

PKView Setup Guide

V1.9 September 2017

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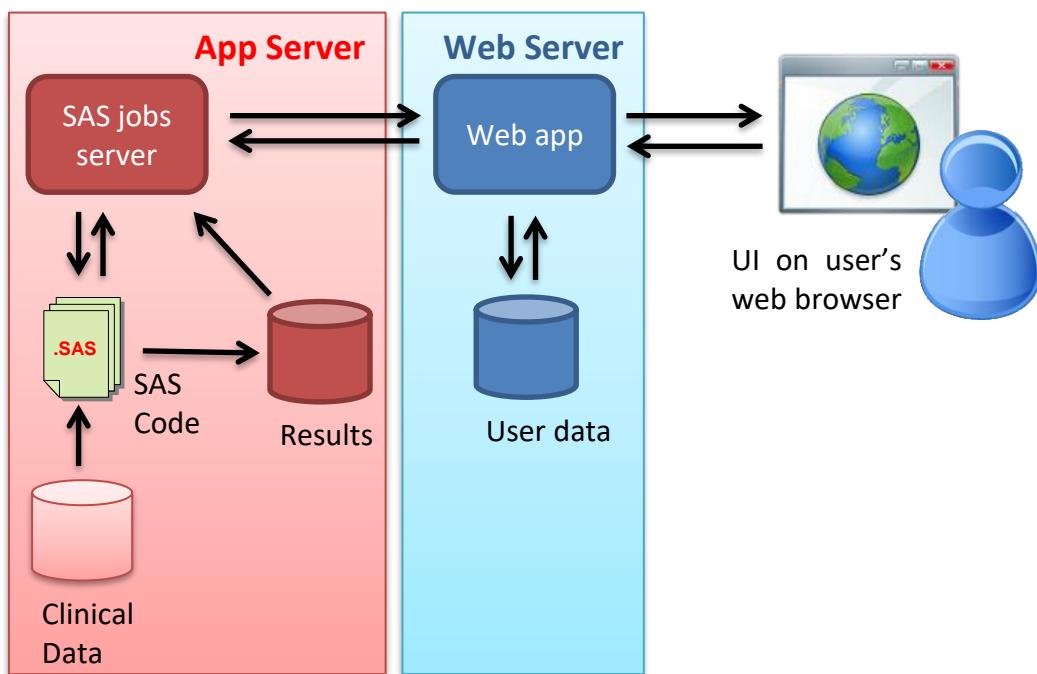
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1. Introduction

1.1 System Architecture

PkView is a three tier application composed of the following elements:

- The SAS jobs server: A background server that controls the execution of the SAS code that comprises the core of PkView. This background server is physically located in a computer we call the *application server* and it can be accessed through a Web API currently restricted to be accessed only by the components of PkView.
- The web app: A web application and API that controls the high level functionality of PkView, including user management, project management, data storage, data display, and other functions used by the UI. This component is physically located in a computer we call the *web server*.
- The Web UI: This is the component that interacts with the user, it is a web SPA (single page application) served by the web app that executes on the client user's web browser and communicates with the web server through a REST API.



It is worth to mention that data is currently stored in files (including user data, which is stored in XML format); therefore no database is required at the moment.

For this document, PkView will be installed in one laptop, so the App Server, Web Server and web browser will install on one single laptop.

1.2 Directory Structure

All applications and data are installed in the data drive (currently defaulted to ‘D:’) and not in the system drive. The directory structure that we will follow is:

- D:\Installed-software-pkgs:** Setup files of installed software for reproducibility.
- D:\apps:** This is where we install third party applications (i.e SAS). (Note, SAS can also be installed in other folder)
- D:\OCP:** This is where we will put internally developed applications such as PkView.
- D:\OCP\data:** Data shared among our applications such as clinical data and reports.

1.3 Software requirements

- .Net Framework 4.5: Needed to build and run the code in iPortal.
- Microsoft Web Deploy 3.6. Used to deploy the web app and api.
- SAS 9.4.
- Visual Studio 2012, 2017 (If you need a debug environment).
- PkView Codes(include SAS Codes).
- Microsoft IIS.
- OS on Laptop require Windows 7 Professional 64 bit, Ultimate and Enterprise (Do not use Windows 7 Home Edition), Windows 10 Professional 64 bit.

Note: Additional modifications of PKView codes will be necessary if it is to be installed on Windows Server 2008, or with SAS 9.3.

2. Software Installation

2.1 SAS

SAS is being used by the SAS jobs server to execute SAS scripts that perform analyses on the clinical data. The first step is to copy the SAS depot into the harddrive.

If SAS has already been installed on the laptop, please verify the installed component using 'PROC SETINIT'. Make sure the check list on section 2.1.2.4 are all installed. Skip Section 2.1.

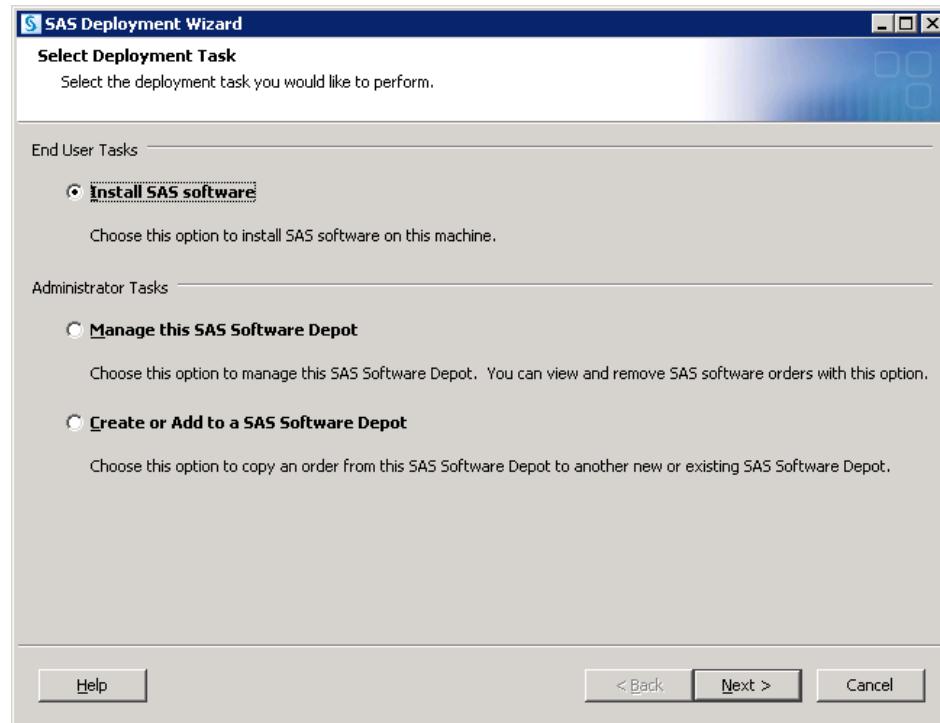
2.1.1 Copy installation files

We copy the SAS installation files to D:\Installed-software-pkgs\SAS9_4.

2.1.2 Installation

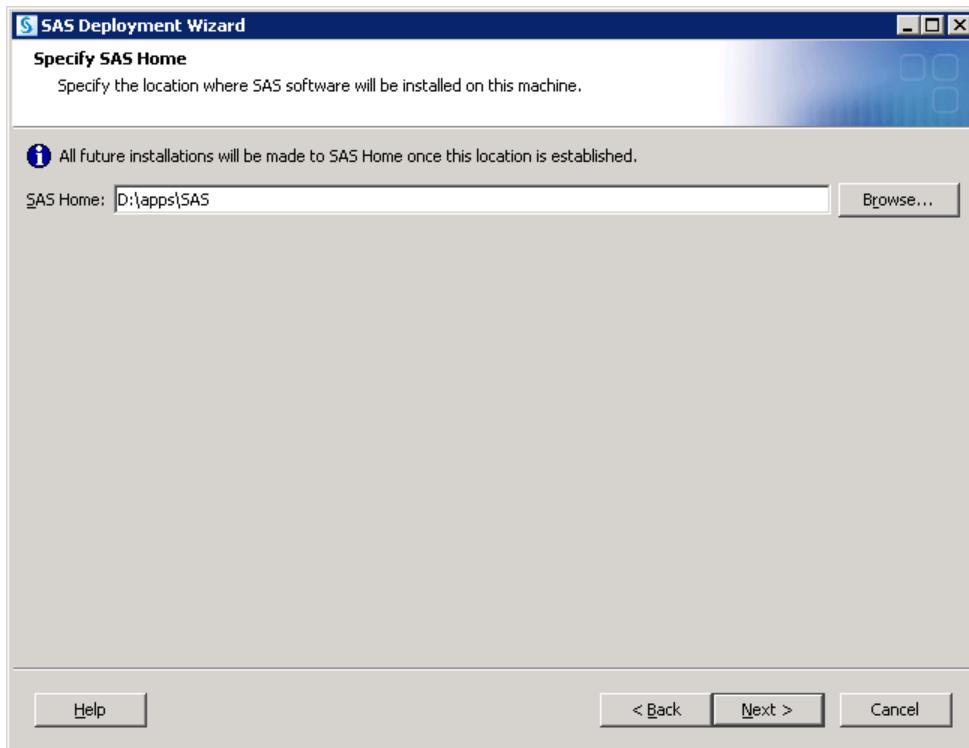
Start the setup.exe. The screen shots in the following sections show you what options you should pick:

2.1.2.1 Install SAS Software



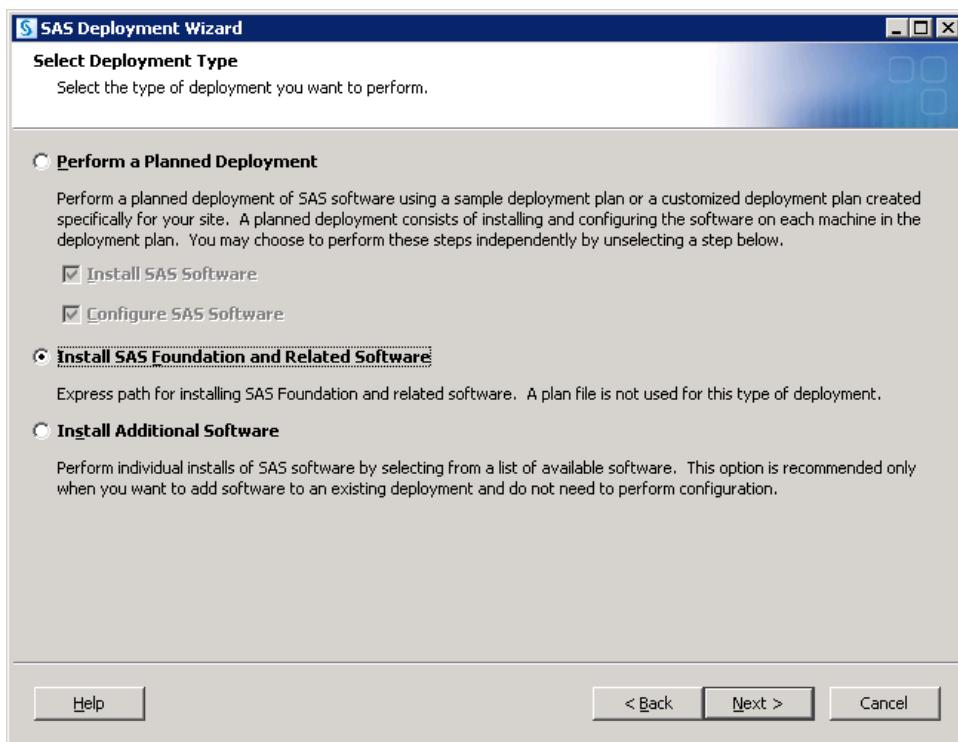
2.1.2.2 SAS home selection

SAS will be installed to D:\apps\SAS or C:\Program Files\SASHome



2.1.2.3 Deployment type

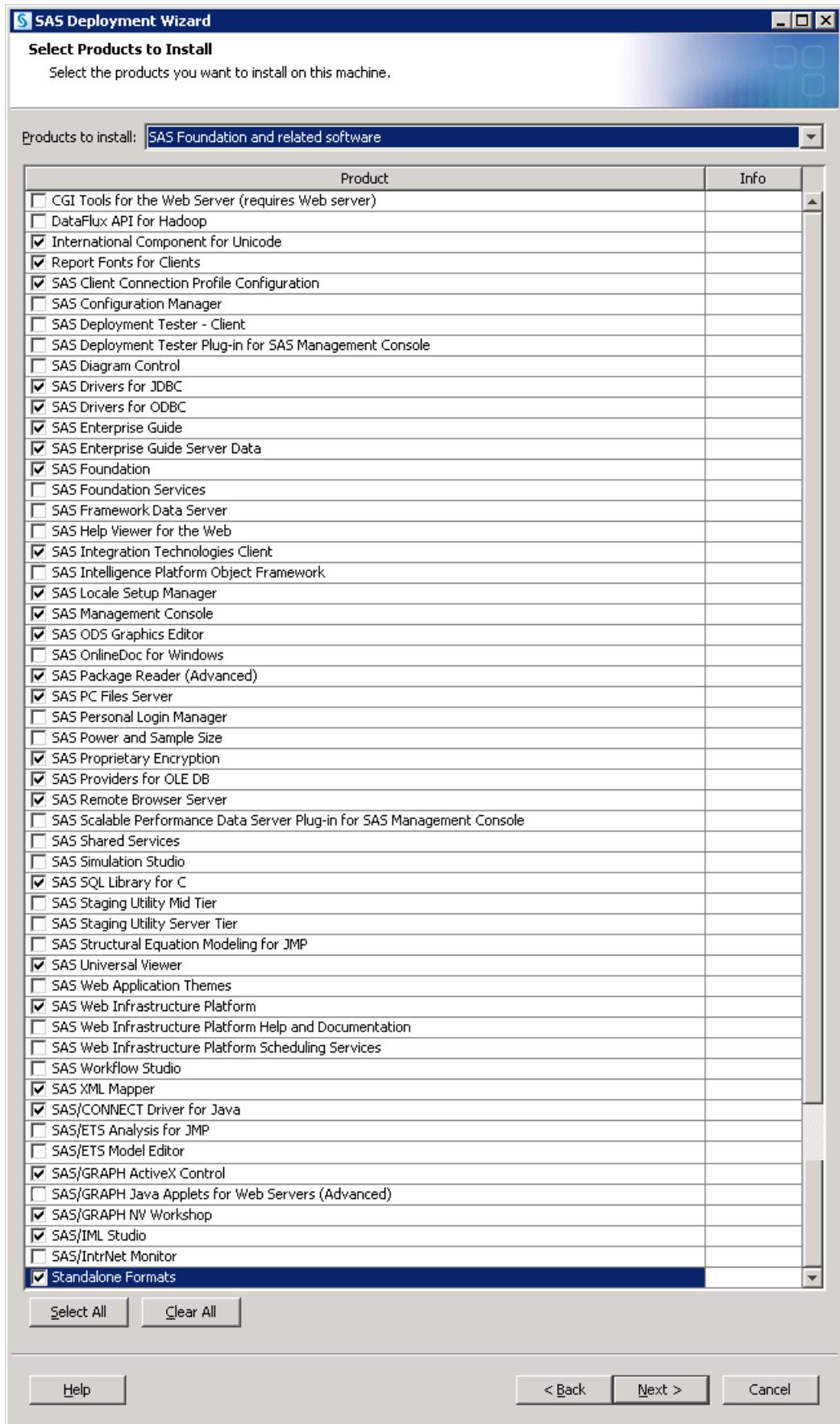
The next screen asks us what kind of deployment to make. We want to Install SAS Foundation and Related Software.



