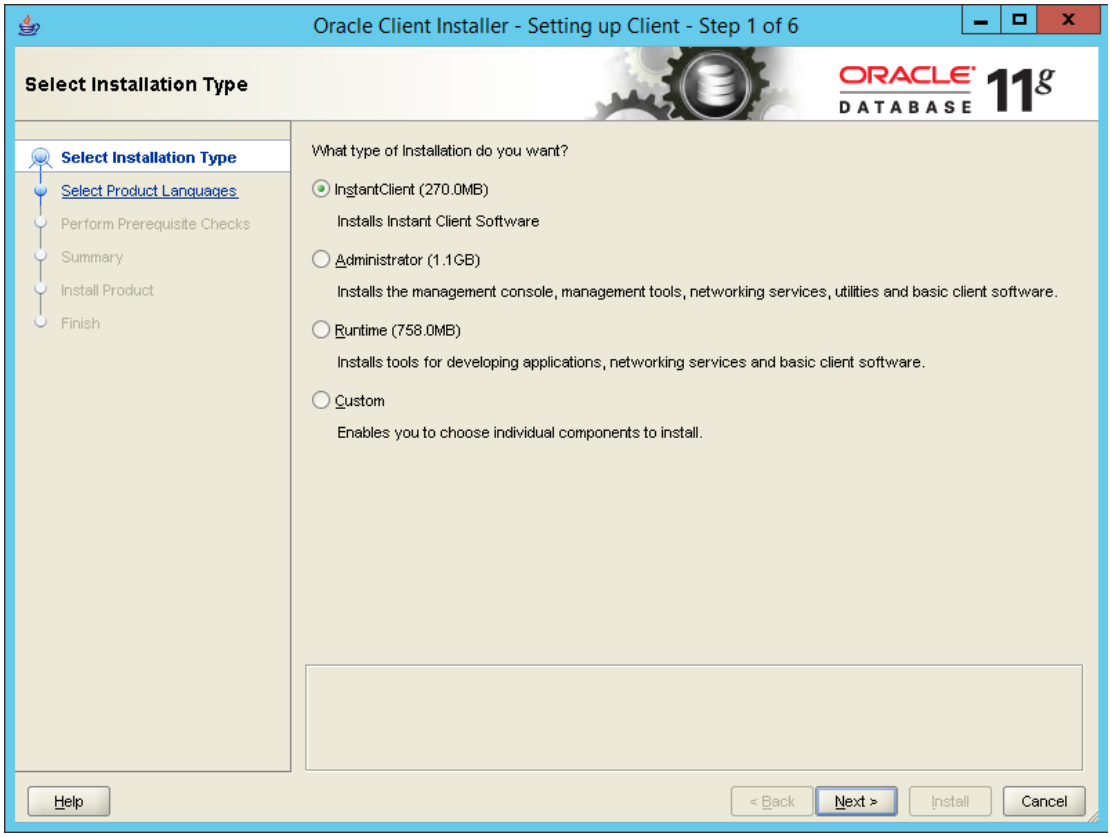
2.6 Install the Oracle Client

On the **application server** go to the <stage> folder created in section 2.2 and unzip the downloaded Oracle 11g Release 2 Client (11.2.0.4.0) for Windows x64 to a folder called OracleClient

You should now have a folder structure that looks something like this:



Double click on <stage>\OracleClient\client\setup.exe to being the installation, a command prompt will be briefly displayed followed by the Oracle Client Installer:



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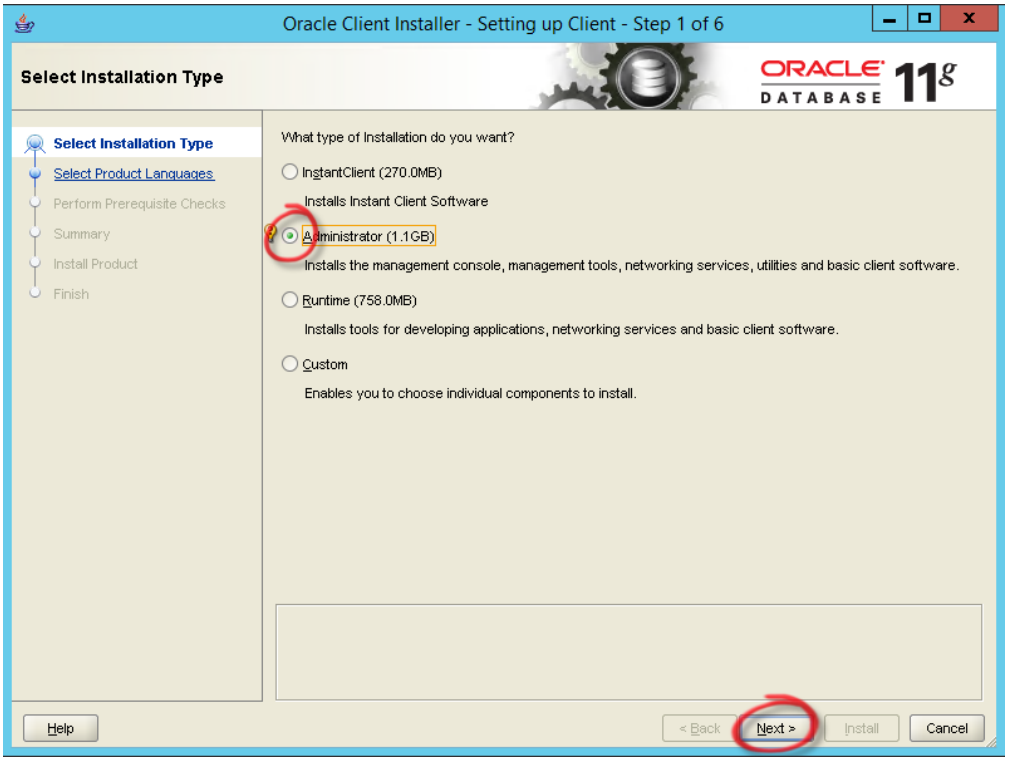
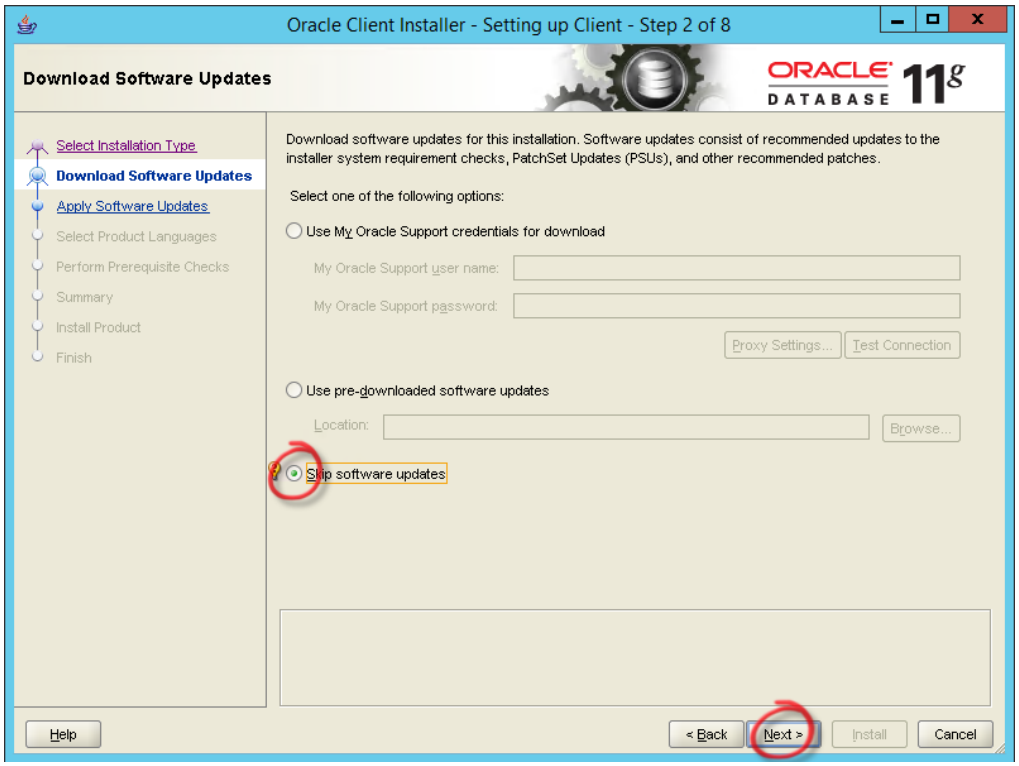
Select “Administrator” from the list of installation types and click on “Next”:



Select “Skip software updates” and click on “Next”:



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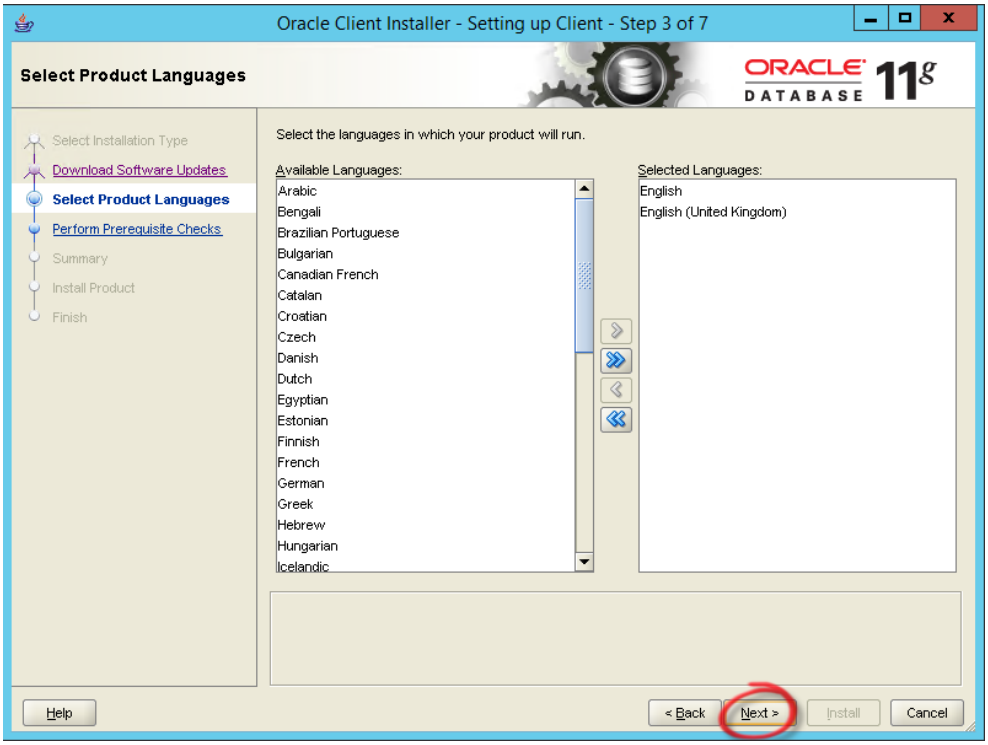
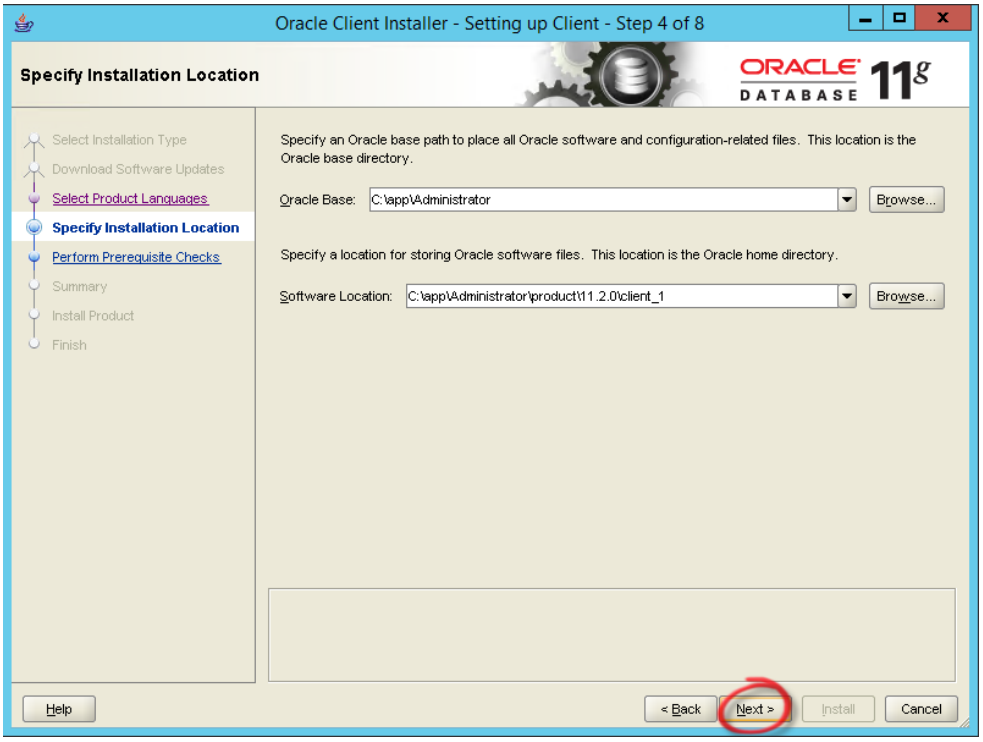
Check the “Selected Languages” and click on “Next”:



Set the required path for the installation and click on “Next”:

NB. Make a note of the path specified in the “Software Location” field as this will be needed for the Oracle Data Access Components installation in section 2.7



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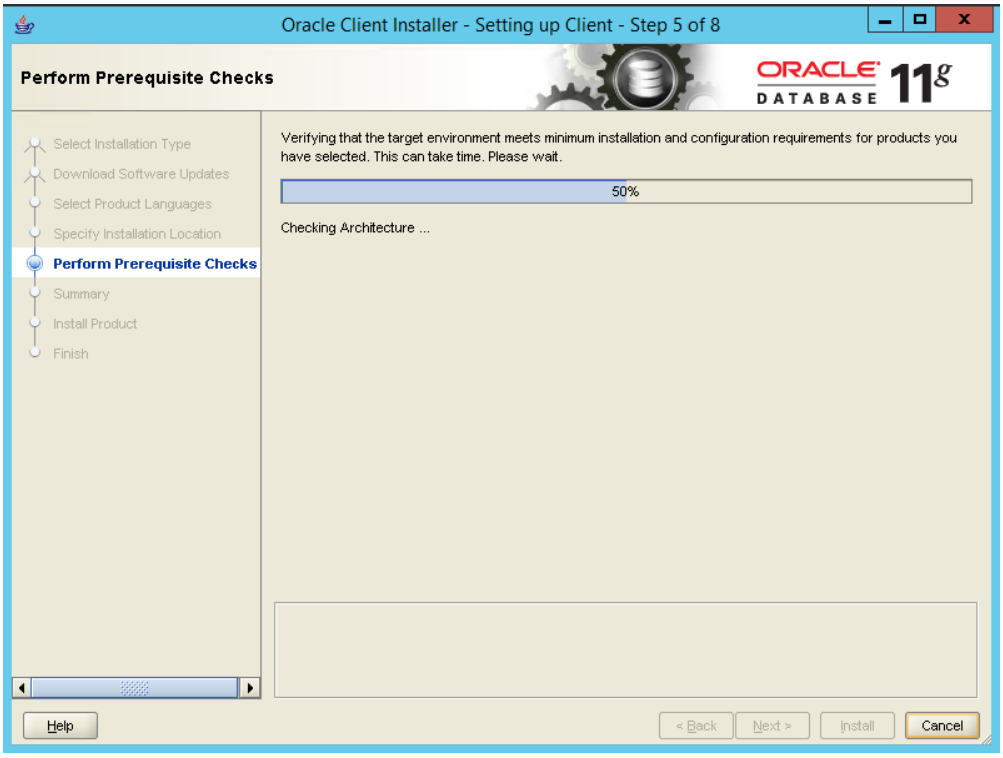
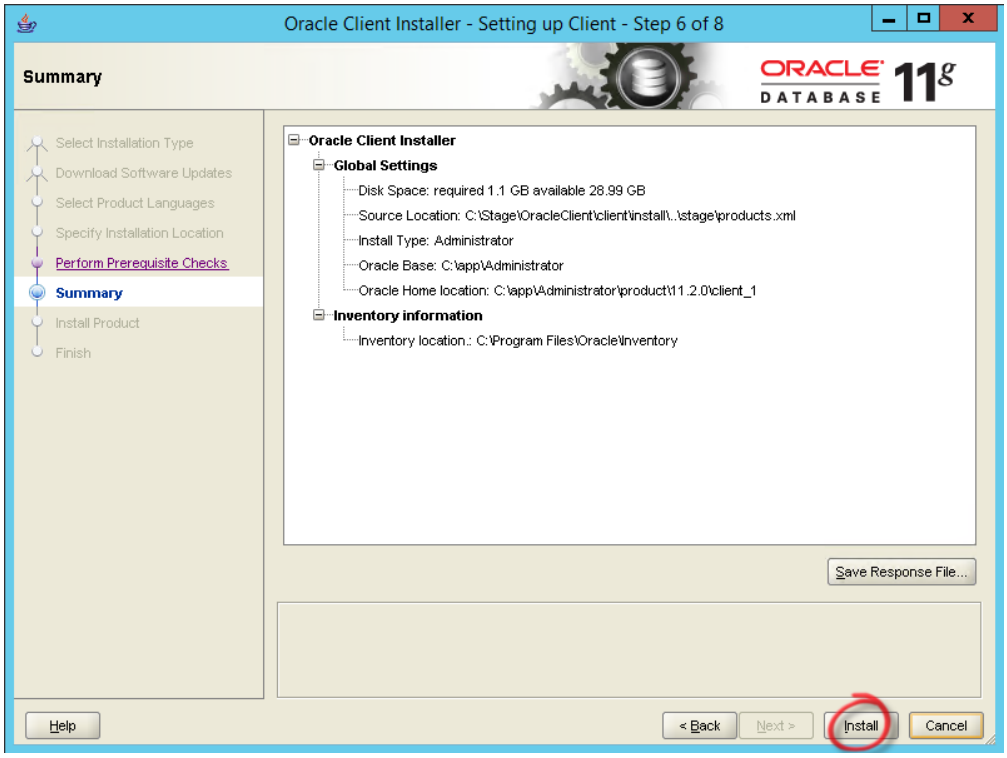
The installer will perform several checks to ensure that the installation can continue:



Once the checks are complete review the installation summary and click on “Install” to start the installation:



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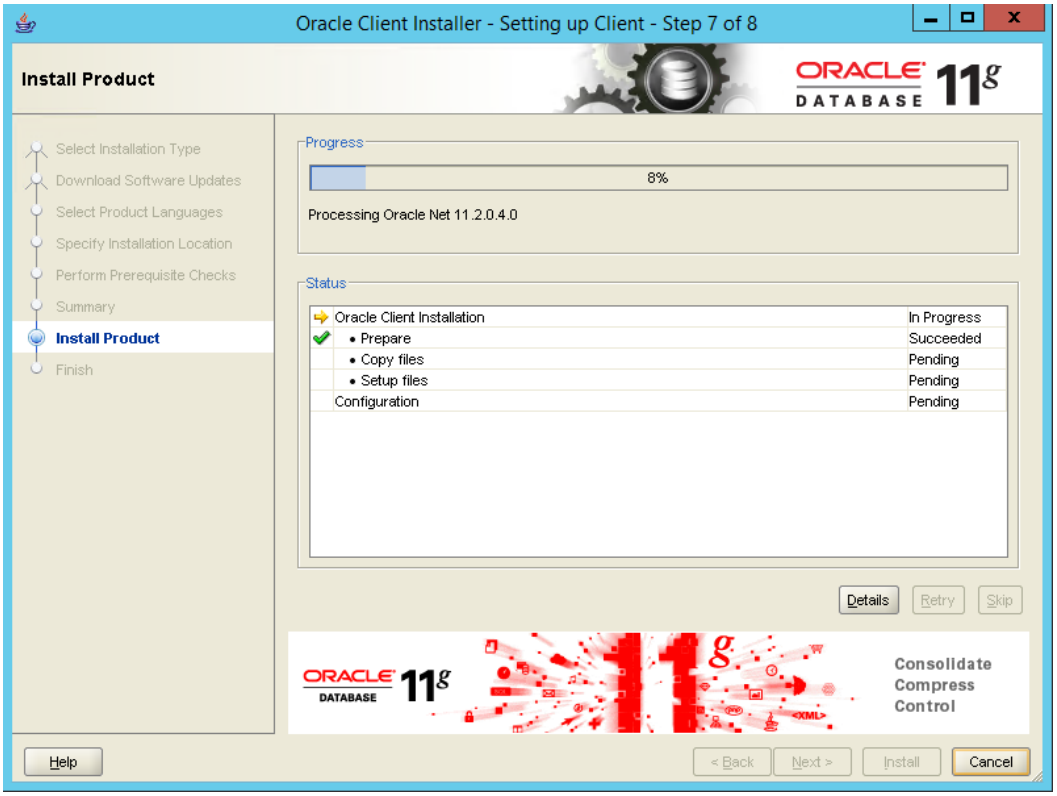
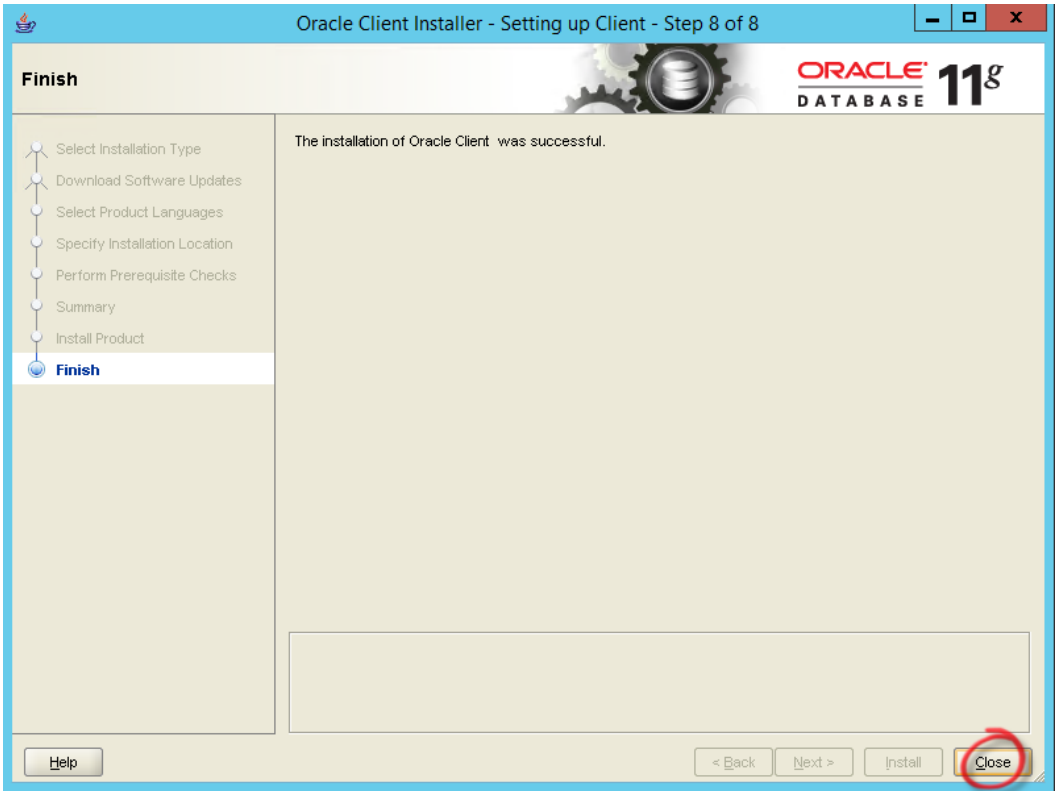


Click on "Close" to complete the installation:



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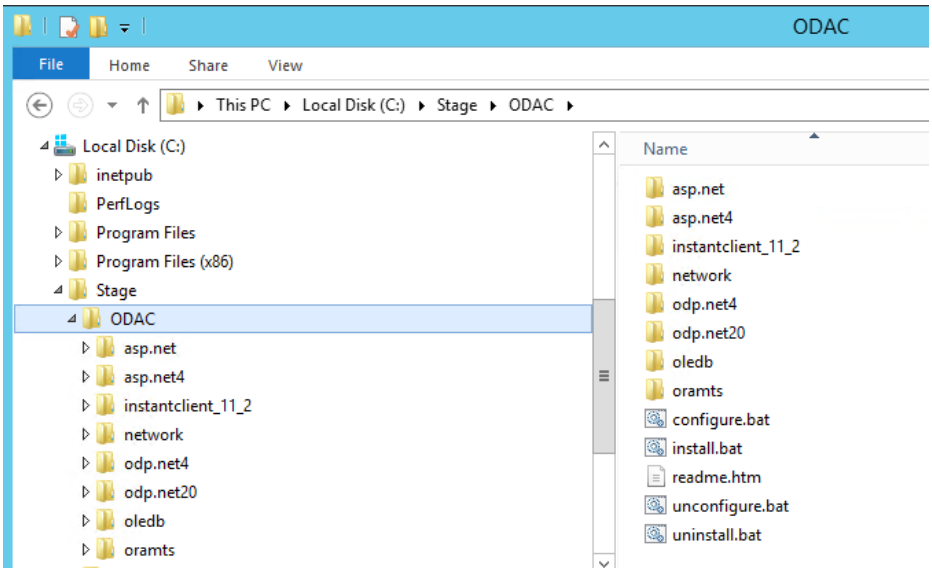
2.7 Install Oracle Data Access Components