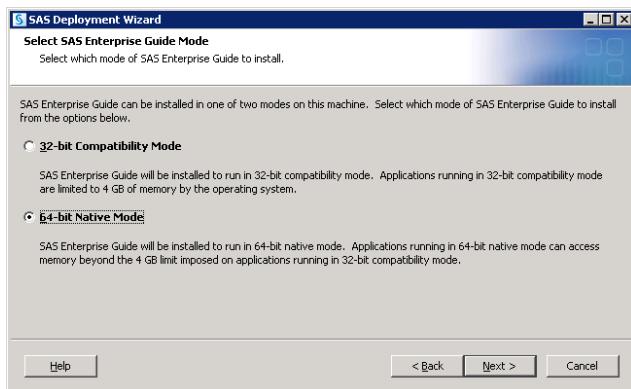
2.1.2.4 Select what to install

Select the following options:

1. NO: CGI Tools
2. NO: DataFlux API for Hadoop (can't see anyone on the admin network needing this)
3. YES: International Component for Unicode (we do get non-English data)
4. YES: Report Fonts for Clients (I've always installed this piece)
5. YES: SAS Client Connection Profile Configuration (I think it is installed by default)
6. NO: SAS Configuration Manager (plug-in for the SMC, which we are not installing)
7. NO: SAS Deployment Tester – Client (Not necessary)
8. NO: SAS Deployment Tester Plug-in.....
9. YES: SAS Drivers for JDBC (never know when it may be needed)
10. YES: SAS Drivers for ODBC
11. YES: SAS Enterprise Guide
12. YES: SAS Environment Manager * (all pieces, not needed for workstation install)
13. NO(2): SAS Flex * (intended for mid-tier applications)
14. YES: SAS Foundation
15. NO: SAS Foundation Services
16. NO: SAS Help Viewer for the Web (mid-tier applications)
17. YES: SAS Integration Technologies Client (SAS can be invoked by other applications)
18. NO: SAS Intelligence Platform Object Framework (mid-tier application)
19. NO: SAS Management Console (for managing a SAS metadata server)
20. YES: SAS ODS Graphics Designer (Output Delivery System used extensively)
21. YES: SAS ODS Graphics Editor
22. NO: SAS Package Reader (I have not seen a package but we very well might)
23. YES: SAS PC Files Server (less important now, but can still come in handy)
24. NO: SAS Personal Login Manager (manages connection profiles)
25. YES: SAS Power and Sample Size (front end to proc power)
26. YES: SAS Proprietary Encryption (we once in a while get an encrypted dataset)
27. YES: SAS Providers for OLE DB
28. YES: SAS Remote Browser Server
29. NO: SAS Scalable Performance data Server....
30. NO: SAS Shared Services (mid-tier web stuff)
31. YES: SAS Simulation Studio (Doesn't seem to work but will install anyway)
32. NO: SAS SQL Library for C
33. NO(2): SAS Staging Utility*
34. YES: SAS Studio
35. NO: SAS Studio Mid-Tier
36. YES: SAS Universal Viewer
37. NO(7): SAS Web * (all Mid-Tier apps)
38. NO: SAS Workflow Studio
39. YES: SAS XML Mapper (read XML files)
40. NO: SAS/CONNECT driver for Java
41. YES: SAS/GRAph ActiveX Control
42. NO: SAS/GRAph Applets.....
43. NO: SAS/GRAph NV Workshop (requires metadata server)
44. YES: SAS/IML Studio
45. NO: SAS/IntrNet Monitor
46. YES(3): SAS/SECURE* (never know when this might be used although I kind of doubt it)
47. YES: Standalone Formats



2.1.2.5 Select 64-bit Native mode



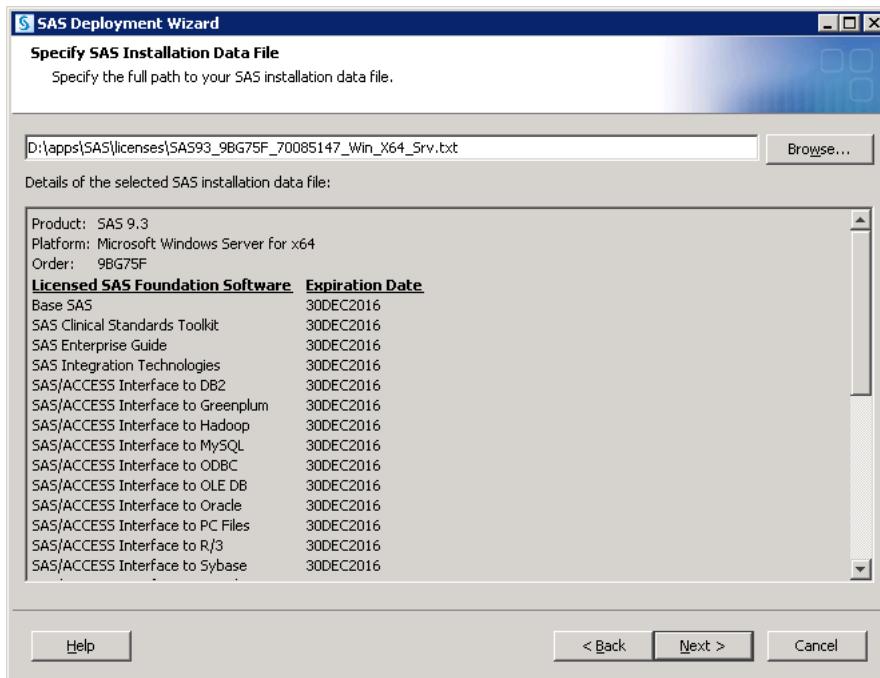
2.1.2.6 Select the SAS Foundation products to install

1. Install Hadoop support as it doesn't take much disk and is currently being used at the agency
2. Clear all the Accelerator choices as they are a part of the data miner products
3. Install the Clinical Standards Toolkit
4. Install all the High Performance Servers
5. Clear the SAS Scalable Performance Client check box
6. All the rest should be installed with the exception of SAS/IntrNet



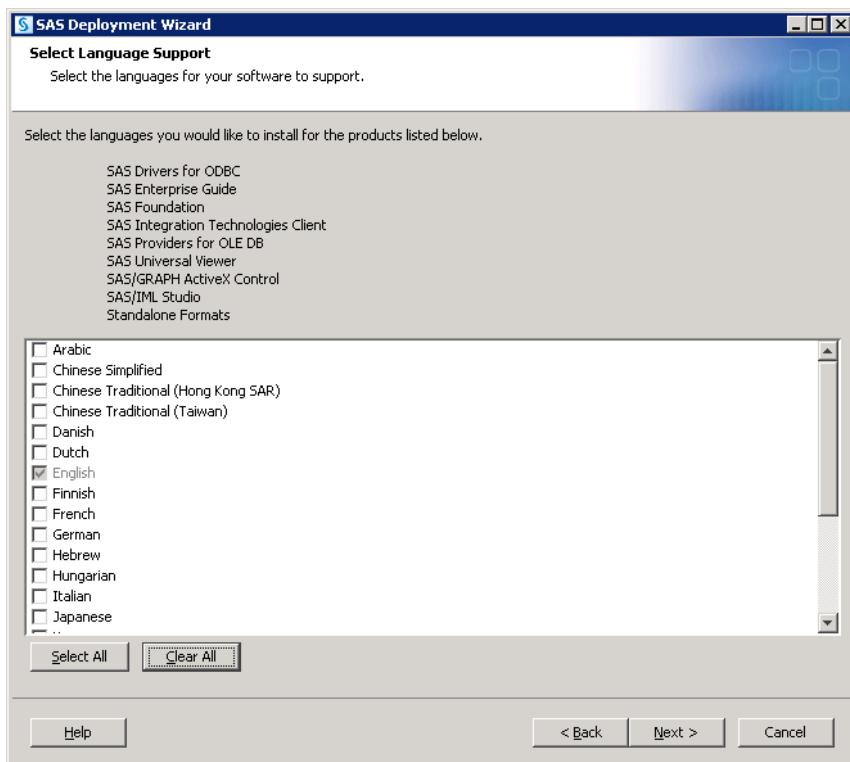
2.1.2.7 License

Copy the sas licence to D:\apps\SAS\licenses and select it. Make sure the correct license file is being used and the license expiration dates make sense. The deployment wizard will not install if the license file date is past the grace period.

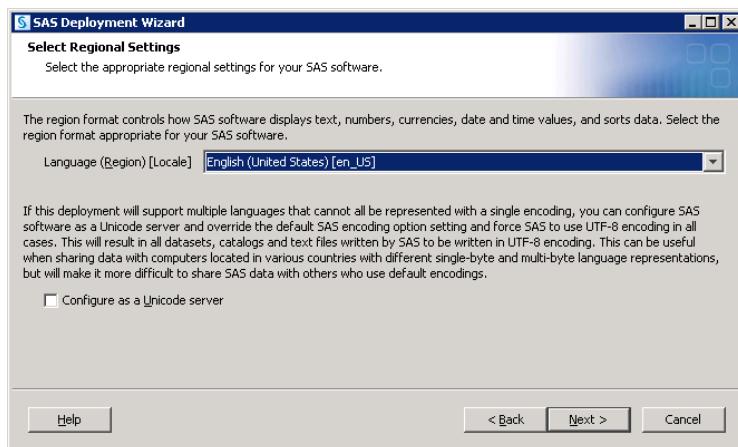


2.1.2.8 Language

Make sure you clear all the languages except English.



Select English as the language Locale. **DO NOT** set as Unicode server, this would make it easier to use international characters but will difficult reading clinical data files since most sponsors submit their data in latin1 encoding.



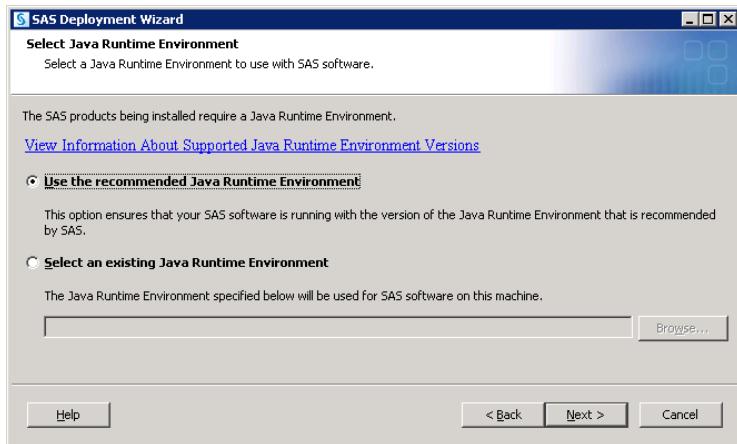
2.1.2.9 Default Viewer

Default viewer selection is not really important since we will not be typically working on the server's SAS environment.



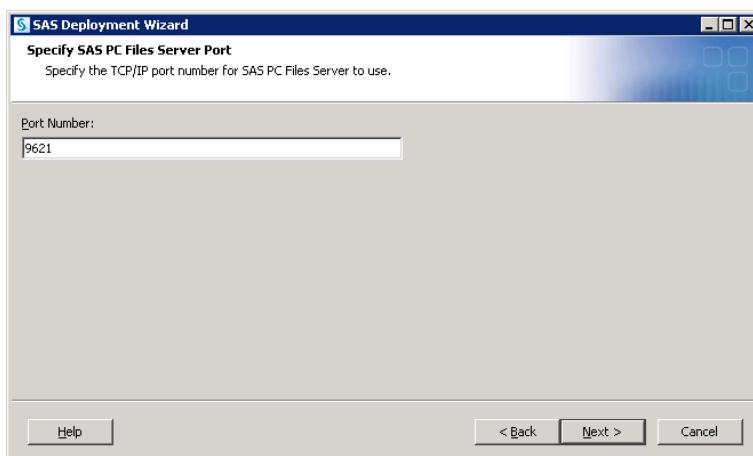
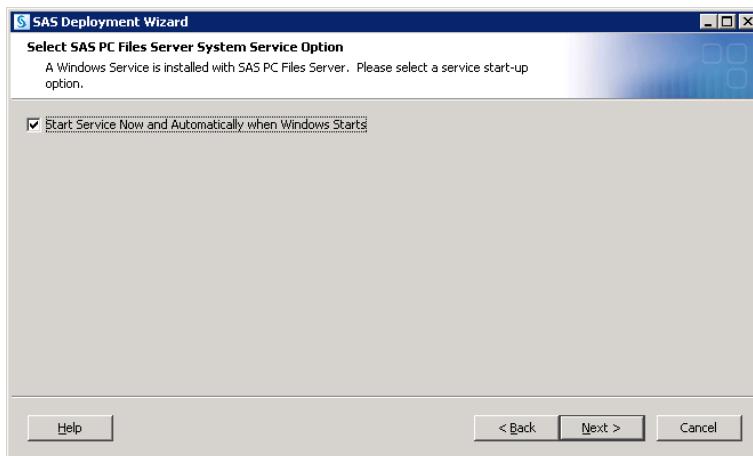
2.1.2.10 Java runtime

Use the recommended Java Runtime: (Note, following any future Java runtime update, do NOT delete the old version of Java Runtime. Please check with SAS website for compatibility)



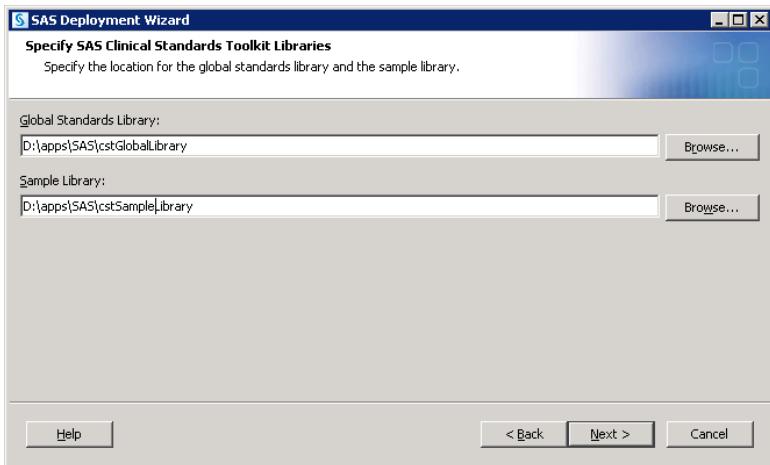
2.1.2.11 PC files server

Start the PC files server automatically, select the default port number:



2.1.2.12 Clinical standards toolkit path

Put the Clinical Standard Toolkits in D:\apps\SAS folders rather than in the root directory of the system drive.



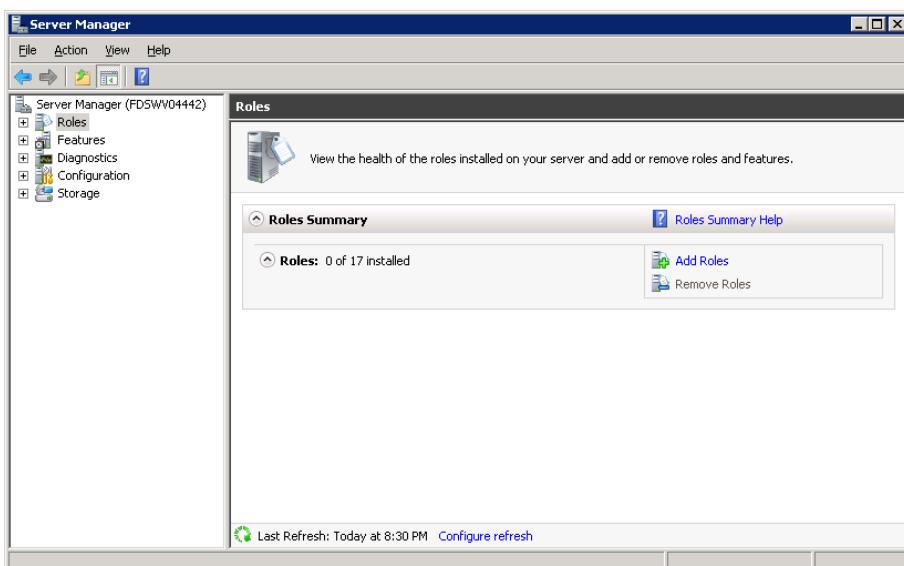
Now click Next on the two following screen and finally Finish on the last to perform the installation, this will take a while so go grab a coffee, stretch your legs, etc..

2.2 Install Server

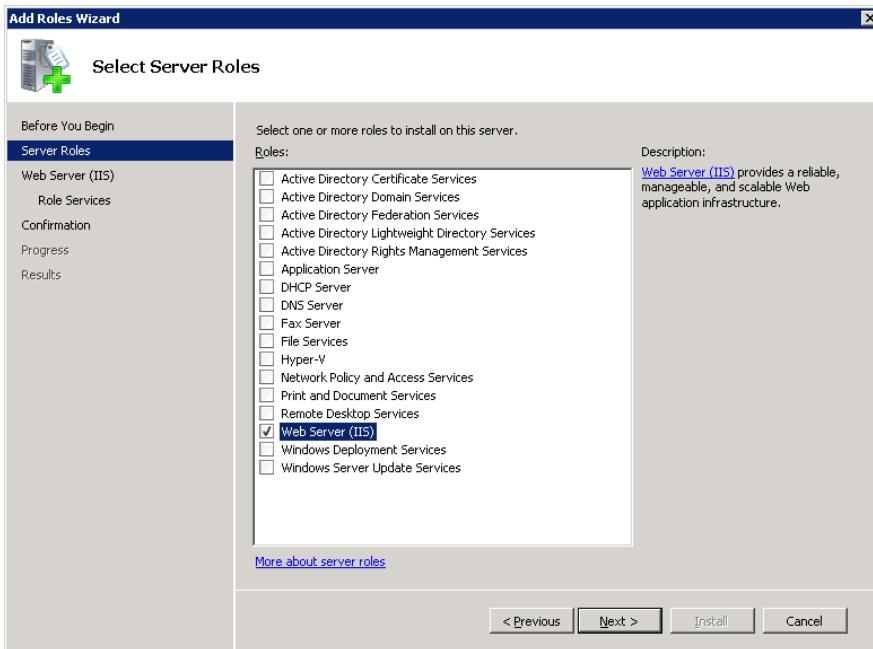
Certain roles must be present in the application and web servers in order for the IIS server to be able to execute ASP.NET code.

Note for Windows 10

- I. If ISS does not exist, follow the instruction in Tip #2 below.
 - II. Follow the “Tip” section below in the current document.
1. Navigate to Start -> Administrative Tools -> Server Manager. If Web server role is not present, click Add Roles. If the role is already present click Add Role services and proceed to step 3.



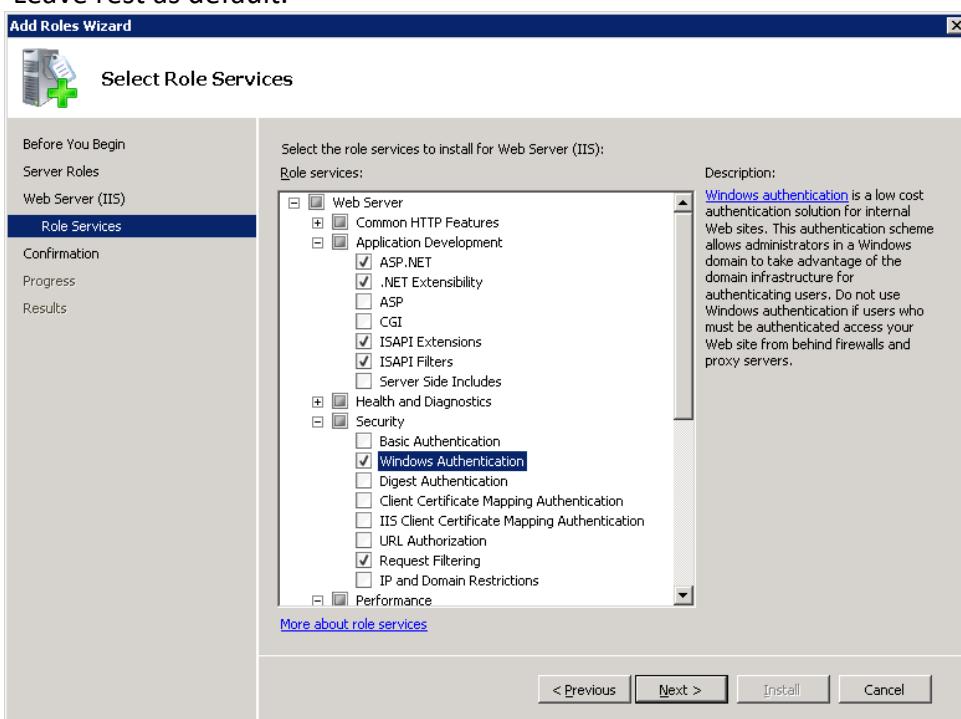
2. Check Web Server and click next:



3. Select the role services to add. Make sure to check:

- Application Development -> ASP.Net
- Security -> Windows Authentication

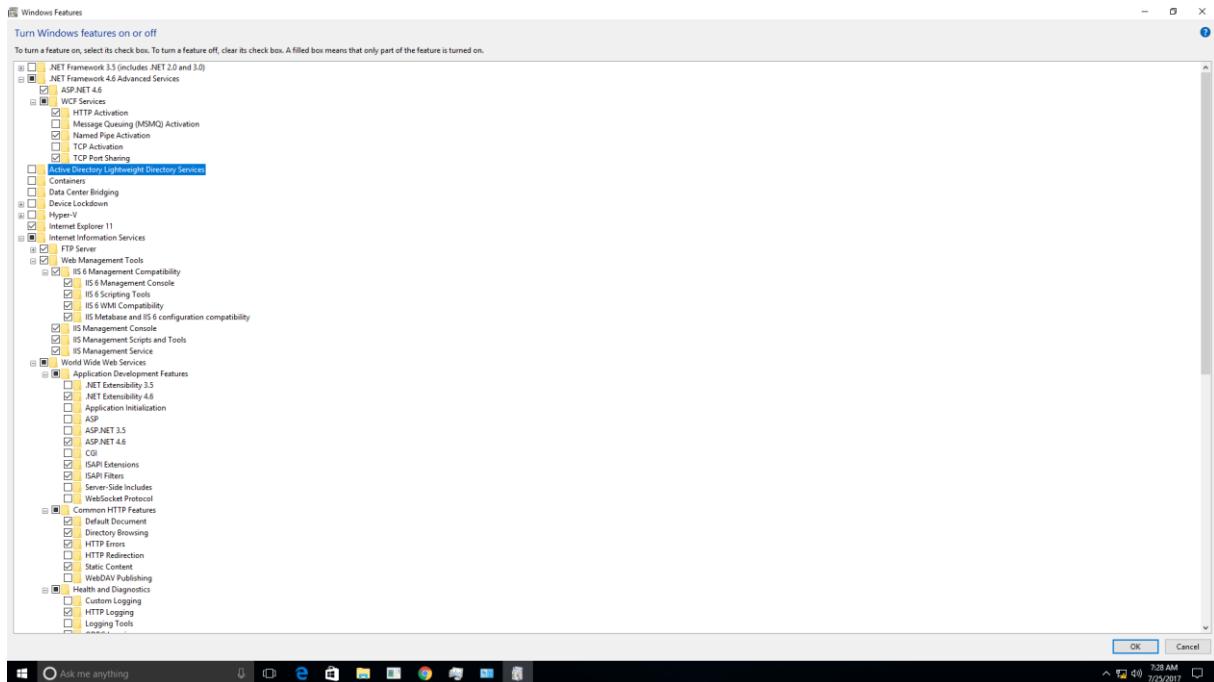
Leave rest as default.



Click next and install and wait for the server to finish the process.

Tips #1:

Under Windows 10, IIS will upgrade to version 10, you must set up the windows features, must select “http activation”, “Named pipe activation”, and “TCP Port Sharing” under WCF Services to keep PkView running well.

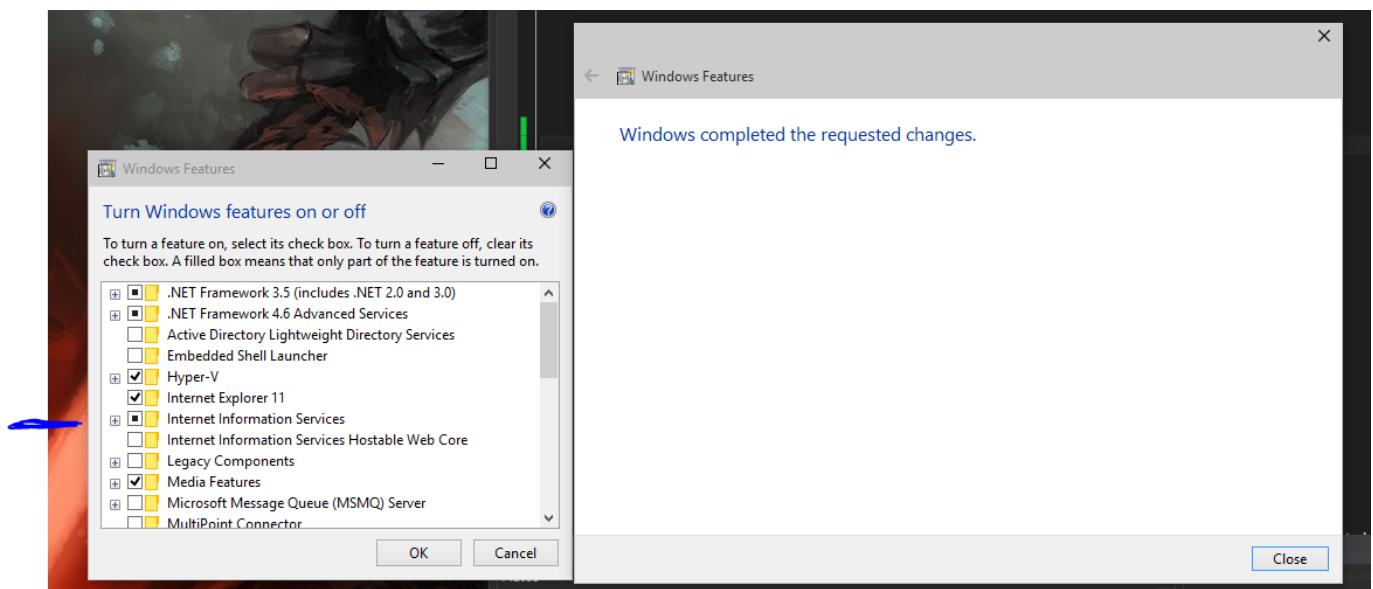


Tips #2:

If IIS cannot be found in Windows 10 following the below process. Then

Press the Windows Key and type Windows Features, select the first entry Turn Windows Features On or Off.

Make sure the box next to IIS is checked.



If it is not checked, check it. This might take a few minutes, but this will install everything you need to use IIS.

When it is done, IIS should have returned to Control Panel > Administrative Tools

The screenshot shows the Windows Control Panel with the 'Administrative Tools' folder selected. A search bar at the top has 'ess' typed into it. Below the search bar, there is a breadcrumb navigation path: Control Panel > All Control Panel Items > Administrative Tools. To the right of the path is a search bar labeled 'Search Administrative Tools'. The main area is a table listing various administrative tools, each with a small icon, the tool's name, the date modified, the type (all listed as 'Shortcut'), and the size (most are 2 KB). The tools listed include Component Services, Computer Management, Defragment and Optimize Drives, Disk Cleanup, Event Viewer, Hyper-V Manager, Internet Information Services (IIS) Manager, iSCSI Initiator, Local Security Policy, ODBC Data Sources (32-bit), ODBC Data Sources (64-bit), Performance Monitor, Print Management, Resource Monitor, Services, System Configuration, System Information, Task Scheduler, Windows Firewall with Advanced Security, Windows Memory Diagnostic, Windows PowerShell (x86), Windows PowerShell ISE (x86), and Windows PowerShell ISE.

Items	Name	Date modified	Type	Size
Administrative Tools	Component Services	4/24/2015 11:14 PM	Shortcut	2 KB
Computer Management	Computer Management	4/24/2015 11:14 PM	Shortcut	2 KB
Defragment and Optimize Drives	Defragment and Optimize Drives	4/24/2015 11:14 PM	Shortcut	2 KB
Disk Cleanup	Disk Cleanup	4/24/2015 11:22 PM	Shortcut	2 KB
Event Viewer	Event Viewer	4/24/2015 11:14 PM	Shortcut	2 KB
Hyper-V Manager	Hyper-V Manager	4/24/2015 11:19 PM	Shortcut	2 KB
Internet Information Services (IIS) Manager	Internet Information Services (IIS) Manager	4/24/2015 11:20 PM	Shortcut	2 KB
iSCSI Initiator	iSCSI Initiator	4/24/2015 11:14 PM	Shortcut	2 KB
Local Security Policy	Local Security Policy	4/24/2015 11:20 PM	Shortcut	2 KB
ODBC Data Sources (32-bit)	ODBC Data Sources (32-bit)	4/24/2015 11:18 PM	Shortcut	2 KB
ODBC Data Sources (64-bit)	ODBC Data Sources (64-bit)	4/24/2015 11:15 PM	Shortcut	2 KB
Performance Monitor	Performance Monitor	4/24/2015 11:14 PM	Shortcut	2 KB
Print Management	Print Management	4/24/2015 11:20 PM	Shortcut	2 KB
Resource Monitor	Resource Monitor	4/24/2015 11:14 PM	Shortcut	2 KB
Services	Services	4/24/2015 11:14 PM	Shortcut	2 KB
System Configuration	System Configuration	4/24/2015 11:14 PM	Shortcut	2 KB
System Information	System Information	4/24/2015 11:14 PM	Shortcut	2 KB
Task Scheduler	Task Scheduler	4/24/2015 11:14 PM	Shortcut	2 KB
Windows Firewall with Advanced Security	Windows Firewall with Advanced Security	4/24/2015 11:15 PM	Shortcut	2 KB
Windows Memory Diagnostic	Windows Memory Diagnostic	4/24/2015 11:14 PM	Shortcut	2 KB
Windows PowerShell (x86)	Windows PowerShell (x86)	4/24/2015 11:29 PM	Shortcut	3 KB
Windows PowerShell ISE (x86)	Windows PowerShell ISE (x86)	4/24/2015 11:21 PM	Shortcut	2 KB
Windows PowerShell ISE	Windows PowerShell ISE	4/24/2015 11:21 PM	Shortcut	2 KB

2.3 Web Deploy

Download Microsoft Web Deploy from the Microsoft website and put it in the “D:\installed-software-pkgs” folder. At the installer just click next, select the “Typical install” and install.

2.4 .Net Framework 4.5

Download Microsoft .Net Framework 4.5 from the Microsoft website and put it in the “D:\installed-software-pkgs” folder. At the installer just click next, through the steps.