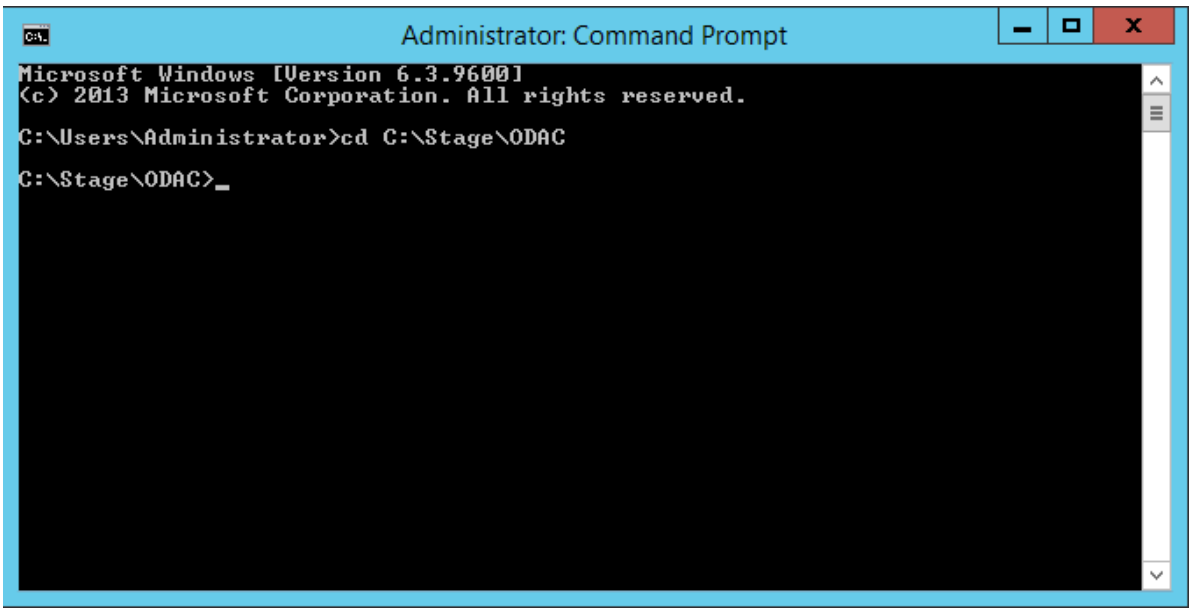
On the **application server** go to the <stage> folder created in section 2.2 and unzip the downloaded 64-bit ODAC 11.2 Release 4 (11.2.0.4.0) Xcopy for Windows x64 to a folder called ODAC

You should now have a folder structure that looks something like this:



Start a new command prompt using the “Run as Administrator” option, and navigate to the <stage>\ODAC folder:

```
cd C:\stage\ODAC
```



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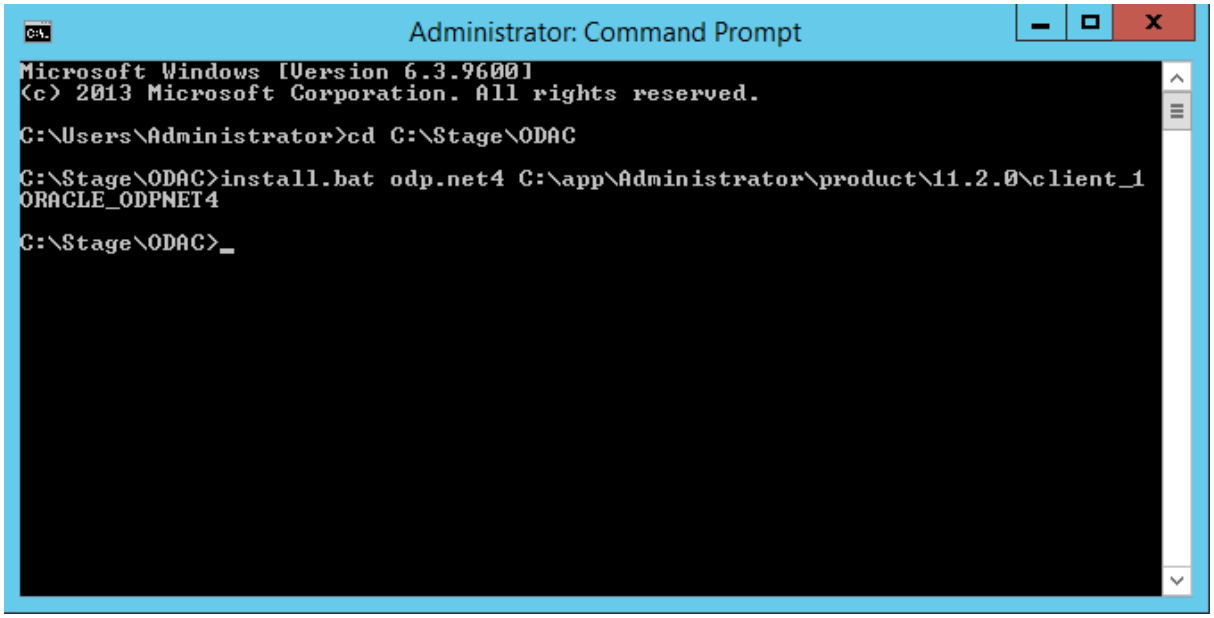
Run install.bat to perform the installation; specifying the following arguments:

- odp.net4
- the path to the Oracle client (installed in section 0)
- The name for the ODAC Oracle home (e.g. ORACLE_ODPNET4), this name should be unique on this machine and not shared by any other Oracle installation.

For example, using the path shown in the screen shots in section 0, the command to enter would be:

```
install.bat odp.net4 C:\app\Administrator\product\11.2.0\client_1 ORACLE_ODPNET4
```



The command will take a few moments to execute and should complete without any errors, as shown above. Type exit to close the command prompt.

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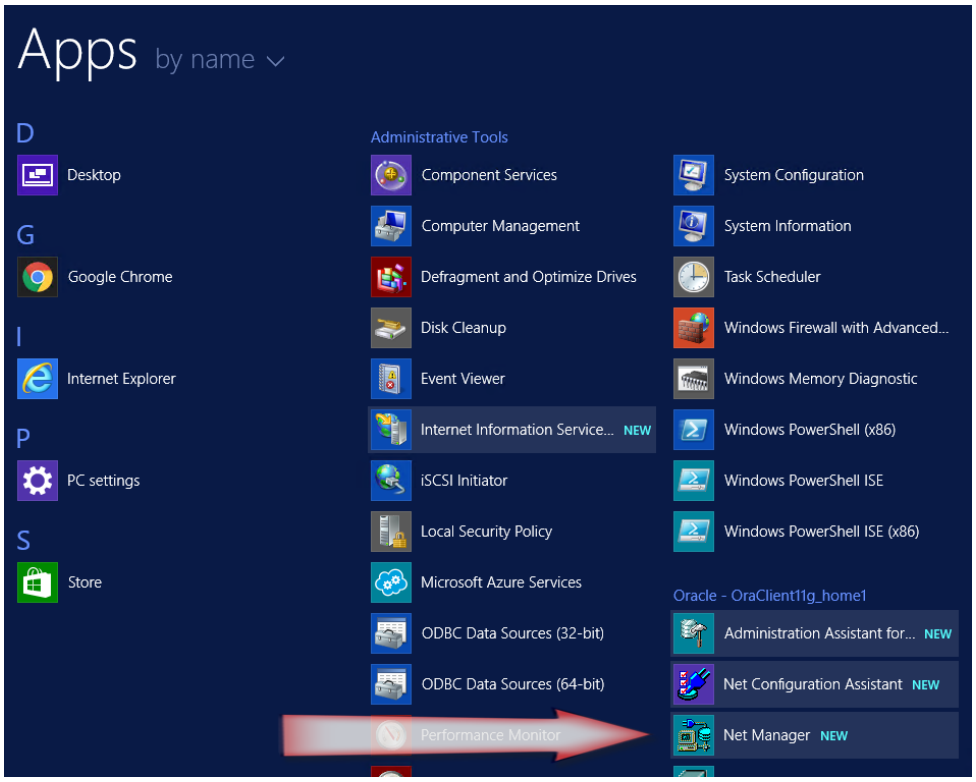
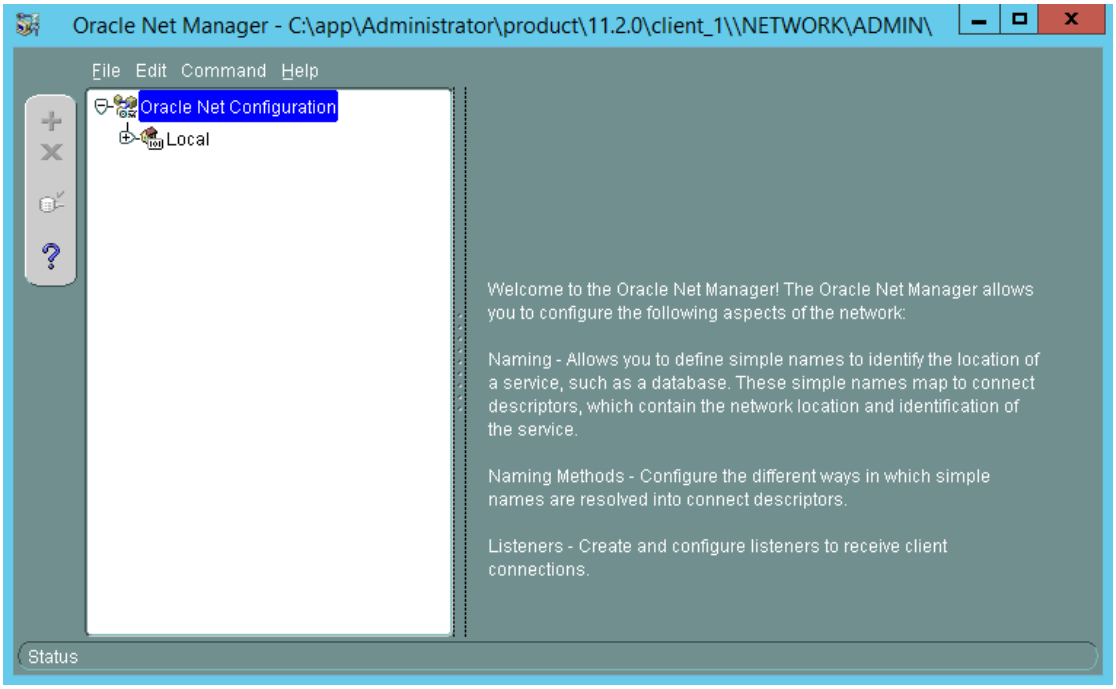
2.8 Configure the database connection

To configure a database connection run the Oracle Net Manager application:



The application will run on the desktop:



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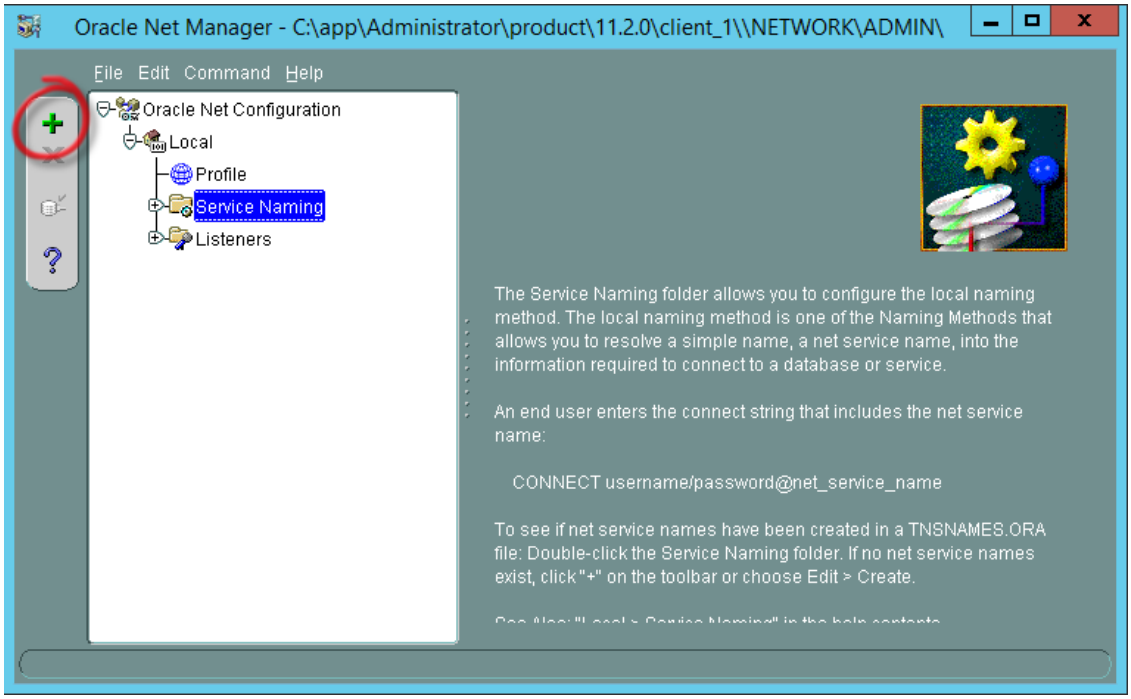
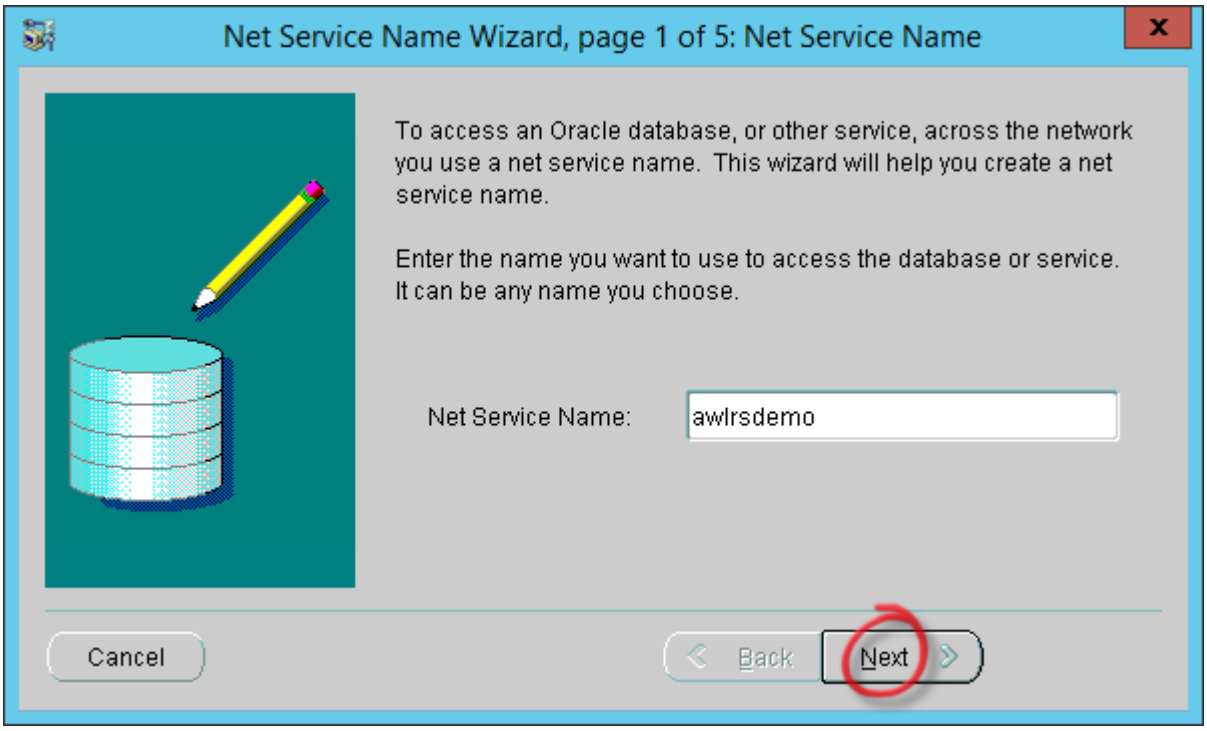
Under “Oracle Net Configuration”, expand “Local”, select “Service Naming” then click on the plus [+] icon.



The Net Service Name Wizard will be displayed, enter the name of the database in which AWLRS will be installed and click on “Next”:



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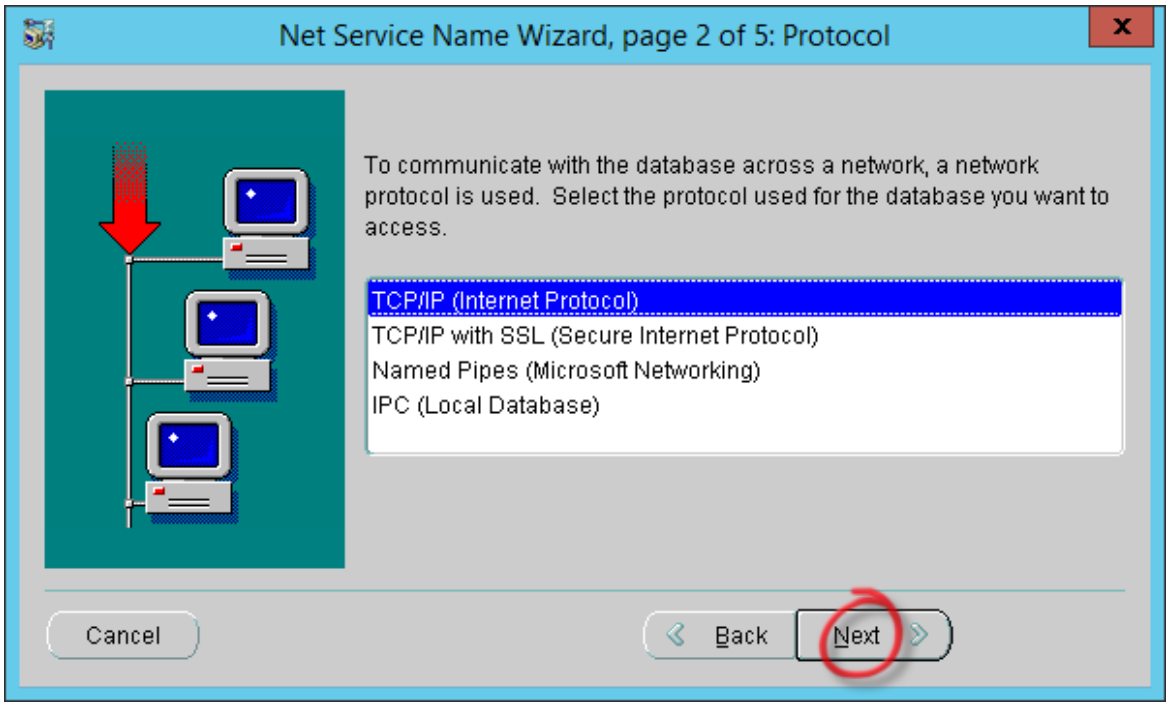
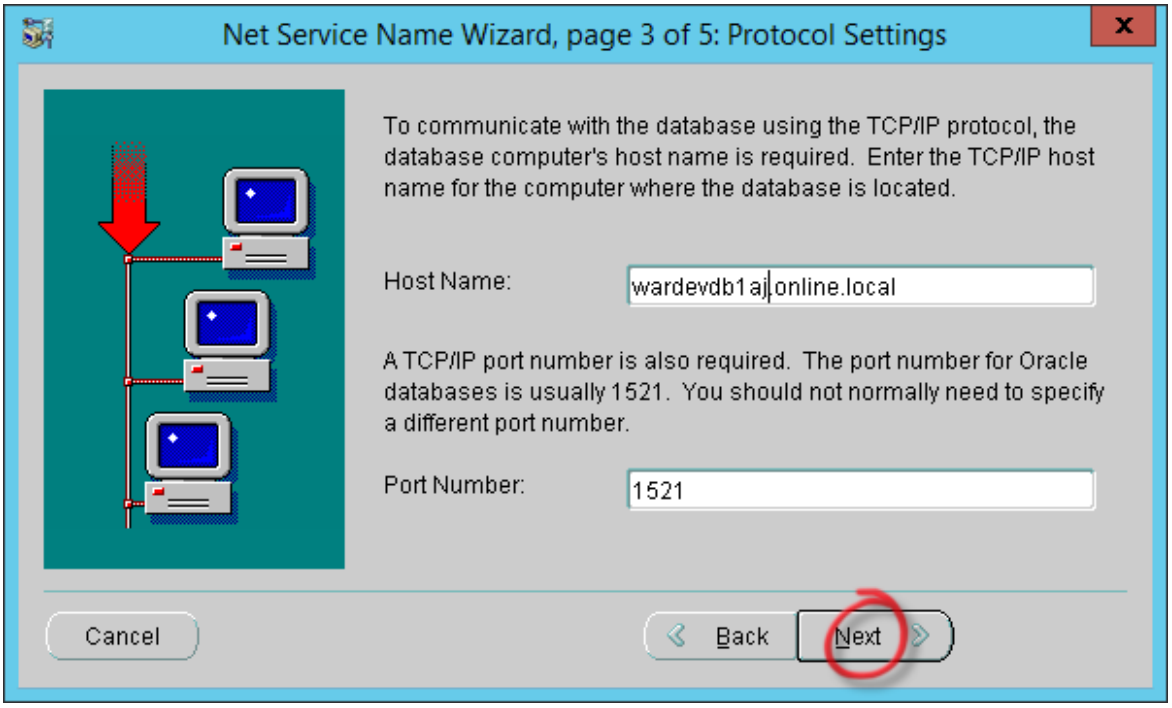
Ensure that “TCP/IP (Internet Protocol)” is selected and click on “Next”:



Enter the Host Name (either the fully qualified name of the database server or its IP Address) and the port number and click on “Next”:



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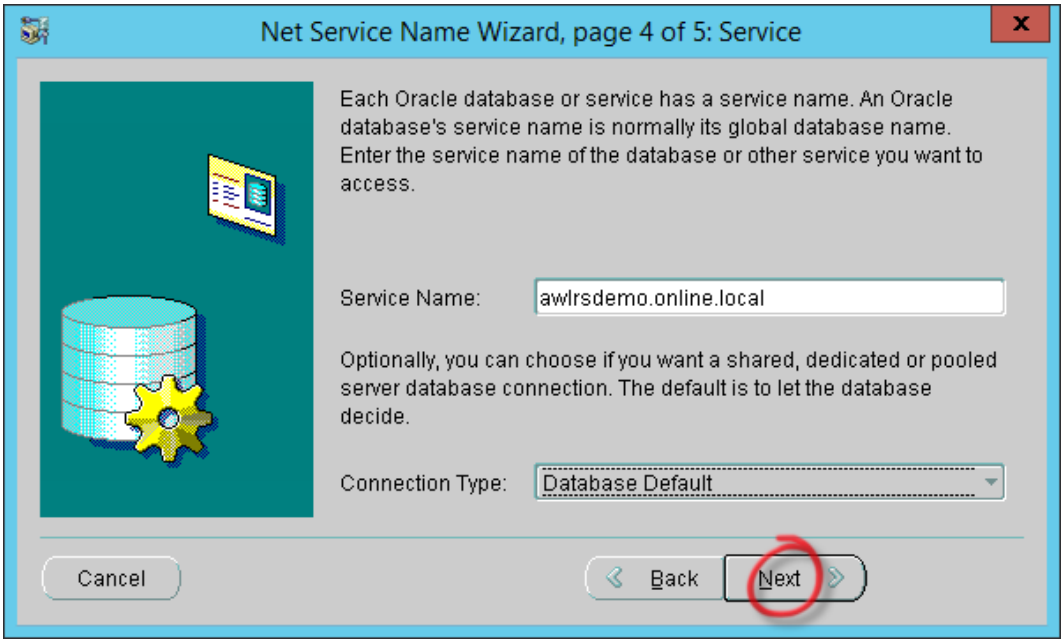
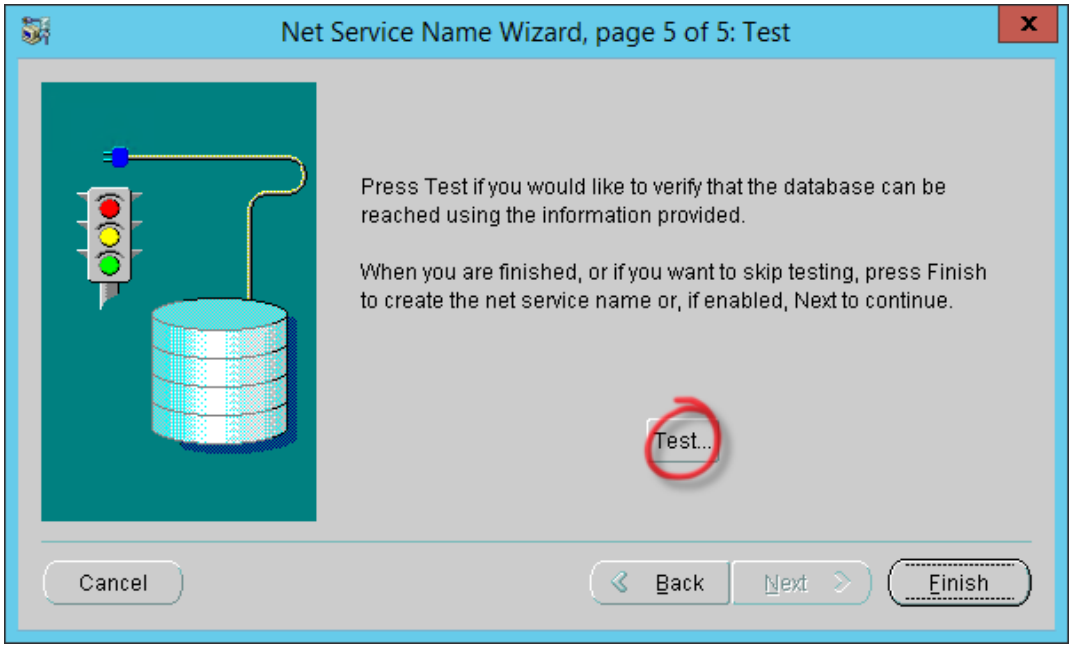
Enter the full database name, including the domain, ensure the Connection Type is “Database Default” and click on “Next”:



To test the connection details, click on “Test”:



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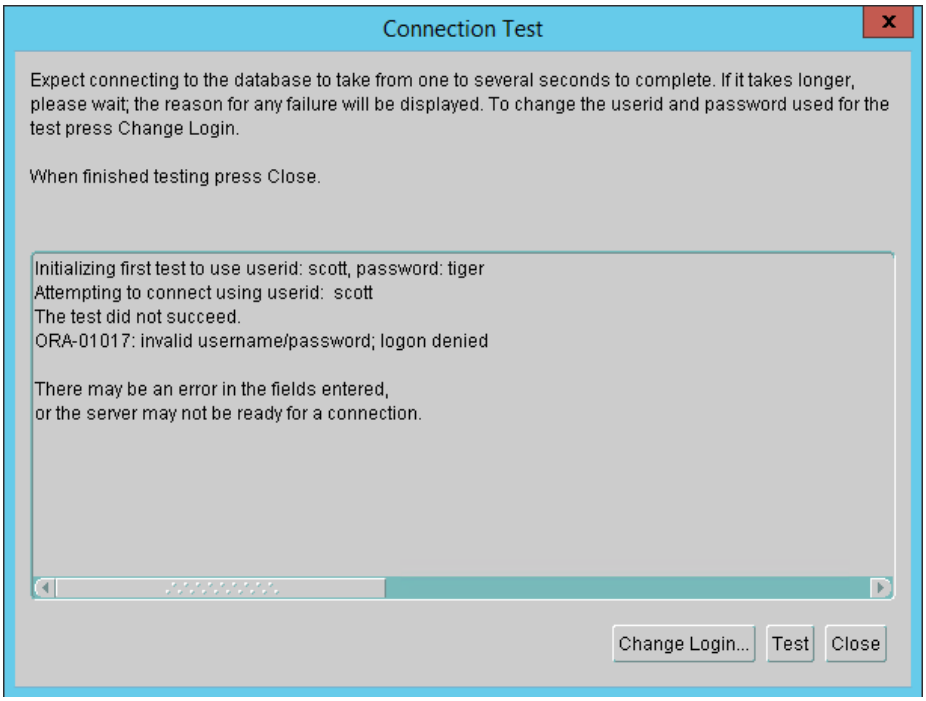
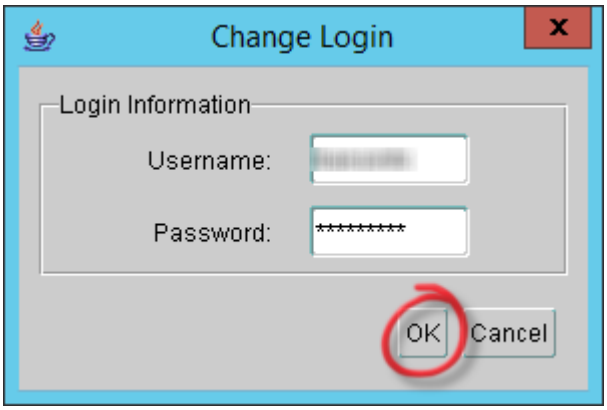
The test will probably fail (with either 0RA-01017: Invalid usernames/password, logon denied or ORA-28043: invalid bind credentials for DB-OID connection) as the default “scott/tiger” user will not exist in the database. Click on “Change Login”:



Enter the username and password for a user that does exists on the database, for example the exor Highways Owner, and click on “OK”:



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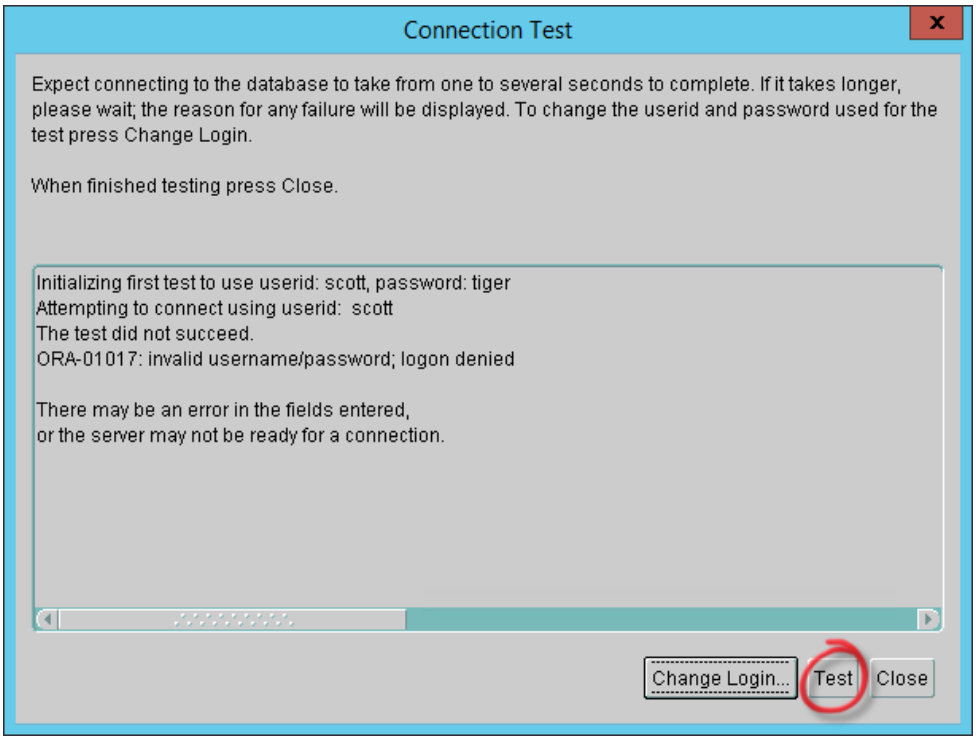
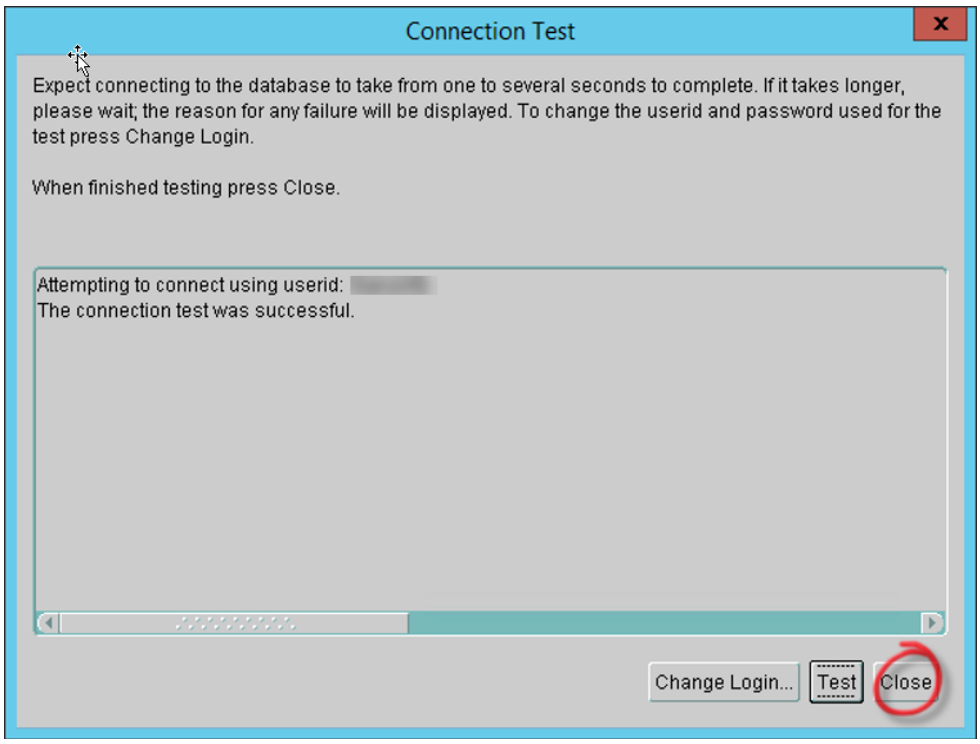
Click on “Test” again, this time the connection test should be successful, click on “Close” to continue:





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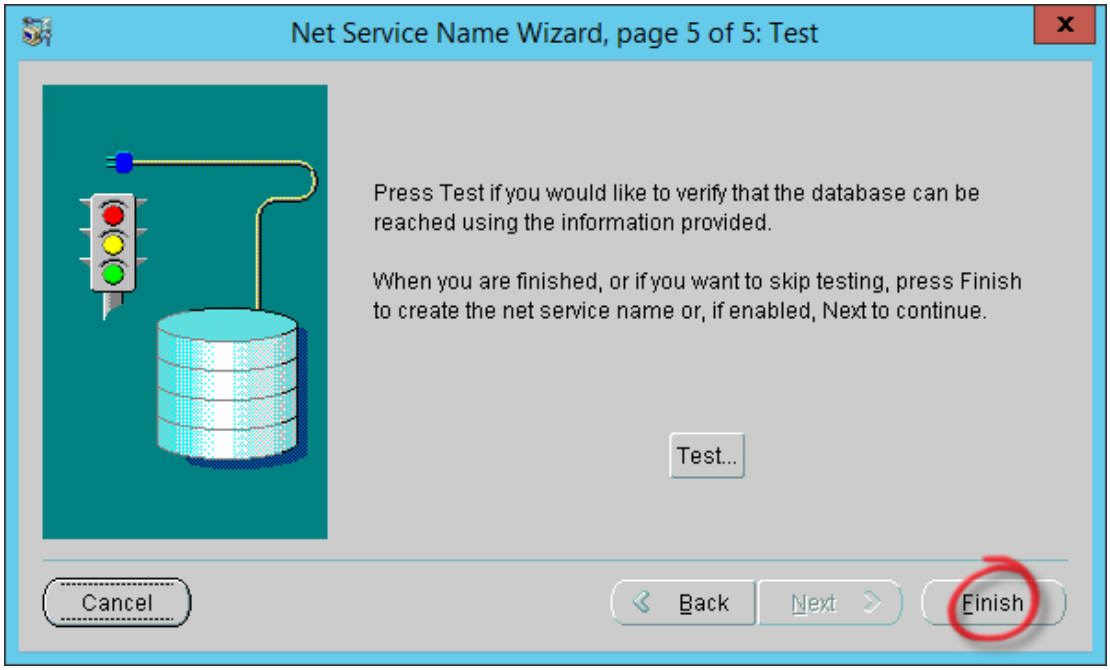
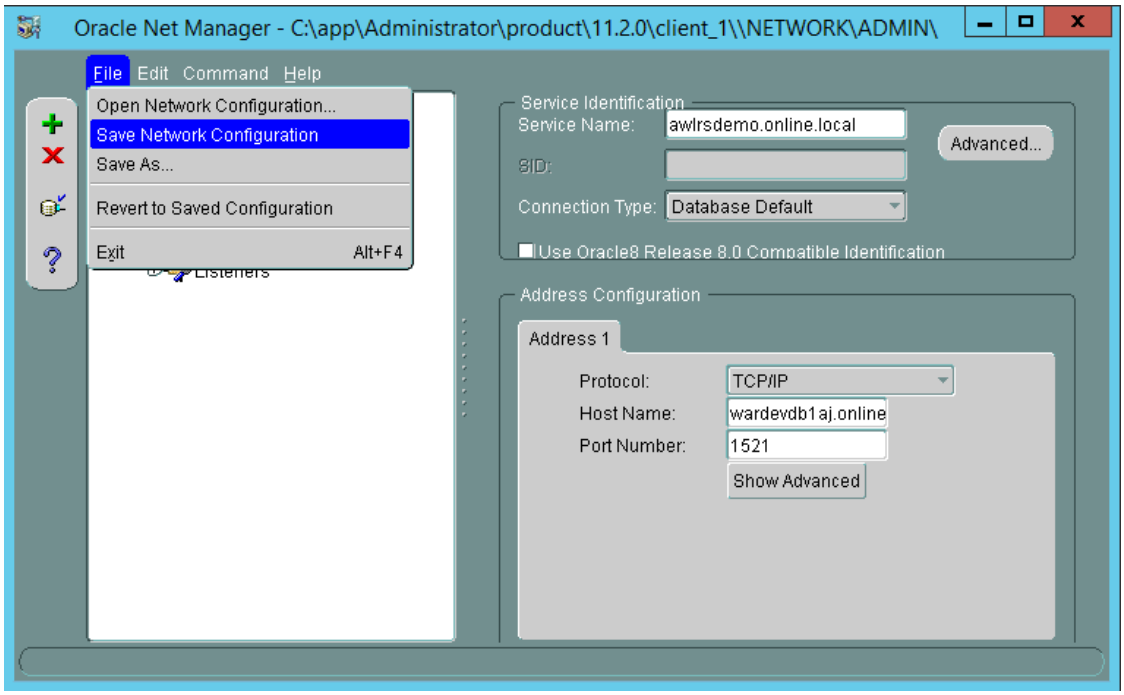
Click on “Finish”:



Review the information displayed for the connection that has just been added then click on File → Save Network Configuration to save the changes. Close the Oracle Net Manager application.



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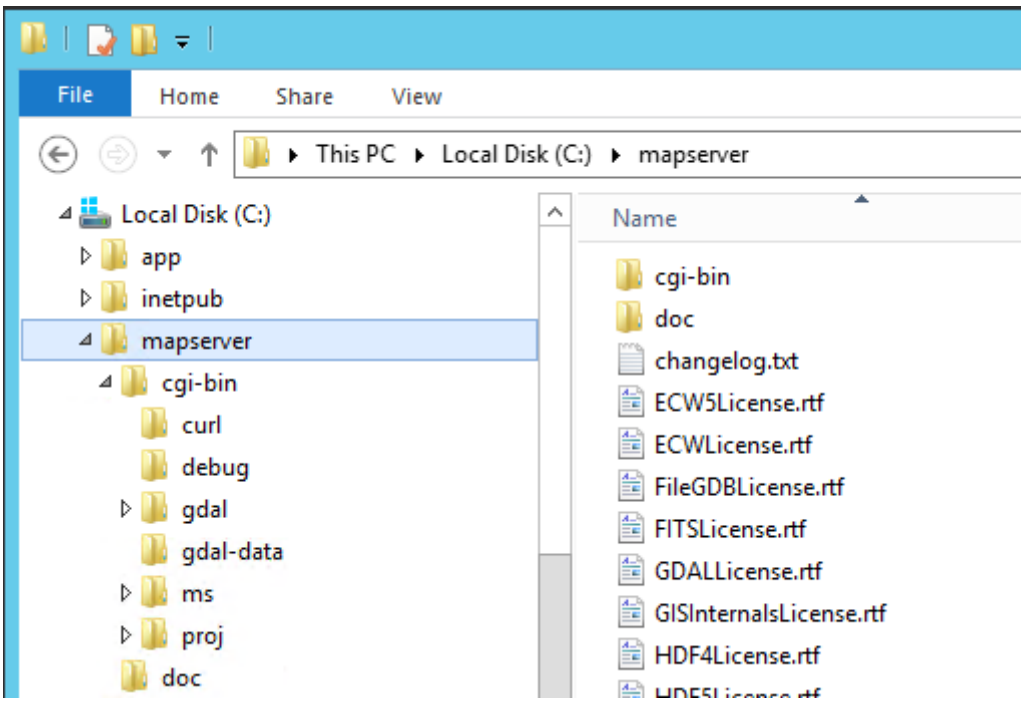
2.9 Install MapServer

2.9.1 Build the MapServer directory

On the **application server** go to the <stage> folder created in section 2.2 and unzip the downloaded MapServer zip file to a folder on the application server, for example C:\mapserver. This folder will be referred to as the <mapserver> folder from here on.

Navigate to the <mapserver> folder and rename the bin folder to “cgi-bin”.
i.e. <mapserver>\bin should now be <mapserver>\cgi-bin

You should now have a folder structure as shown below:



Several files need to be copied from their original locations to <mapserver>\cgi-bin folder:

- <mapserver>**cgi-bin\ms\plugins\oci\msplugin_oracle.dll**
- <mapserver> **cgi-bin\ms\apps\mapserv.exe**
- <mapserver> **cgi-bin\ms\apps\msencrypt.exe**

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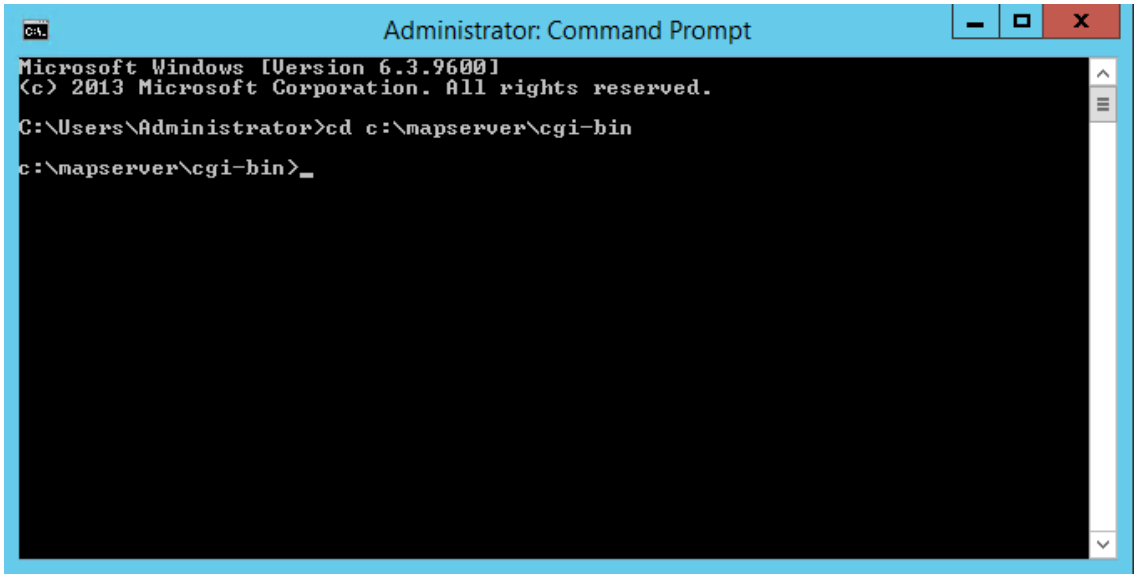
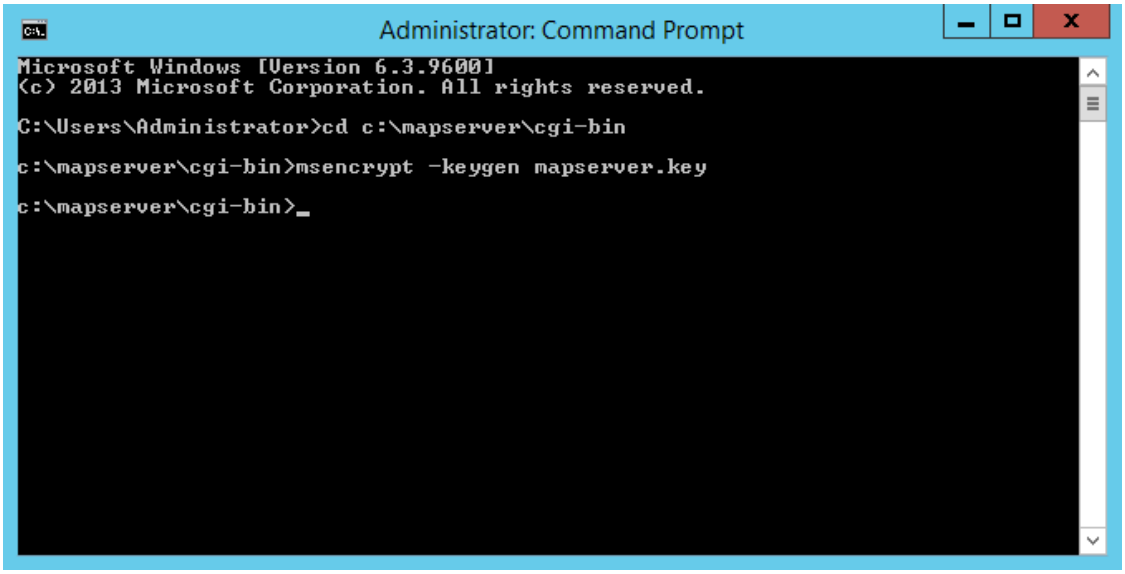
Start a new command prompt using the “Run as Administrator” option, and navigate to the <mapserver>\cgi-bin folder:

```
cd C:\mapserver\cgi-bin
```



Enter the following command to generate an encryption key:

msencrypt -keygen mapserver.key



There should now be a file called mapserver.key in the <mapserver>\cgi-bin folder. Type exit to close the command prompt.

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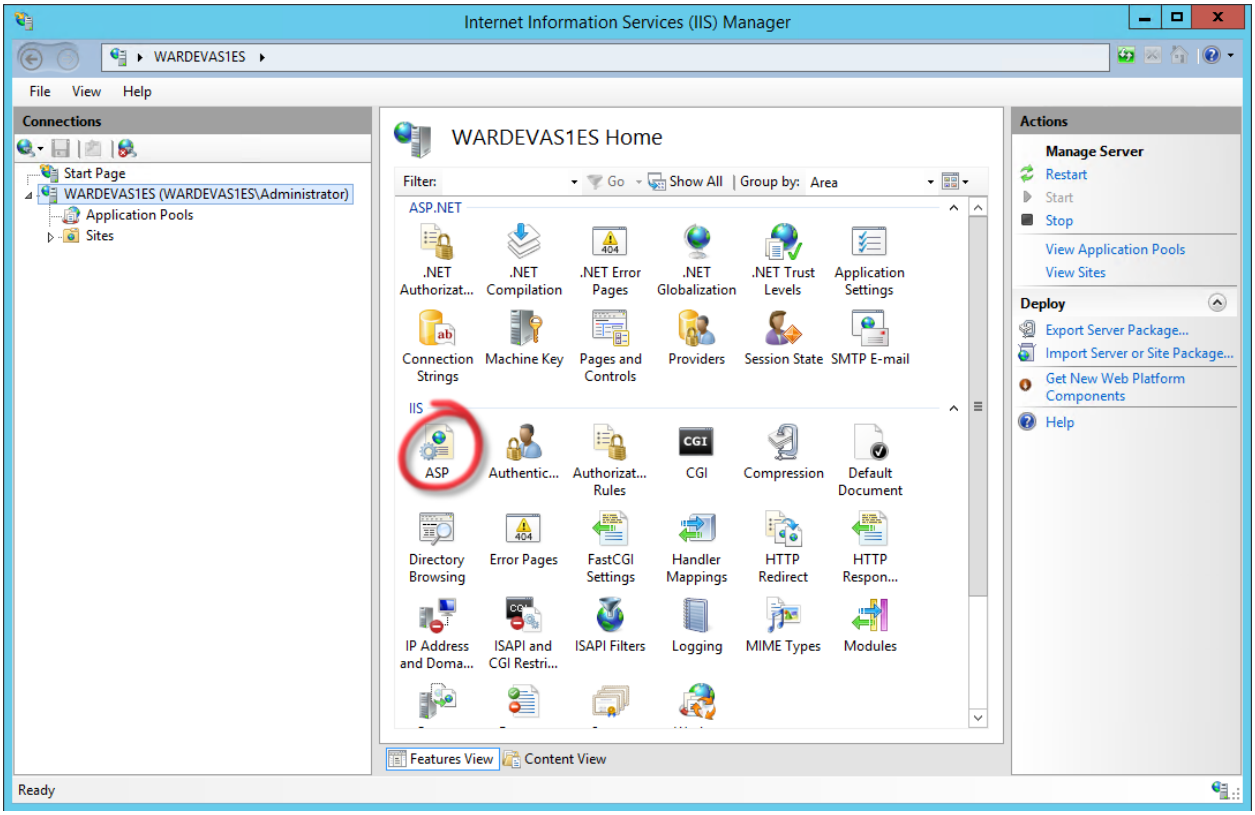
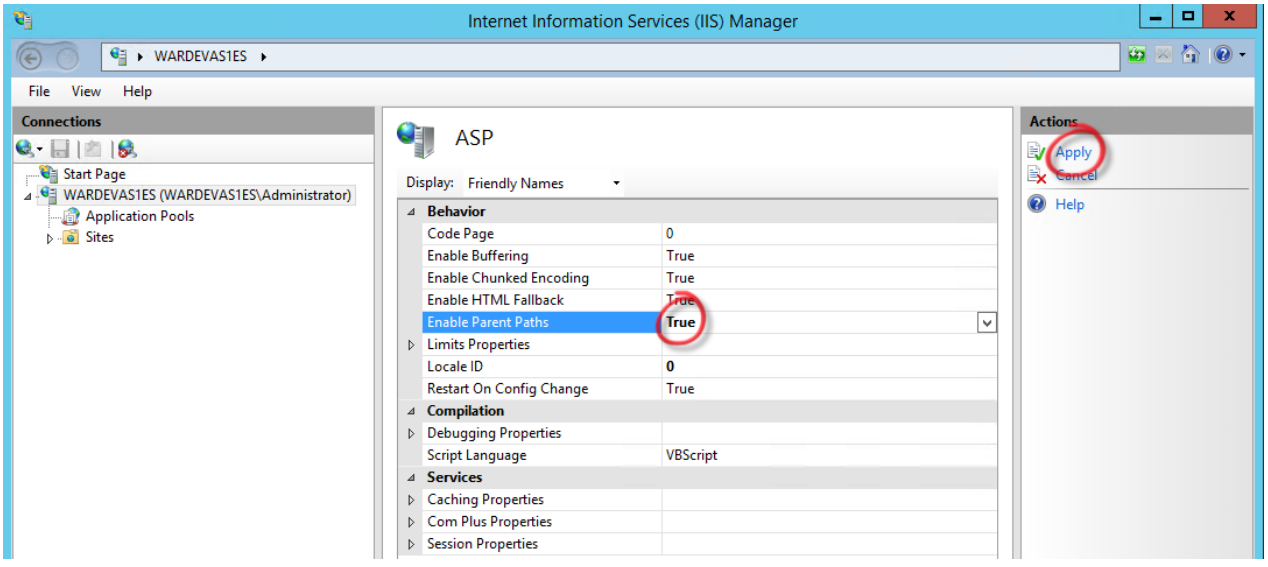
2.9.2 Configure Mapserver in IIS