3. Server Deployment

3.1 PkView web app

We will deploy the PkView web tool via a zip web deploy package. The first step is to prepare the web server for deployment. This will only be needed the first time:

Windows 10 note:

- I. Copy folder “OCP” in the installation package to under //C: and change it to a new folder name “CompanyName”

3.1.1 Directory structure

Create the following directories to hold the webapp and logs, the root folder is called iPortal and not PkView, since PkView is developed as one of the many modules of iPortal, even though the current deployment only includes PkView and the base framework and web portal:

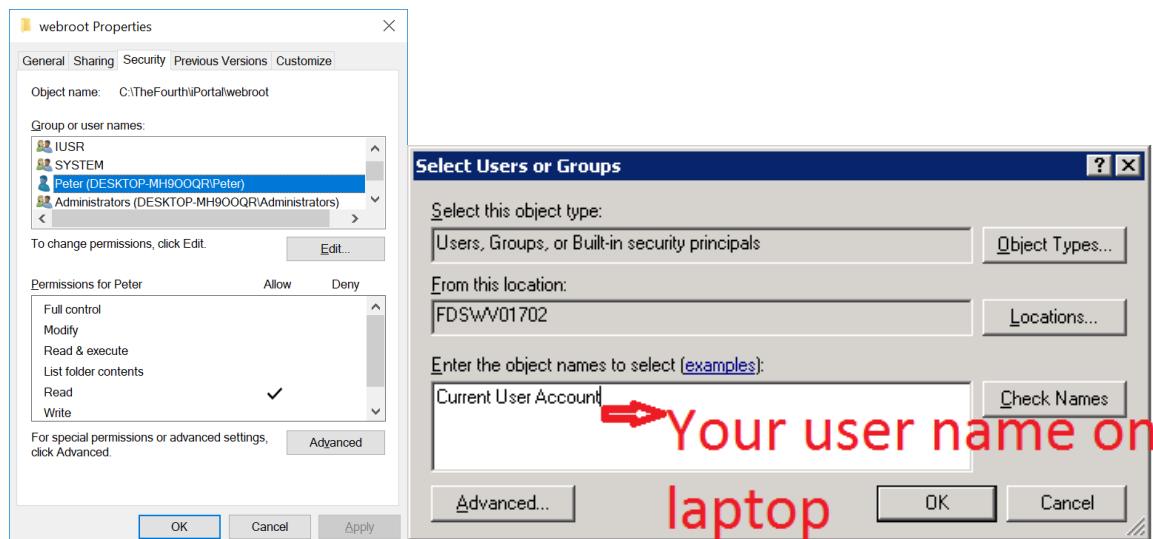
- D:\ CompanyName\iPortal\webroot
- D:\ CompanyName\iPortal\logs
- D:\ CompanyName\iPortal\webroot\App_Data\userData

Windows 10 note:

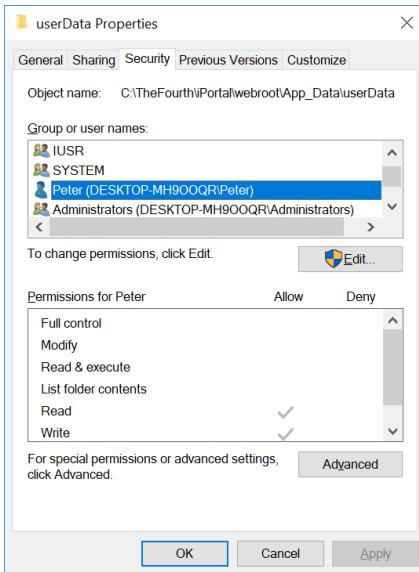
I. Change folder ‘peter’ in “C:\ CompanyName\iPortal\webroot\App_Data\userData\Peter” to the current user.

3.1.2 Folder permissions

Since the web app will be executed by the service account, we have to give it read access to the “D:\ CompanyName\iPortal\webroot” folder. Right click on the folder -> Properties -> Security. Click “Edit” -> “Add”, then enter Current User Account and click “Check Names”. Click ok, then ok.



There is a folder that the web app uses to store user data and it will need write permissions, follow the same process as above for “D:\ CompanyName\iPortal\webroot\App_Data\userData” but click the “Full control” checkbox on the second screen before saving.



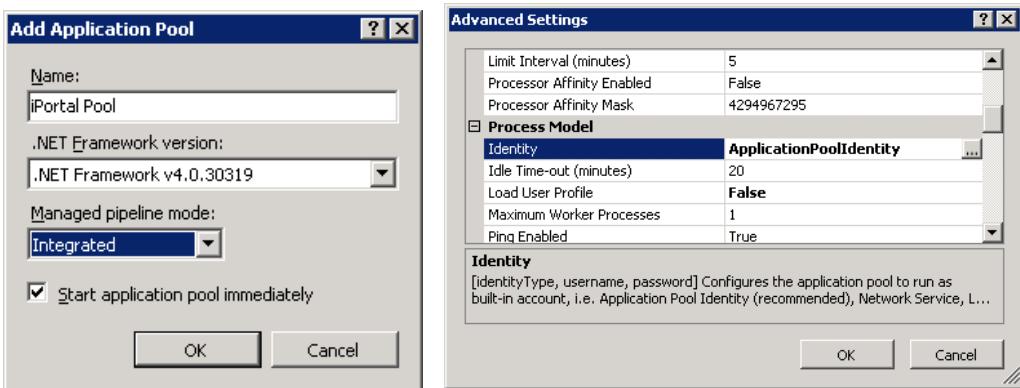
3.1.3 IIS Server Setup

If this is not the first deployment, skip to next section. Open IIS Manager (Start -> Administrative Tools -> Internet Information Services (IIS) Manager). We will remove the default web site and application pool, then we will create the app pool and site for PkView.

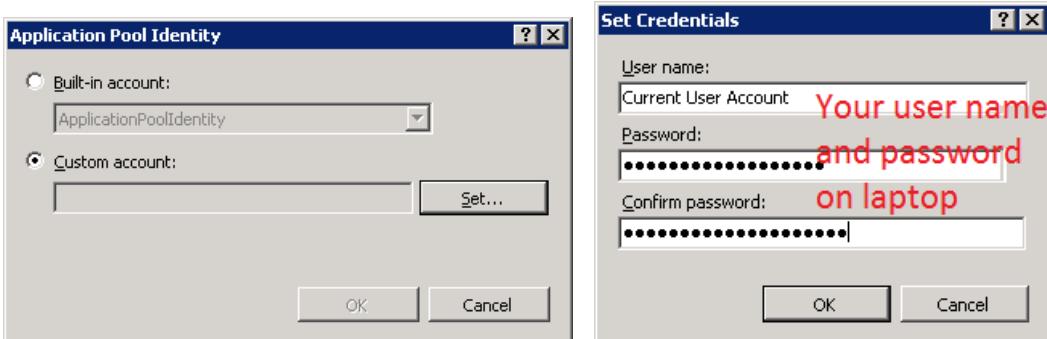
1. Expand the navigation on the left and remove ‘Default Web Site’ by right click and selecting the ‘Remove’ option.
2. Navigate to application pools and remove ‘DefaultAppPool’.

Name	Status	.NET Frame...	Managed Pipeli...	Identity	Applications
ASP.NET v4.0	Started	v4.0	Integrated	ApplicationPooliden...	0
ASP.NET v4.0 Cl...	Started	v4.0	Classic	ApplicationPooliden...	0
Classic .NET App...	Started	v2.0	Classic	ApplicationPooliden...	0
DefaultAppPool	Started	v4.0	Integrated	ApplicationPooliden...	1

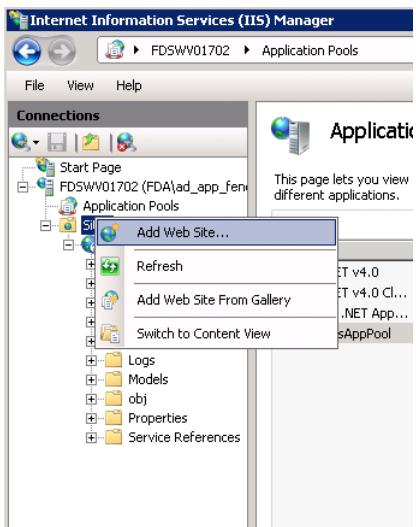
3. Click add application pool on the right panel. Name the pool “iPortal Pool” and set the .Net framework version to 4.0.
4. Now we need to set the pool to run under as the service account. Click ‘advanced settings’ on the right menu and click “...” under identity.



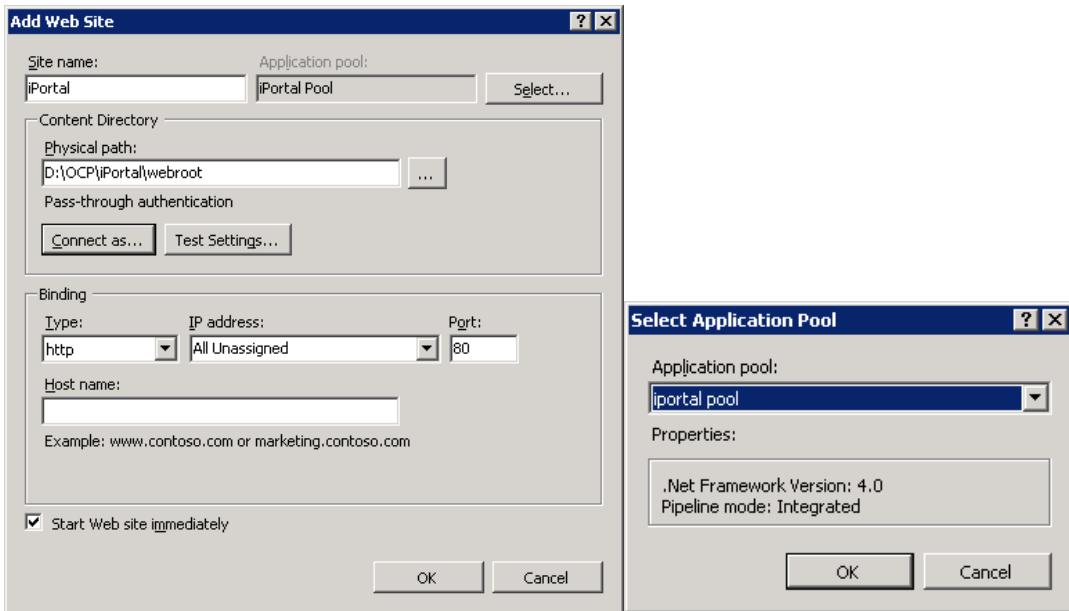
5. Select custom account and click ‘Set’. Set “[Current User Account](#)” as the user name and provide the password for such account.



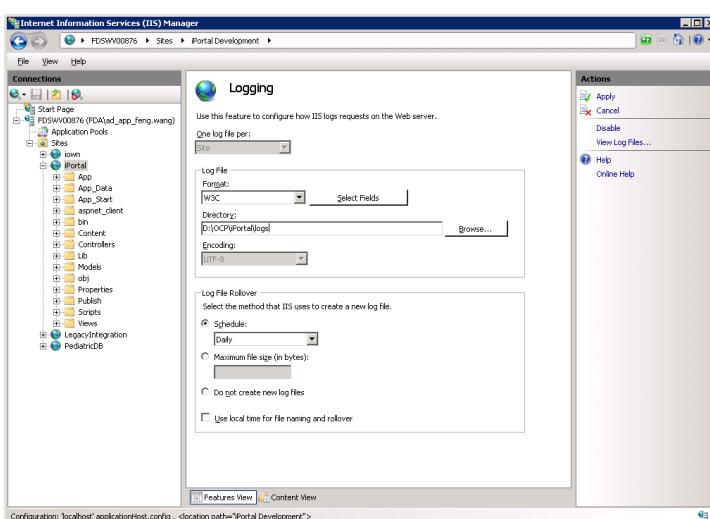
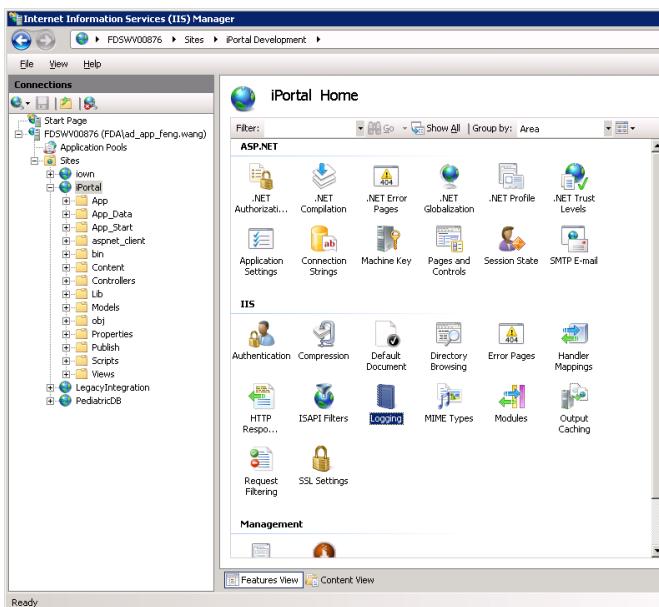
6. Now we will add the site. Click ‘Sites’ on the left panel, then “Add Web Site...” on the right panel.



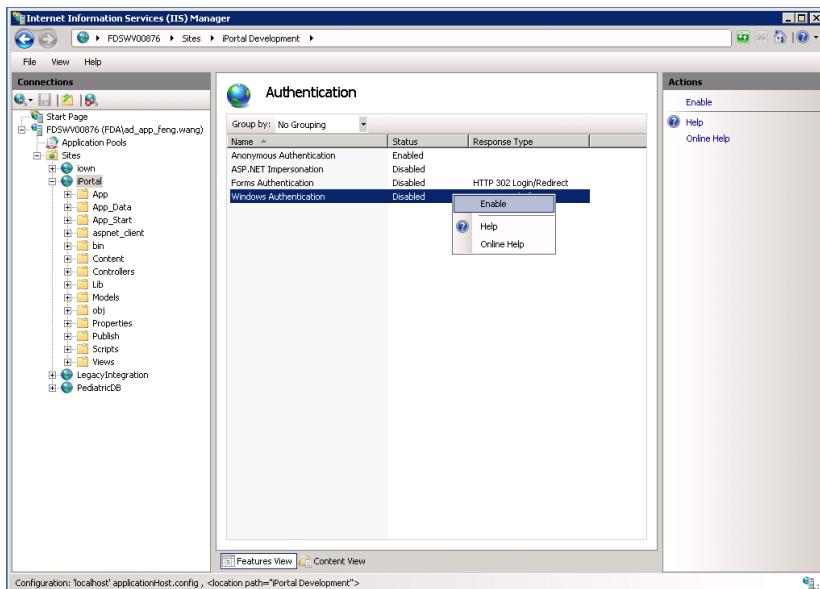
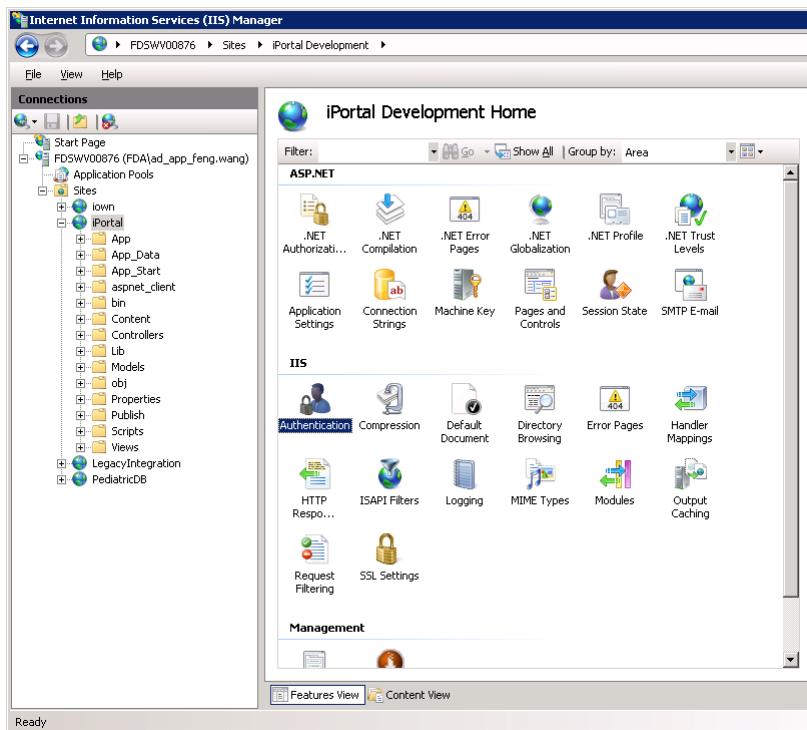
7. Set the site name as “iPortal”, ‘Select’ the application pool we just created, the site path should be the folder we created earlier in “D:\ CompanyName\iPortal\webroot:



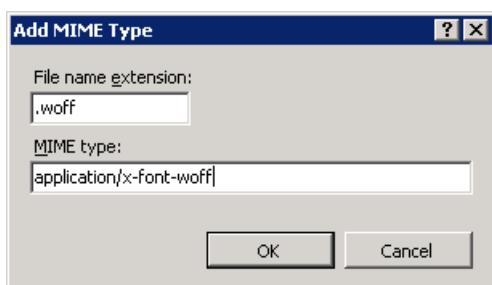
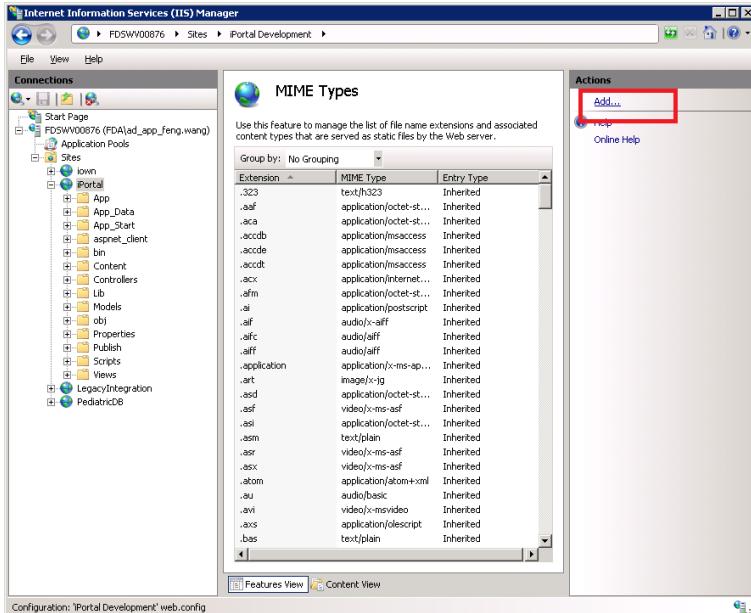
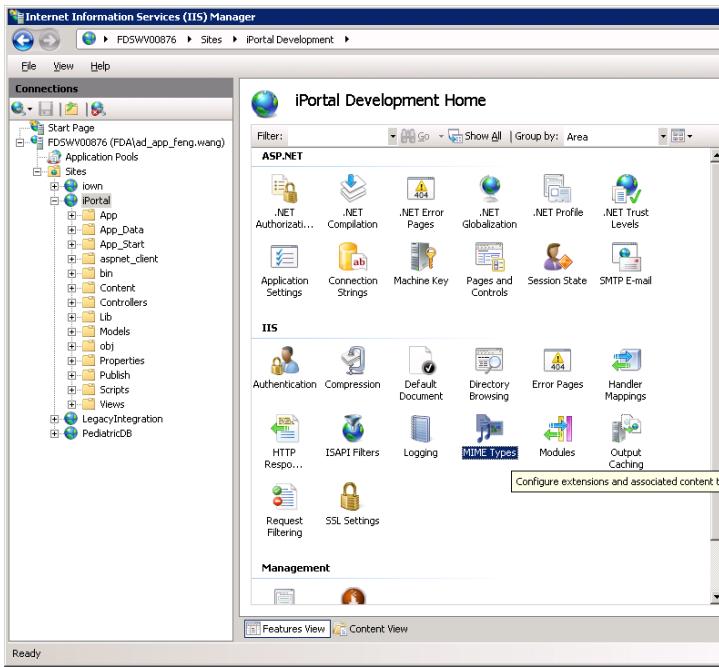
- Under the newly created iPortal site, select logging. Set the logging folder to the path we created before at "D:\ CompanyName\iPortal\logs". Click 'Apply'.



9. Also under iPortal, select Authentication. Enable windows authentication.



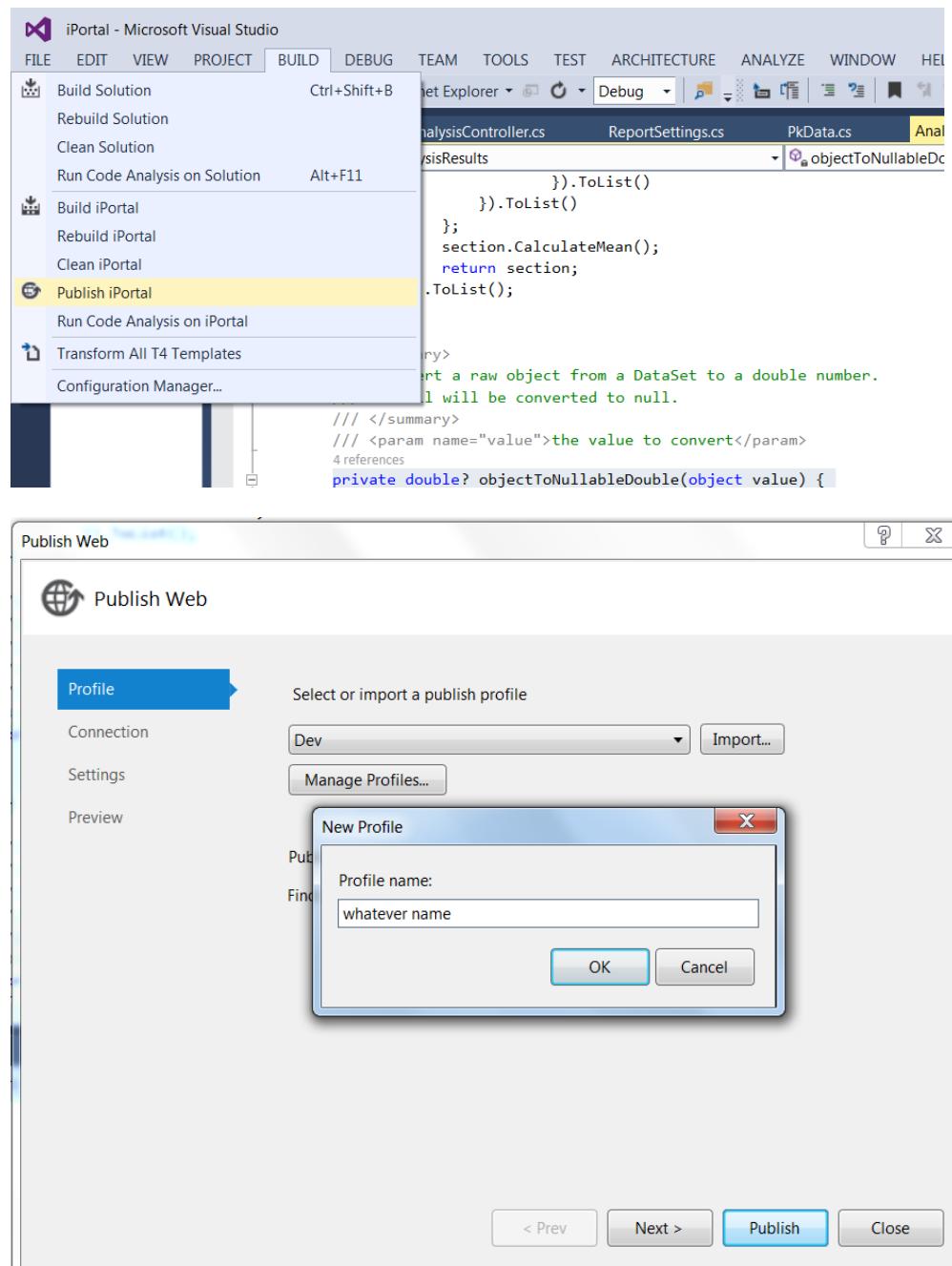
10. iPortal uses web fonts, so we need to add the mime type so IIS can serve the file. On the left menu go to the general server settings (the entry under 'Start Page'), click on "MIME Types", then add a new type with the ".woff" extension and the "application/x-font-woff" type.

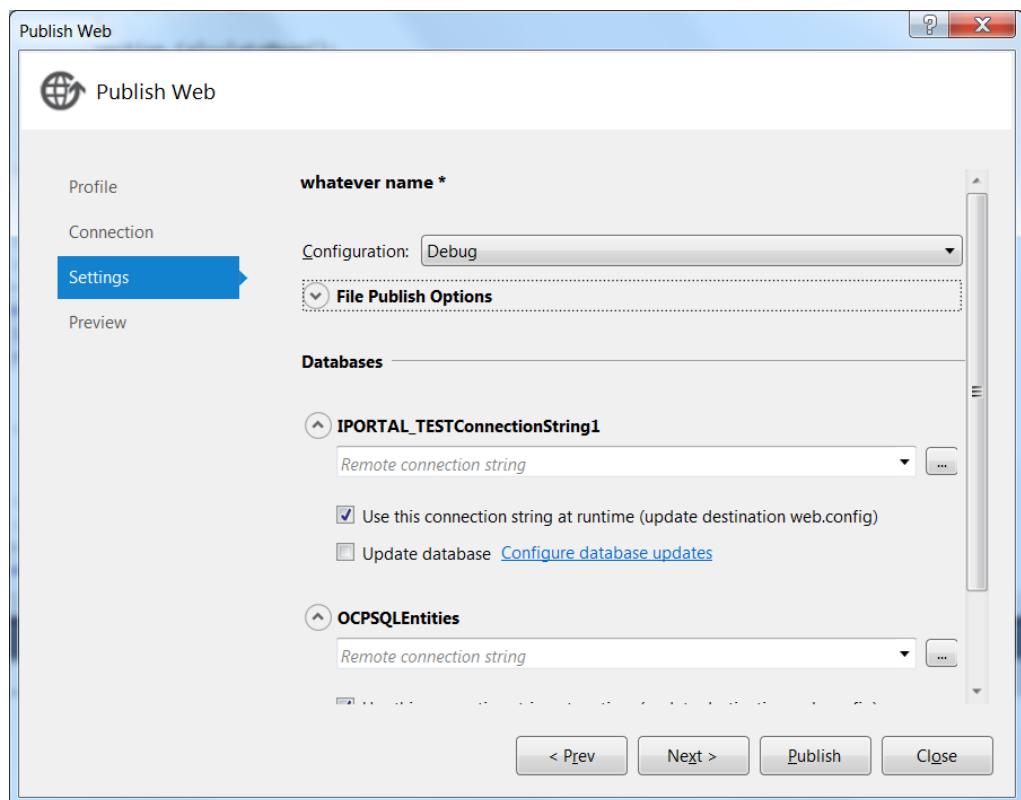
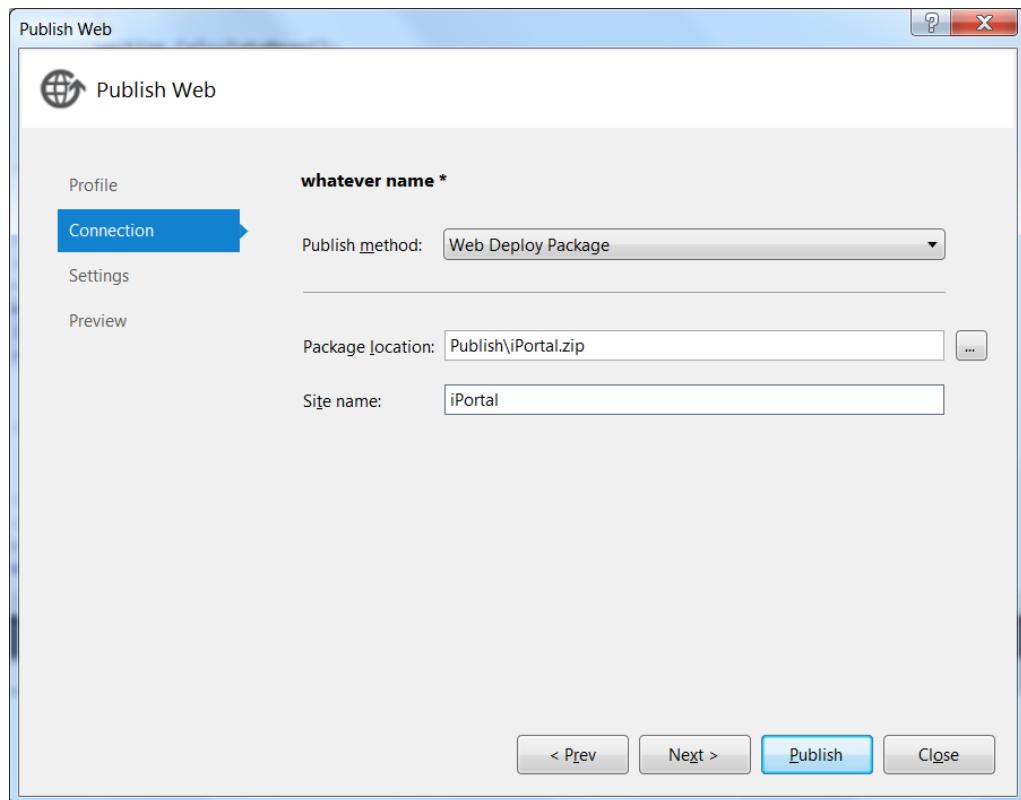


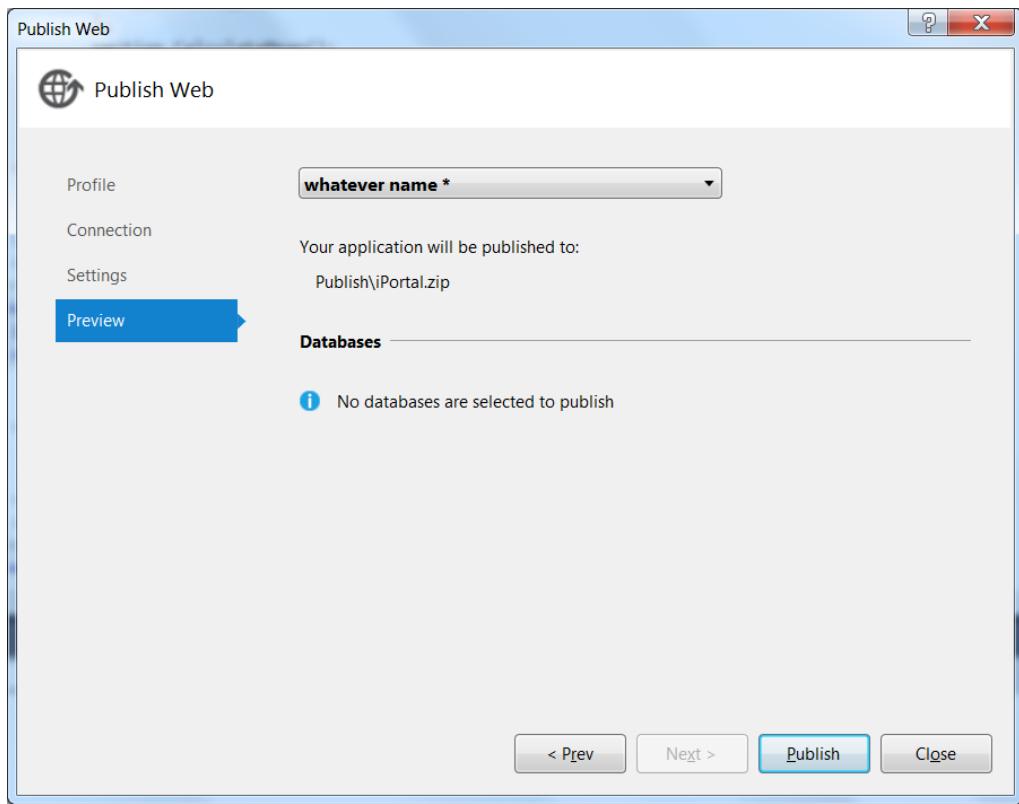
3.1.4 Create web deploy package

Note: The web deploy package is provide in “iPortal-publish” folder in the “installation package”. Skip to section 3.1.5

Perform this step if a deployment package is not available already. Load the iPortal project on Visual Studio. Click build -> publish. Then select the production profile and click next until the package is generated. The package will be found under the “publish” folder at the root of the project.