On the **application server** run the Internet Information Services (IIS) Manager application.

Click on the server branch (WARDEVAS1ES in the example below) in the left-hand panel then double click on the ASP icon in the central panel:



Ensure that “Enable Parent Paths” is set to “True”, if you changed the value click on “Apply” on the right-hand side to save the change:



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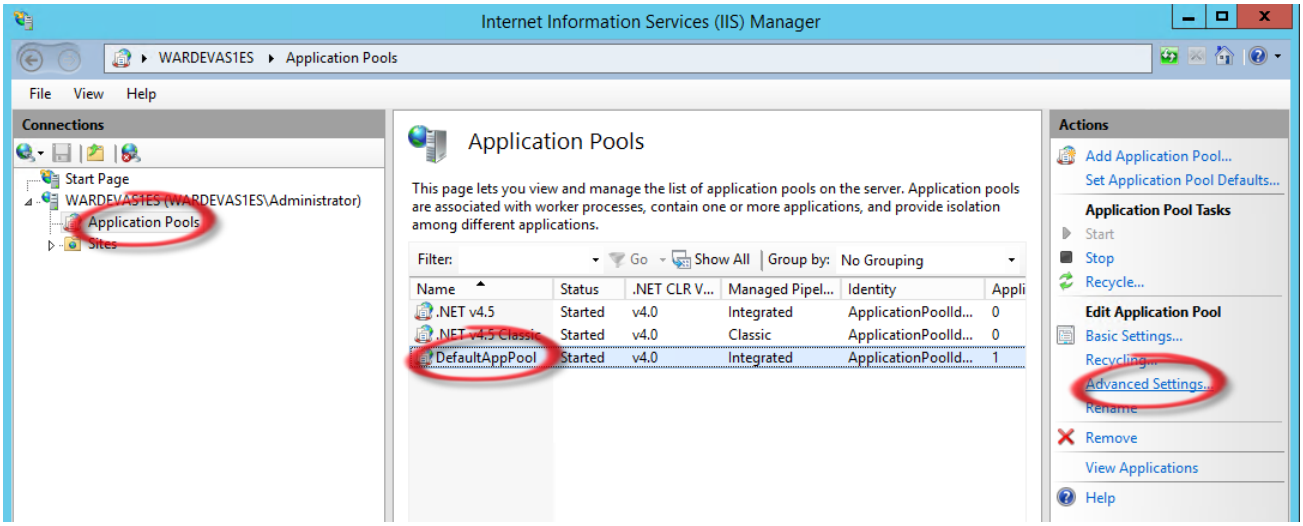
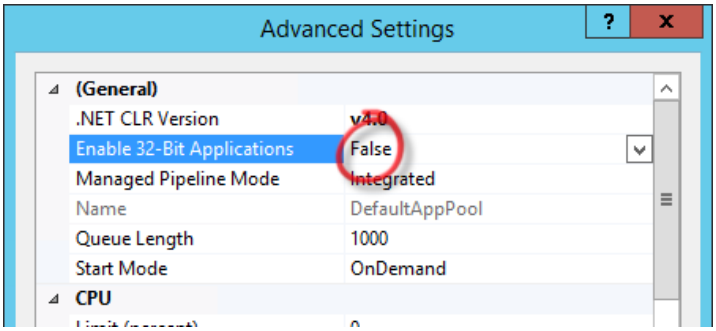
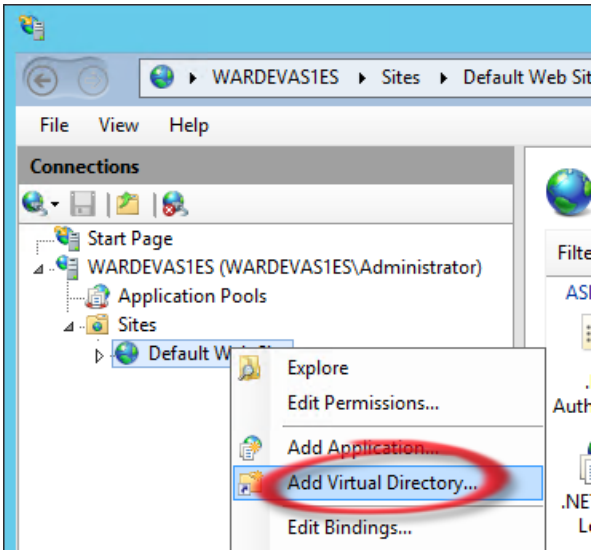
Click on “Application Pools” in the left-hand panel, select “DefaultAppPool” in the central panel then click on “Advanced Settings” in the right-hand panel:



Ensure that “Enable 32-Bit Applications” is set to “False”:



Expand the “Sites” branch in the left-hand panel, right click on “Default Web Site” then select “Add Virtual Directory…” from the context menu:



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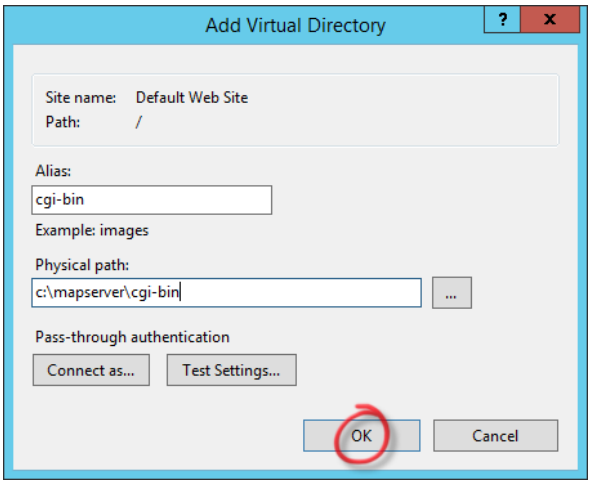
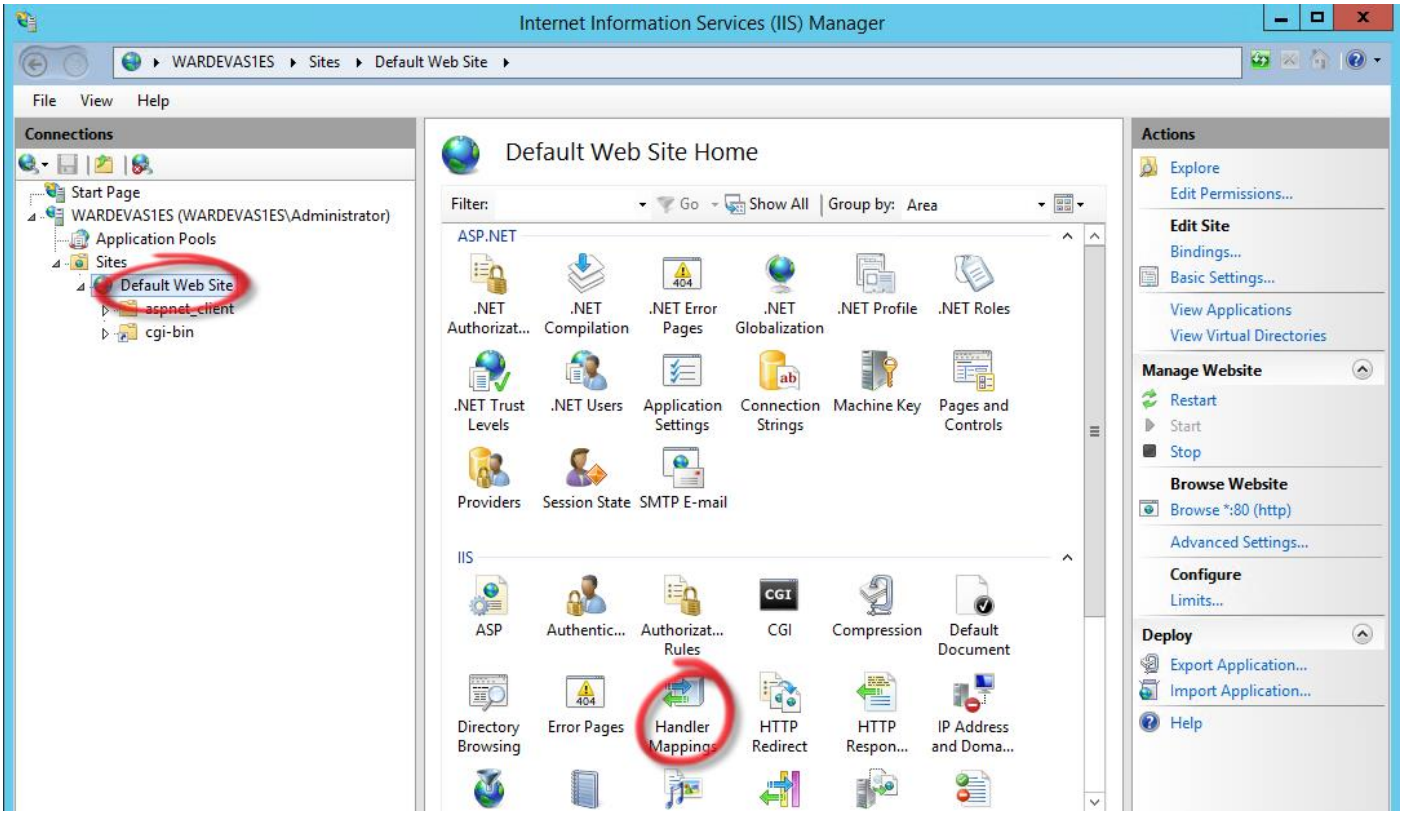
Enter the following values and click “OK”:

Alias: cgi-bin

Physical path: <mapserver>\cgi-bin



Select “Default Web Site” in the left-hand panel then double click on the “Handler Mappings” icon in the central panel:



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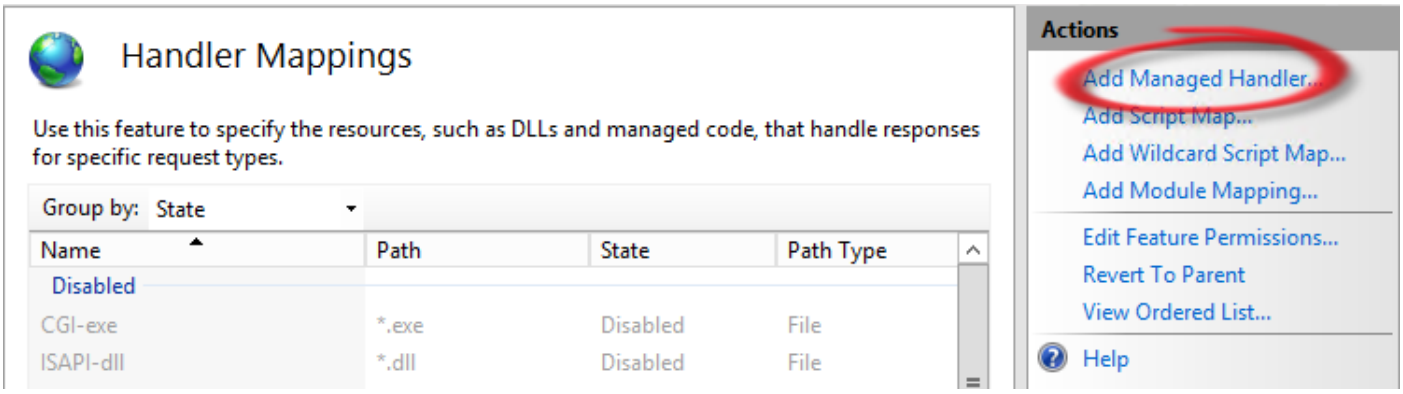
Click on “Add Managed Handler…” in the right-hand panel:

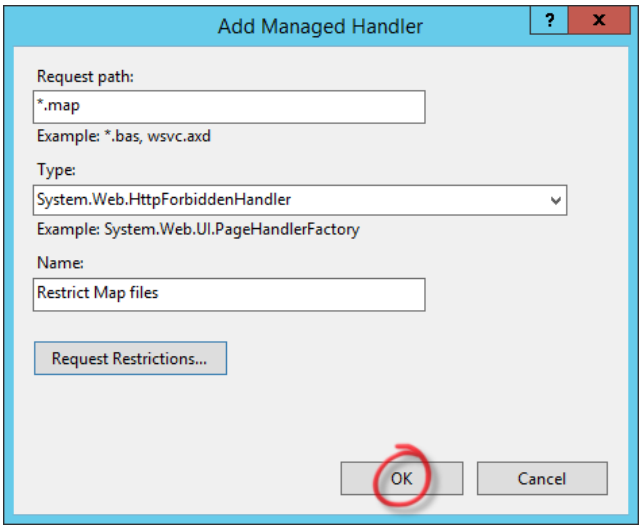


Enter the following values and click on “OK”:

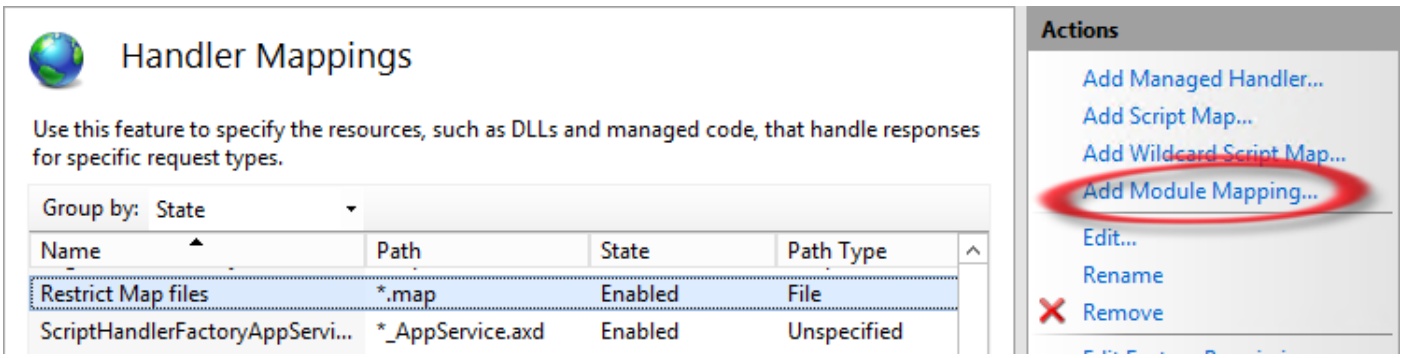
Request path: *.map

Type: System.Web.HttpForbiddenHandler

Name: Restrict Map files



Select “Restrict Map Files” and click on “Add Module Mapping…” in the right-hand panel:



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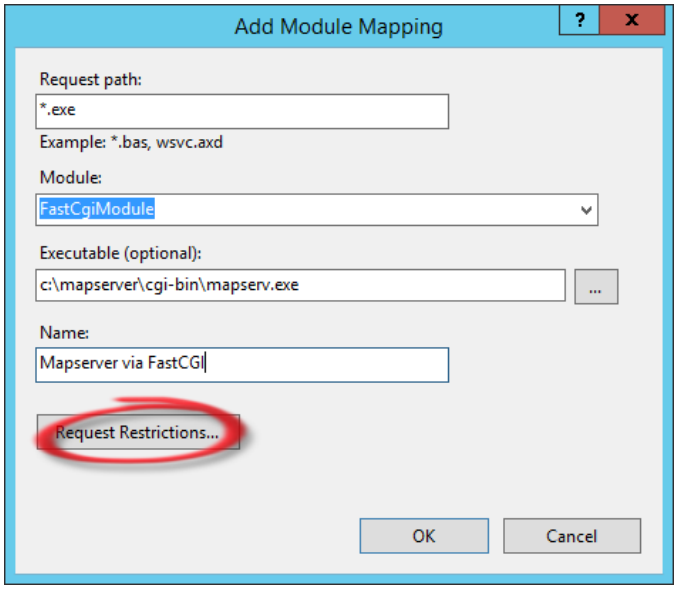
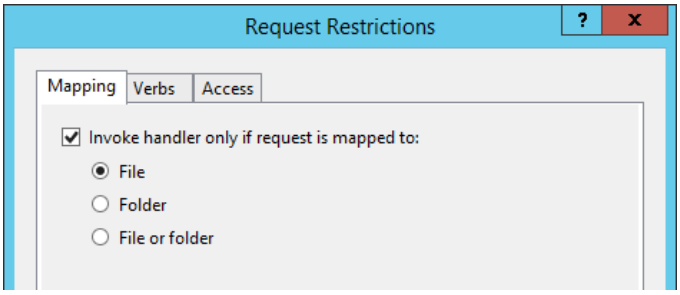
Enter the following values then click on “Request Restrictions…”:
Request path: *.exe
Module: FastCgiModule
Executable: <mapserver>\cgi-bin\mapserv.exe
Name: Mapserver via FastCGI



In the “Mapping” tab make sure that “Invoke handler only if request is mapped to:” is ticked and that “File” is selected.



In the “Verbs” tab select “One of the following verbs:” and enter “GET,HEAD,POST”

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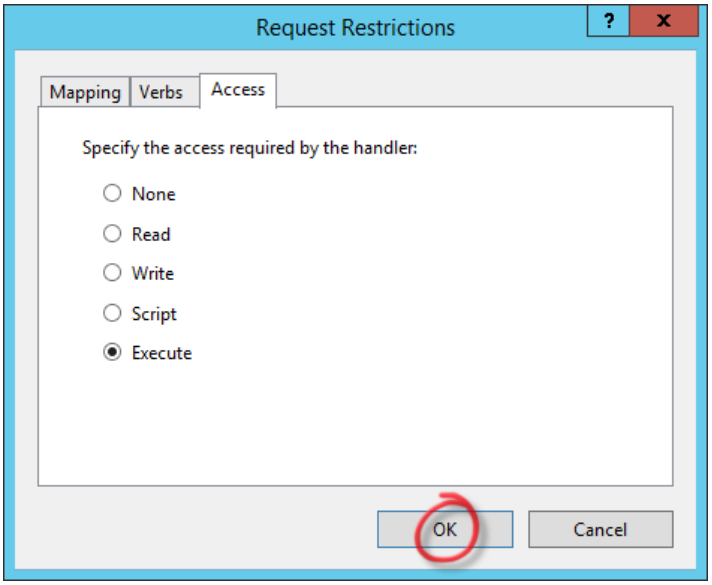
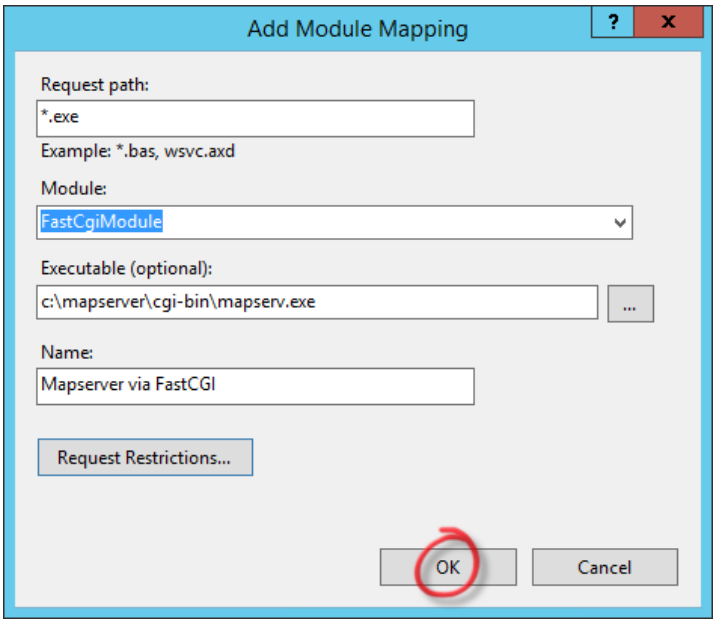
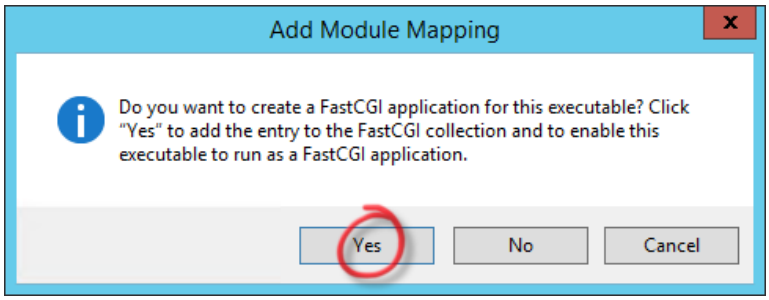
In the “Access” tab select “Execute” and click on “OK”



Click on “OK” then “Yes” when Prompted:





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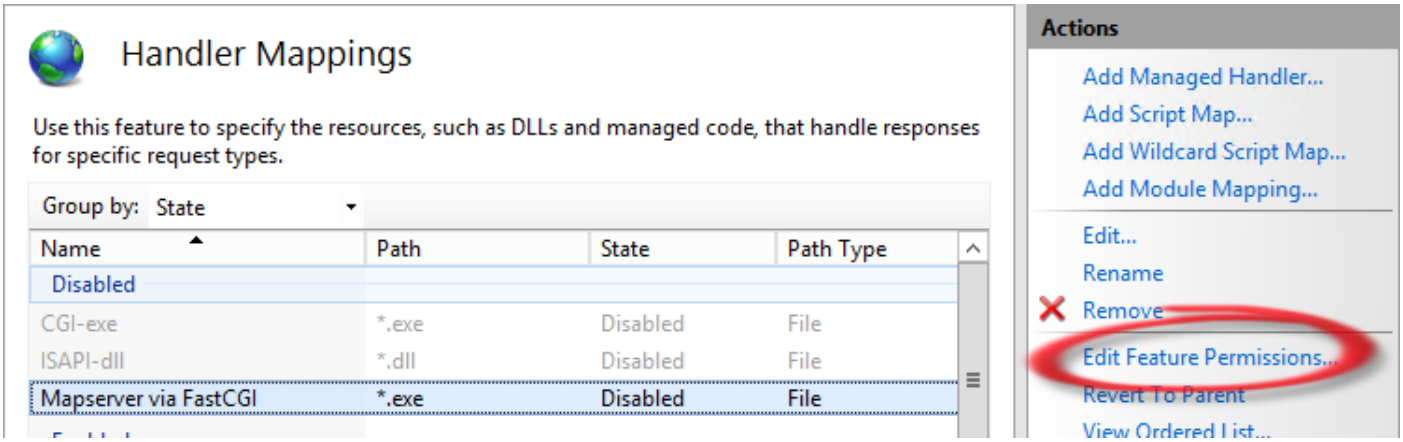
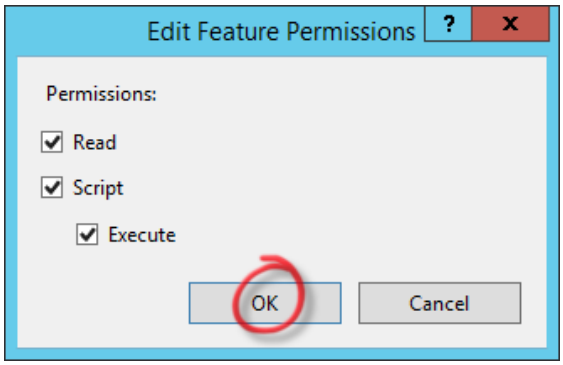
Select the “Mapserver via FastCGI” handler mapping and click on “Edit Feature Permissions…” in the right-hand panel.



Ensure that “Read”, “Script” and “Execute” are all ticked then click on “OK”



The Mapserver IIS configuration is complete, close IIS Manager.

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