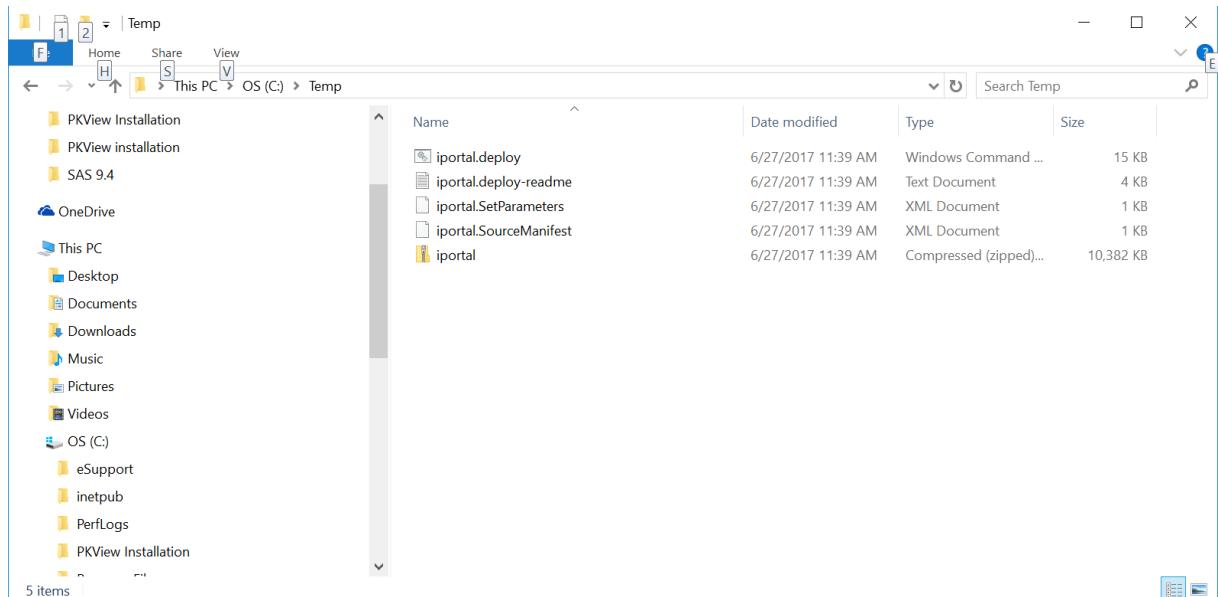


3.1.5 Deploy the package

Copy the “publish” directory to a temporary location in laptop hard disk. From a command line run “iPortal.deploy.cmd /t” to test the deployment package. If everything looks right, run “iPortal.deploy.cmd /y” to deploy.

Windows 10 note:

- I. Copy “iPortal-Publish” to “C:\Temp”



- II. Type CMD

```
Command Prompt
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Peter>C:\Temp\iportal.deploy.cmd /t
```

III.

IV. Solve permission issue described in the “Tips” section below

```
Command Prompt
Info: Adding sitemanifest (sitemanifest).
Info: Creating application (iPortal)
Info: Adding virtual path (iPortal)
Error: An error occurred when reading the IIS Configuration File 'MACHINE/REDIRECTION'. The identity performing the operation was 'DESKTOP-MH900QR\Peter'.
Error: Filename: \\?\C:\WINDOWS\system32\inetsrv\config\redirection.config
Error: Cannot read configuration file due to insufficient permissions

Error count: 1.

C:\Users\Peter>C:\Temp\iportal.deploy.cmd /t
SetParameters from:
"C:\Temp\iportal.SetParameters.xml"
You can change IIS Application Name, Physical path, connectionString
or other deploy parameters in the above file.
-----
Start executing msdeploy.exe
-----
"C:\Program Files\IIS\Microsoft Web Deploy V3\msdeploy.exe" -source:package='C:\Temp\iportal.zip' -dest:auto,includeAcls="False" -verb:sync -disableLink:AppPoolExtension - disableLink:ContentExtension - disableLink:CertificateExtension - setParamFile:"C:\Temp\iportal.SetParameters.xml" -whatif
Info: Deleting directory (iPortal\App_Data\userData\Administrator\PKView).
Info: Deleting directory (iPortal\App_Data\userData\Administrator).
Info: Deleting file (iPortal\App_Data\userData\Peter\PKView\DRUG241_New_pk_analysis.xml).
Info: Deleting file (iPortal\App_Data\userData\Peter\PKView\NDAL00000_7-26.xml).
Info: Deleting file (iPortal\App_Data\userData\Peter\PKView\NDAL00000_New_pk_analysis.xml).
Info: Deleting directory (iPortal\App_Data\userData\Peter\PKView).
Info: Deleting directory (iPortal\App_Data\userData\Peter).
Info: Deleting directory (iPortal\App_Data\userData).
Info: Deleting directory (iPortal\aspnet_client\system_web\4_0_30319).
Info: Deleting directory (iPortal\aspnet_client\system_web).
Info: Deleting directory (iPortal\aspnet_client).
Info: Updating file (iPortal\Web.config).
Info: Adding ACL's for path (iPortal)
Info: Adding ACL's for path (iPortal)
Info: Adding ACL's for path (iPortal/App_Data)
Total changes: 15 (0 added, 11 deleted, 4 updated, 0 parameters changed, 7194 bytes copied)

C:\Users\Peter>C:\Temp\iportal.deploy.cmd /y
```

V.

```
Command Prompt
Info: Deleting file (iPortal\App_Data\userData\Peter\PkView\NDA10000_New_pk_analysis.xml).
Info: Deleting directory (iPortal\App_Data\userData\Peter\PkView).
Info: Deleting directory (iPortal\App_Data\userData\Peter).
Info: Deleting directory (iPortal\app_data\userData).
Info: Deleting directory (iPortal\aspnet_client\system_web\4_0_30319).
Info: Deleting directory (iPortal\aspnet_client\system_web).
Info: Deleting directory (iPortal\aspnet_client).
Info: Updating file (iPortal\Web.config).
Info: Adding ACL's for path (iPortal)
Info: Adding ACL's for path (iPortal)
Info: Adding ACL's for path (iPortal/App_Data)
Total changes: 15 (0 added, 11 deleted, 4 updated, 0 parameters changed, 7194 bytes copied)

C:\Users\Peter>C:\Temp\iportal.deploy.cmd /y
SetParameters from:
"C:\Temp\iportal.SetParameters.xml"
You can change IIS Application Name, Physical path, connectionString
or other deploy parameters in the above file.
-----
Start executing msdeploy.exe
-----
"C:\Program Files\IIS\Microsoft Web Deploy V3\msdeploy.exe" -source:package='C:\Temp\iportal.zip' -dest:auto,includeAcls="False" -verb:sync -disableLink:AppPoolExtension - disableLink:ContentExtension - disableLink:CertificateExtension - setParamFile="C:\Temp\iportal.SetParameters.xml"
Info: Deleting directory (iPortal\app_data\userData\Administrator).
Info: Deleting directory (iPortal\app_data\userData\Peter).
Info: Deleting file (iPortal\app_data\userData\Peter\PKView\DRUG241_New_pk_analysis.xml).
Info: Deleting file (iPortal\app_data\userData\Peter\PKView\NDA10000_7-26.xml).
Info: Deleting file (iPortal\app_data\userData\Peter\PKView\NDA10000_New_pk_analysis.xml).
Info: Deleting directory (iPortal\app_data\userData\Peter\PKView).
Info: Deleting directory (iPortal\app_data\userData\Peter).
Info: Deleting directory (iPortal\app_data\userData).
Info: Deleting directory (iPortal\aspnet_client\system_web\4_0_30319).
Info: Deleting directory (iPortal\aspnet_client\system_web).
Info: Deleting directory (iPortal\aspnet_client).
Info: Updating file (iPortal\Web.config).
Info: Adding ACL's for path (iPortal)
Info: Adding ACL's for path (iPortal)
Info: Adding ACL's for path (iPortal/App_Data)
Total changes: 15 (0 added, 11 deleted, 4 updated, 0 parameters changed, 7194 bytes copied)

C:\Users\Peter>
```

Deploy tips:

1. (Error Message: iPortal.SetParameters.xml was unexpected at this time)

How to solve:

Do not put the package folder to a deep path in your laptop, put it under C:\, sometimes the path too deep, deploy may not works.

2. (Error Message: Filename: <\\?\C:\Windows\system32\inetsrv\config\redirection.config> cannot find configuration file due to insufficient permissions)

How to solve:

Open folder "C:\Windows\system32\inetsrv\config\" in your laptop and confirm the permissions, then try deploy again.

```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Peter>C:\Temp\iportal.deploy.cmd /t
SetParameters from:
"C:\Temp\iportal.SetParameters.xml"
You can change IIS Application Name, Physical path, connectionString
or other deploy parameters in the above file.
-----
Start executing msdeploy.exe

"C:\Program Files\IIS\Microsoft Web Deploy V3\msdeploy.exe" -source:package='C:\Temp\iportal.zip' -dest:auto,includeAcls="False" -verb:sync -disableLink:AppPoolExtension -disableLink:ContentExtension -disableLink:CertificateExtension -setParamFile='C:\Temp\iportal.SetParameters.xml' -whatif
Warning: BACKUP_FAILED Skipping backup because it failed due to an unknown reason. For more information, contact your server administrator.

Trace Error:
msdeploy.exe Error: 0 :
Trace Error:
Skipping backup because it failed due to the following error 'System.UnauthorizedAccessException: Filename: redirection.config
Error: Cannot read configuration file due to insufficient permissions

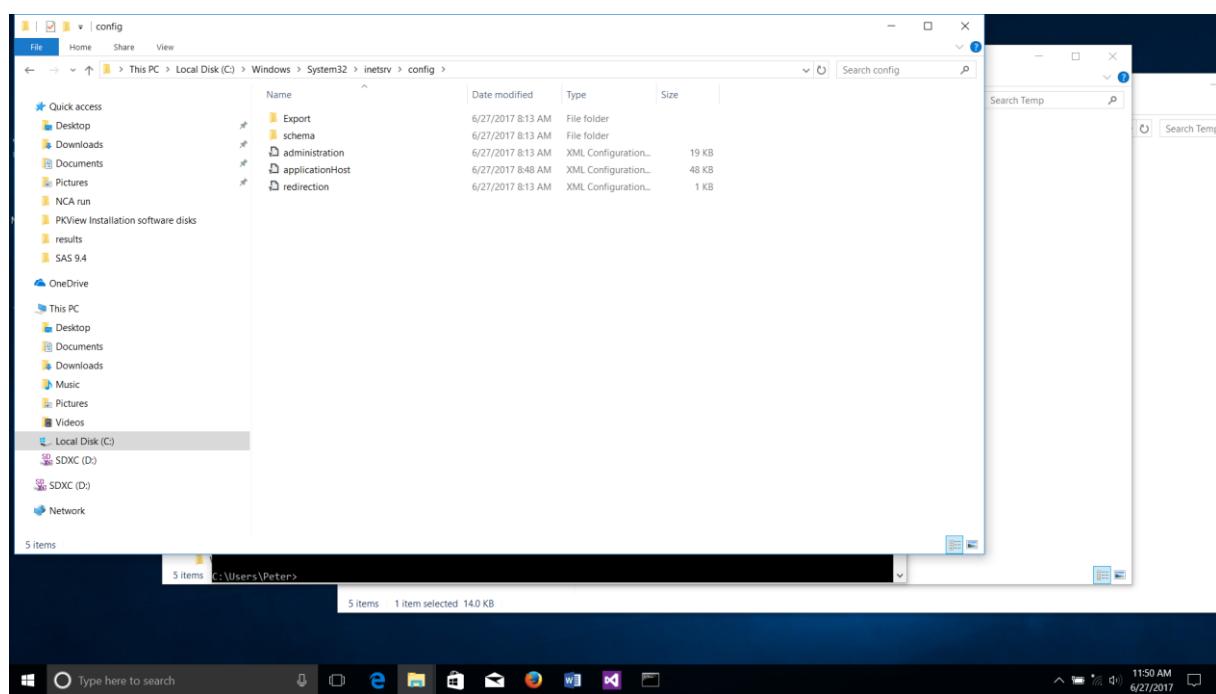
at Microsoft.Web.Administration.Interop.IAppHostAdminManager.GetAdminSection(String bstrSectionName, String bstrPath)
at Microsoft.Web.Administration.Configuration.GetSectionInternal(ConfigurationSection section, String sectionPath, String locationPath)
at Microsoft.Web.Deployment.BackupConfigIper.InitializeServerBackupSettings()
at Microsoft.Web.Deployment.BackupConfigIper.ResetCaching()
at Microsoft.Web.Deployment.BackupConfigIper.get_TurnedOn()
at Microsoft.Web.Deployment.BackupManager.ProduceWithBackup(DeploymentObject depObj, Boolean ignoreEnabled, BackupSettings& settings, Boolean suppressLogging).

Info: Adding sitemanifest (sitemanifest).
Info: Creating application (iPortal)
Info: Adding Virtual path (iPortal)
Error: An error occurred when reading the IIS Configuration File 'MACHINE/BEDIRECTION'. The identity performing the operation was 'DESKTOP-MPBHDJJ\Peter'.
Error: Filename: \\?\C:\Windows\system32\inetsrv\config\redirection.config
Error: Cannot read configuration file due to insufficient permissions

Error count: 1.

C:\Users\Peter>

```



3.2 Sas Jobs Api

The Sas jobs api will be deployed to the app server. The first step is to deploy the web api that serves as endpoint of the service. The steps to follow are going to be really similar to the steps followed to deploy the web app.

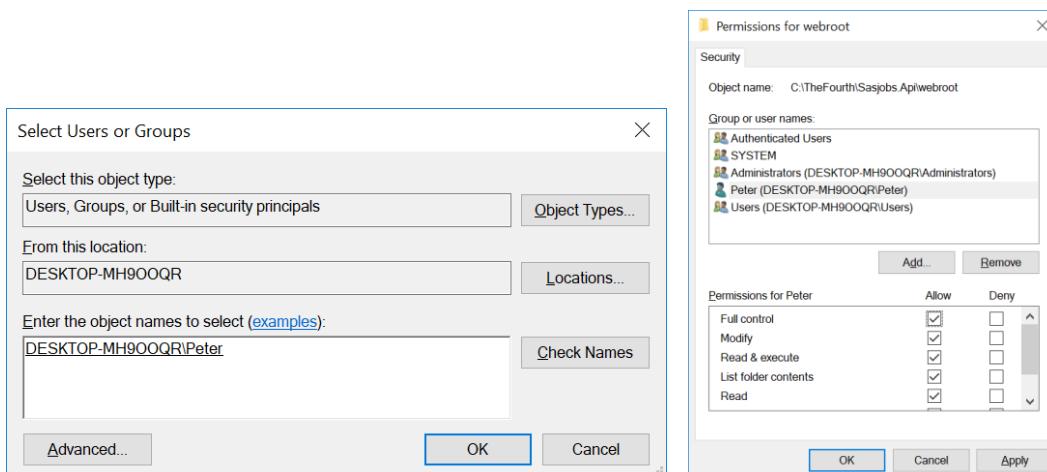
3.2.1 Directory structure

Create the following directories to hold the api and logs:

- D:\CompanyName\SasJobs.Api\webroot
- D:\ CompanyName\ SasJobs.Api \logs

3.2.2 Folder permissions

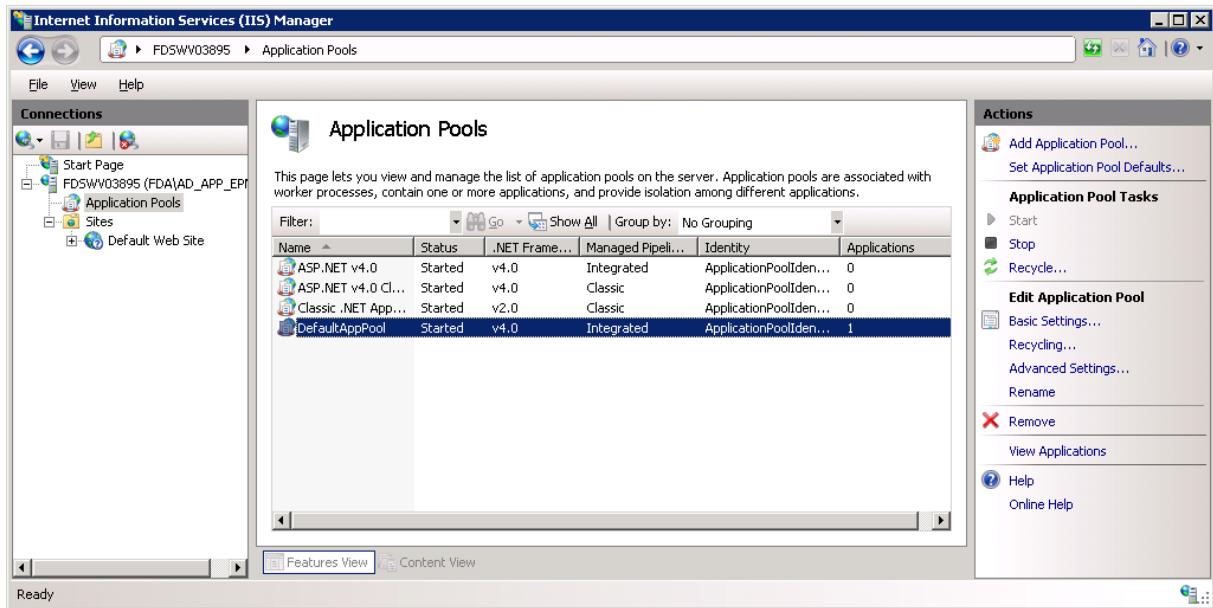
Since the web api will be executed by the service account, we have to give it read access to the “D:\ CompanyName\ SasJobs.Api \webroot” folder. Right click on the folder -> Properties -> Security. Click “Edit” -> “Add”, then enter [Current User Account](#) and click “Check Names”. Click ok, then ok.



3.2.3 IIS Server Setup

If this is not the first deployment, skip to next section. Open IIS Manager (Start -> Administrative Tools -> Internet Information Services (IIS) Manager). We will remove the default web site and application pool, then we will create the app pool and site for PkView.

11. Expand the navigation on the left and remove ‘Default Web Site’ by right click and selecting the ‘Remove’ option.
12. Navigate to application pools and remove ‘DefaultAppPool’.



13. Click add application pool. Name the pool “SasJobs Pool” and set the .Net framework version to 4.0.
14. Now we need to set the pool to run under as the service account. Click ‘advanced settings’ on the right menu and click “...” under identity.

Add Application Pool

Name:	SasJobs Pool
.NET CLR version:	.NET CLR Version v4.0.30319
Managed pipeline mode:	Integrated
<input checked="" type="checkbox"/> Start application pool immediately	
OK Cancel	

Advanced Settings

Limit Interval (minutes)	5
Processor Affinity Enabled	False
Processor Affinity Mask	4294967295
Process Model	
Identity	ApplicationPoolIdentity ...
Idle Time-out (minutes)	20
Load User Profile	False
Maximum Worker Processes	1
Ping Enabled	True
Identity [identityType, username, password] Configures the application pool to run as built-in account, i.e. Application Pool Identity (recommended), Network Service, L...	
OK Cancel	

15. Select custom account and click ‘Set’. Set “[Current User Account](#)” as the user name and provide the password for such account .

Application Pool Identity

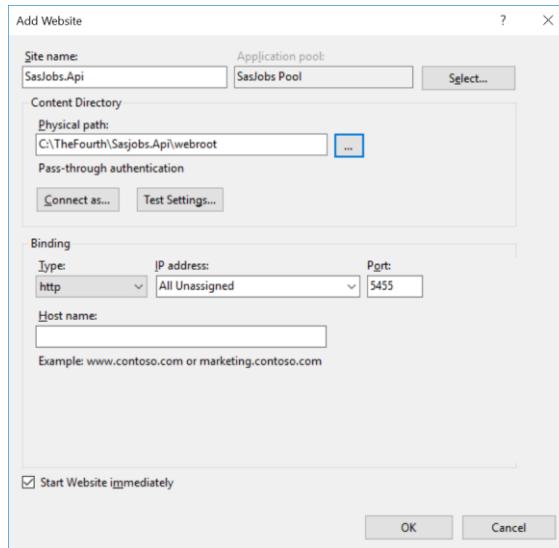
<input type="radio"/> Built-in account:	ApplicationPoolIdentity
<input checked="" type="radio"/> Custom account:	<input type="text"/> Set...
OK Cancel	

Set Credentials

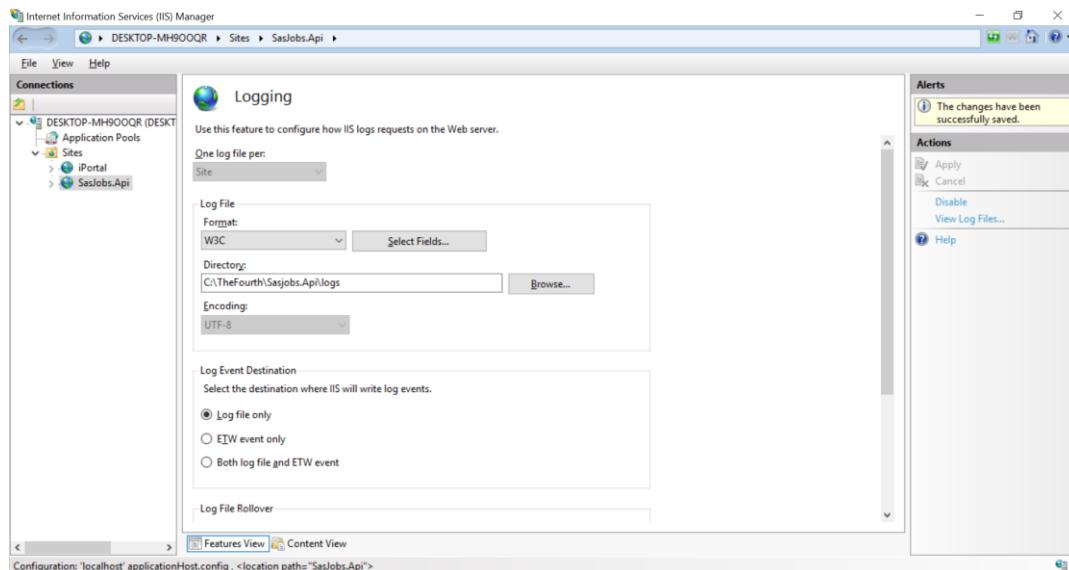
User name:	peter
Password:	*****
Confirm password:	*****
OK Cancel	

16. Now we will add the site. Click ‘Sites’ on the left panel, then “Add Web Site...” on the right panel.

17. Set the site name as “SasJobs.Api”, select the application pool we just created, the site path should be the folder we created earlier in “D:\ CompanyName\SasJobs.Api\webroot and the port should be 5455:



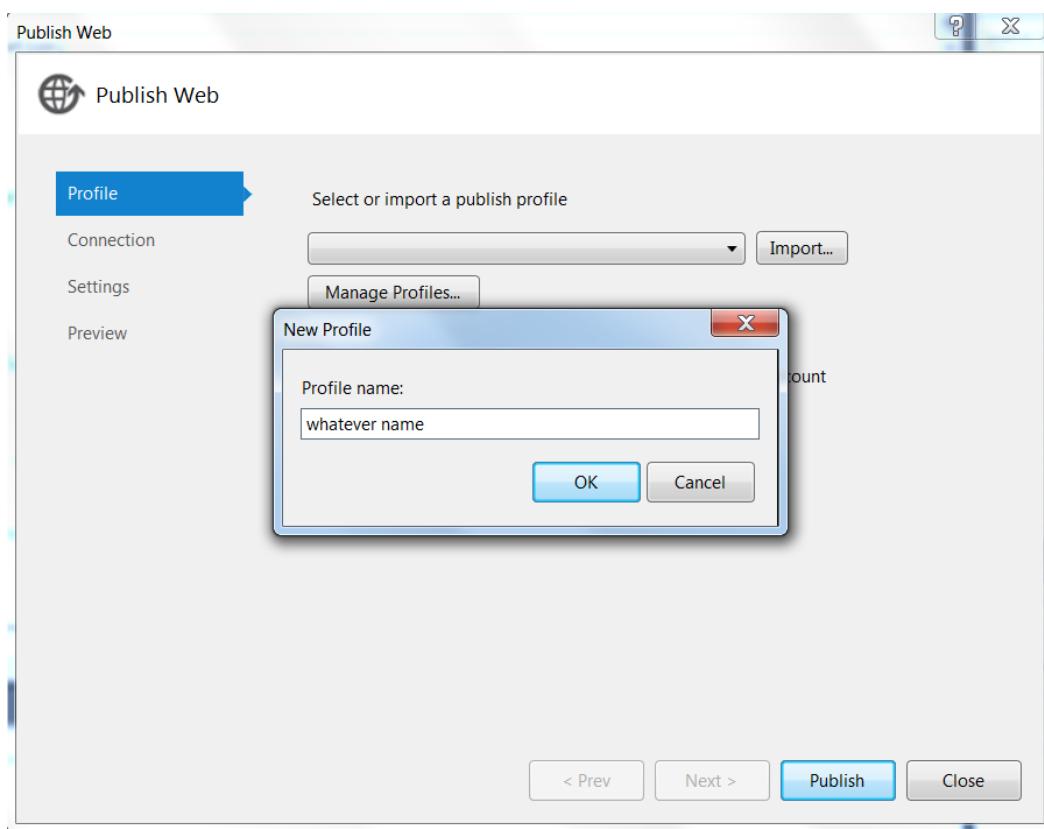
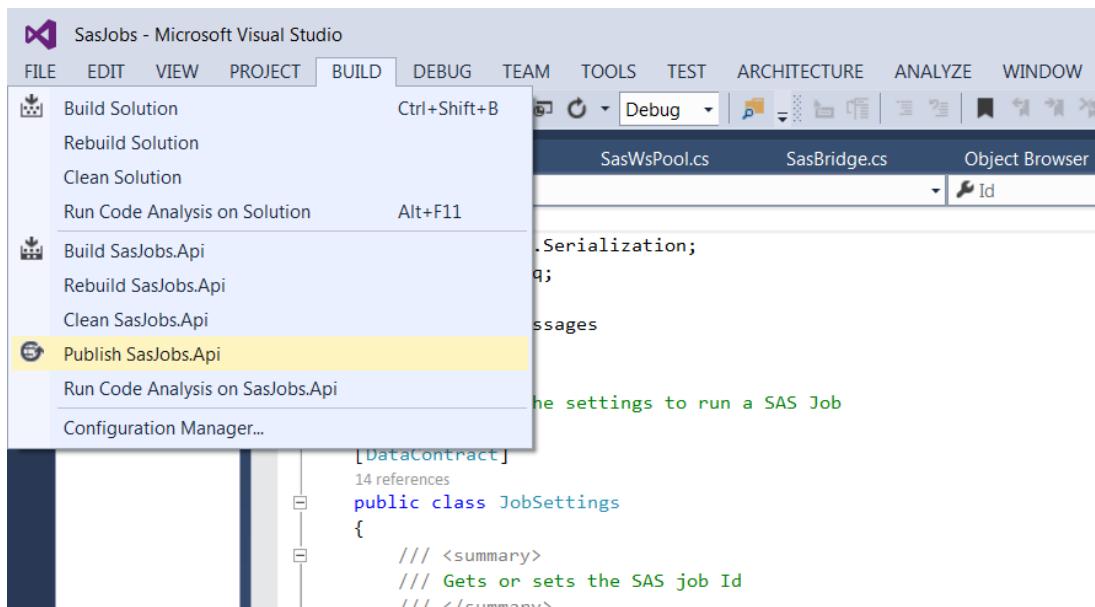
18. Under the newly created SasJobs.Api site, select logging. Set the logging folder to the path we created before at “D:\ CompanyName\SasJobs.Api\logs”. Click apply.

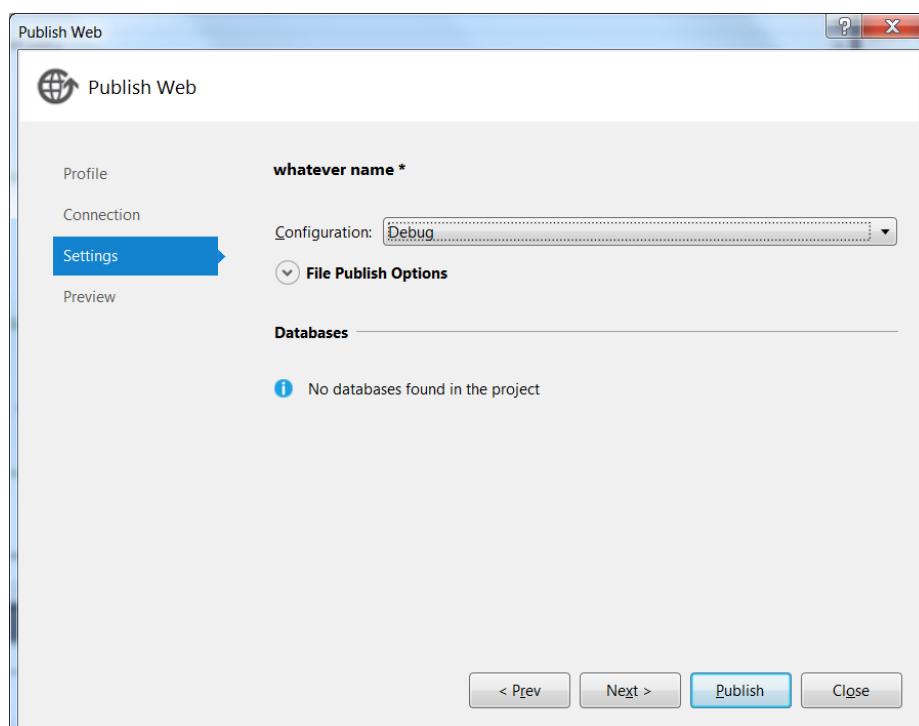
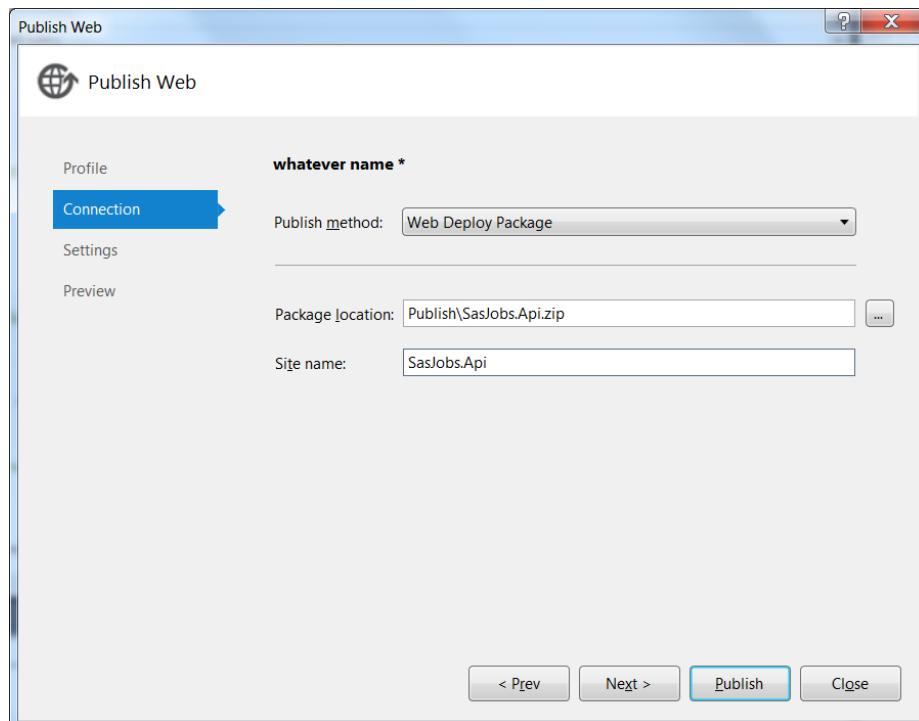


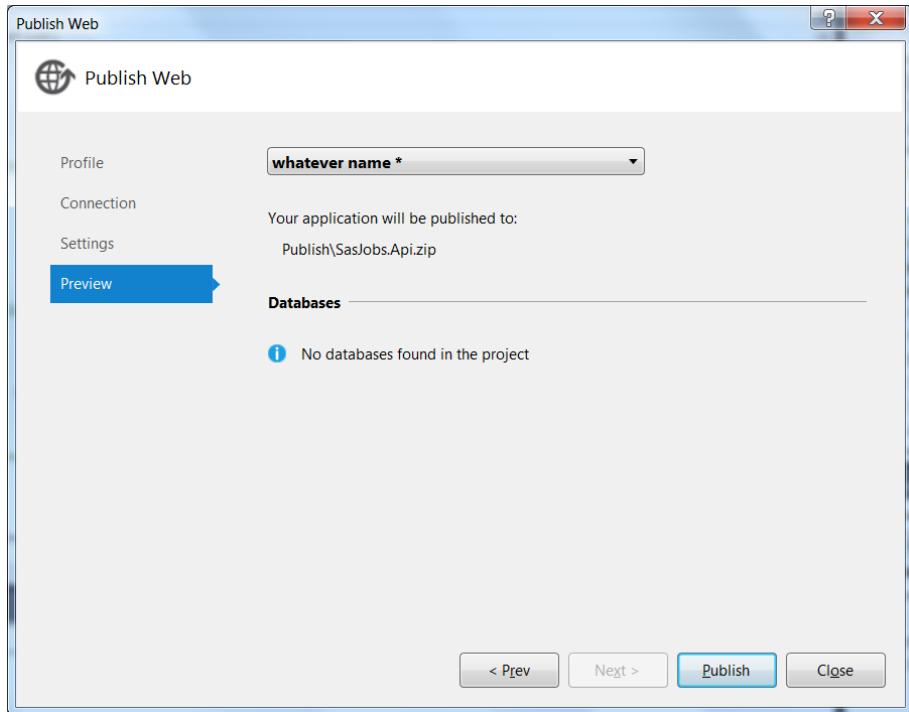
3.2.4 Create web deploy package

Note: the Sas jobs API is provided in the “SasJobsApi-Publish” folder in the “Installation Package”. Skip to Section 3.2.5.

Perform this step if a deployment package is not available already. Load the SasJobs.Api project on Visual Studio. Click build -> publish. Then select the production profile and click next until the package is generated. The package will be found under the “publish” folder at the root of the project.







3.2.5 Deploy the package

Copy the “publish” directory to a temporary location in the web server. From a command line run “SasJobs.Api.deploy.cmd /t” to test the deployment package. If everything looks right, run “SasJobs.Api.deploy.cmd /y” to deploy.

Windows 10 note:

I. Copy “SasJobs.Api-Publish” to “C:\Temp”.

II. on the Command prompt

```
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Peter>C:\Temp\Sasjobs.Api.deploy.cmd /t
SetParameters from:
"C:\Temp\Sasjobs.Api.SetParameters.xml"
You can change IIS Application Name, Physical path, connectionString
or other deploy parameters in the above file.
-----
Start executing msdeploy.exe
-----
"C:\Program Files\IIS\Microsoft Web Deploy V3\msdeploy.exe" -source:package='C:\Temp\Sasjobs.Api.zip' -dest:auto,includeAcls="False" -verb:sync -disableLink:AppPoolExtension
on - disableLink:ContentExtension - disableLink:CertificateExtension - setParamFile:"C:\Temp\Sasjobs.Api.SetParameters.xml" -whatif
Info: Adding ACL's for path (Sasjobs.Api)
Info: Adding ACL's for path (Sasjobs.Api)
Total changes: 2 (0 added, 0 deleted, 2 updated, 0 parameters changed, 0 bytes copied)

C:\Users\Peter>C:\Temp\Sasjobs.Api.deploy.cmd /y
SetParameters from:
"C:\Temp\Sasjobs.Api.SetParameters.xml"
You can change IIS Application Name, Physical path, connectionString
or other deploy parameters in the above file.
-----
Start executing msdeploy.exe
-----
"C:\Program Files\IIS\Microsoft Web Deploy V3\msdeploy.exe" -source:package='C:\Temp\Sasjobs.Api.zip' -dest:auto,includeAcls="False" -verb:sync -disableLink:AppPoolExtension
on - disableLink:ContentExtension - disableLink:CertificateExtension - setParamFile:"C:\Temp\Sasjobs.Api.SetParameters.xml"
Info: Adding ACL's for path (Sasjobs.Api)
Info: Adding ACL's for path (Sasjobs.Api)
Total changes: 2 (0 added, 0 deleted, 2 updated, 0 parameters changed, 0 bytes copied)

C:\Users\Peter>
```

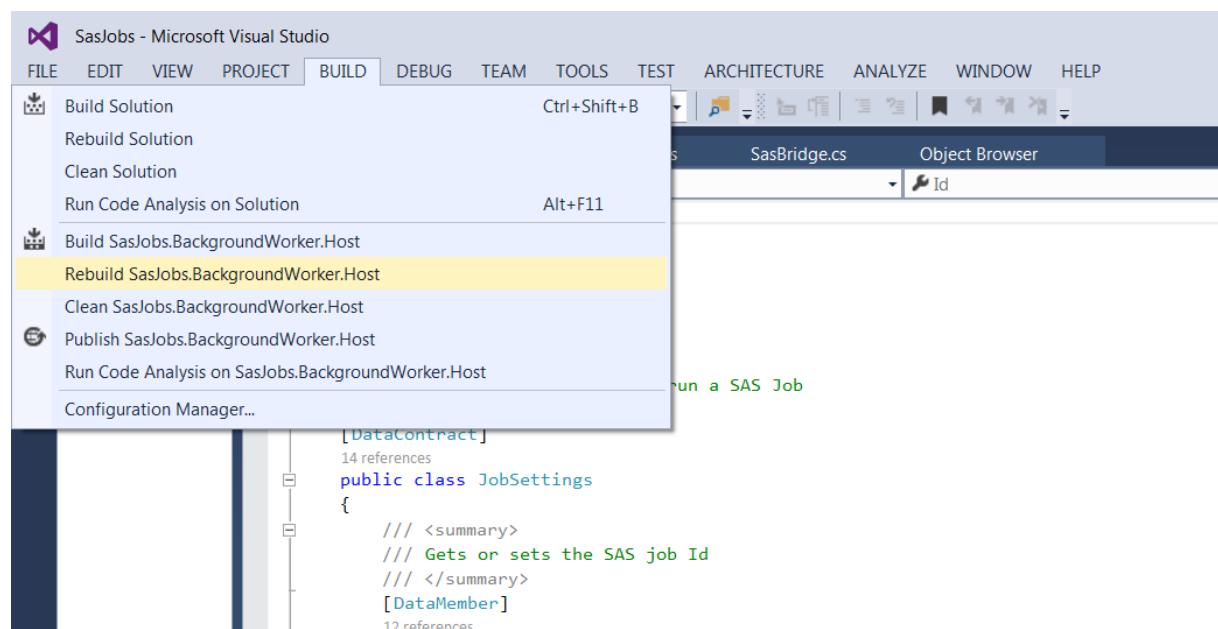
3.3 Sas Jobs Server

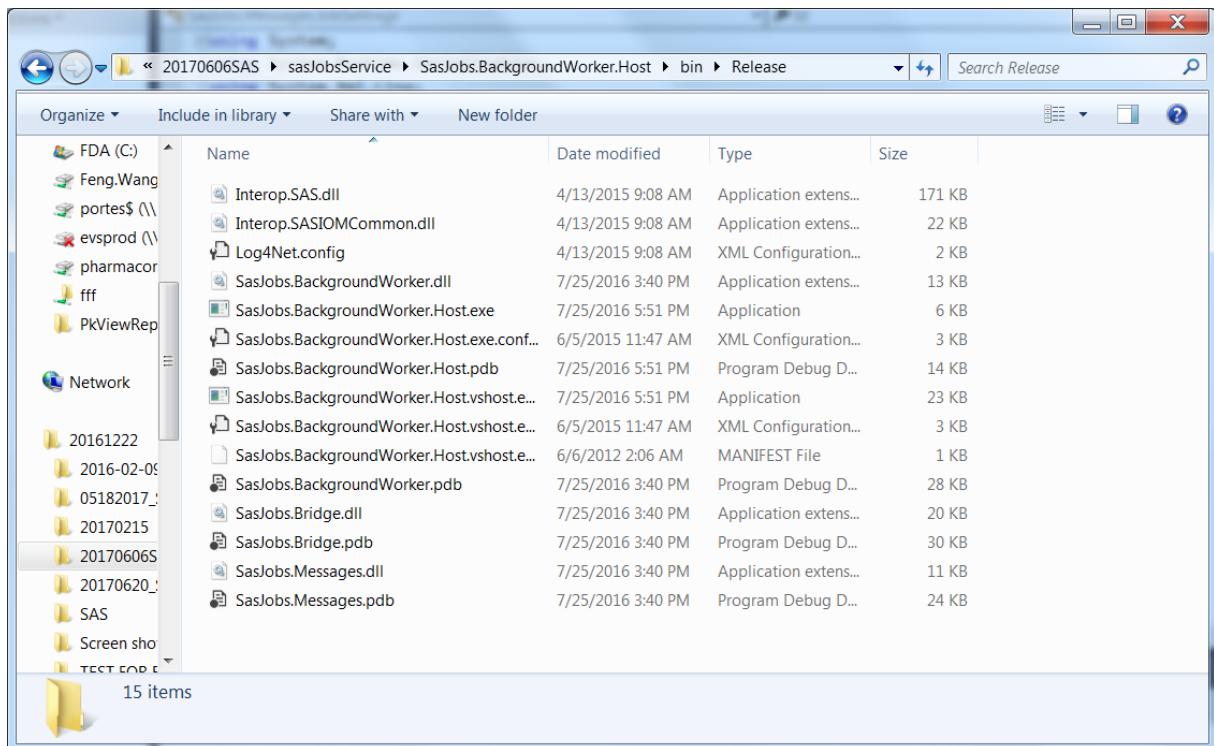
The Sas Jobs server is implemented as a background worker capable of running on a number of hosts. Hosting it on a IIS would not be of much help since we would not be able to ensure the persistence/continuity of the long-running jobs. A windows service host is being developed, but in the meantime the background worker is hosted on a standalone command line program.

3.3.1 Build the release package

Note: BackgroundWorker.Host is already provided under “Installation package\OCP\Sasjobs.Standalone”. Skip this section 3.31.

Under the SasJobs solution there is a project called BackgroundWorker.Host. Building this project from Visual studio in Release Mode will create a folder bin/Release in the project folder.





3.3.2 Allow the server to open port 5454

To allow the background server to register urls at the port 5454, we need to execute the following command at a command prompt in the app server:

```
netsh http add urlacl url=http://+:5454/ user=User-Name
```

Tips: You may need change “User-Name” to your laptop user account. And create a .bat (.cmd) file include the following line of text:

```
netsh http add urlacl url=http://+:5454/ user=peter
```

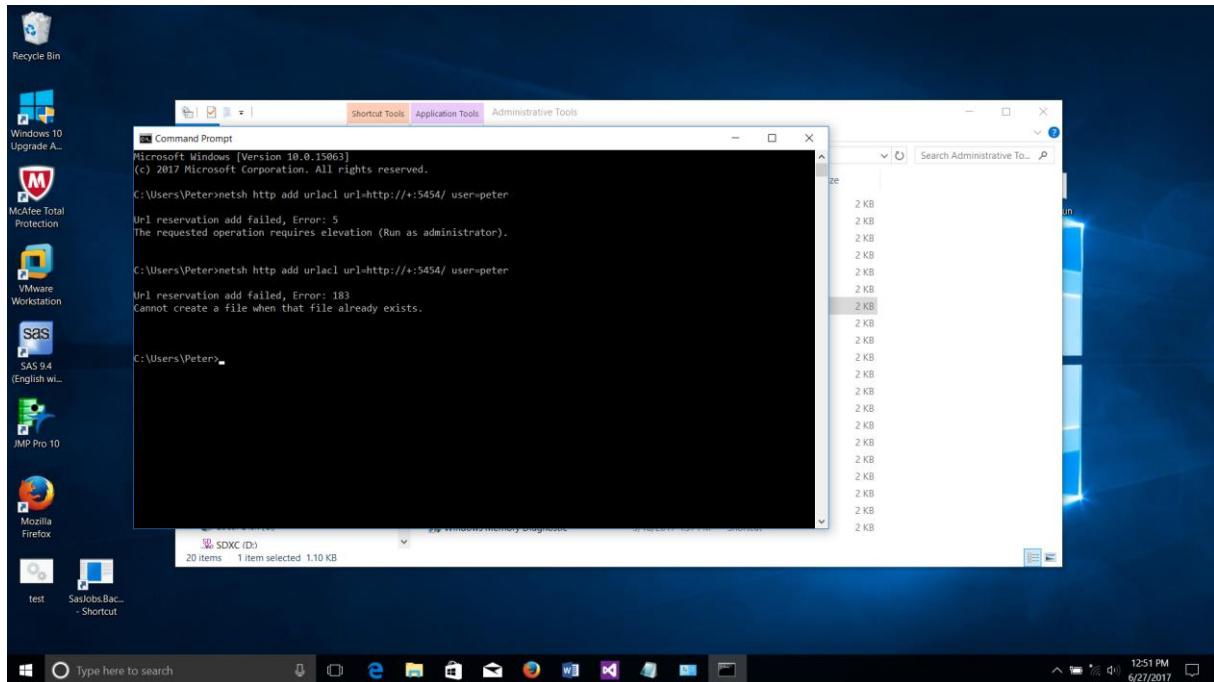
right click the .bat file, and run it as administrator.

```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\AD_APP_EPMM>netsh http add urlacl url=http://+:5454/ user=FDSA_OCP_PROD

URL reservation successfully added

C:\Users\AD_APP_EPMM>
```



Windows 10 note:

I. If required “run as administrator”:

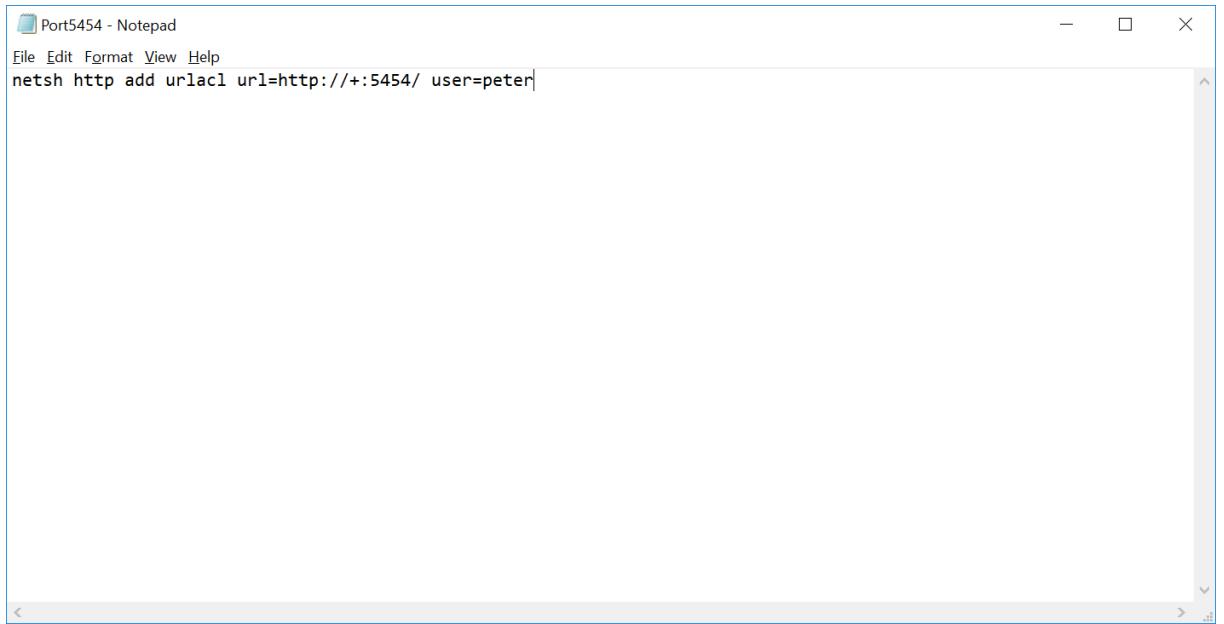
A screenshot of a Windows 10 Command Prompt window titled "Command Prompt" with the path "C:\Users\Peter>". The window shows the same error messages as the previous screenshot, indicating that the operations were attempted while running as a standard user:

```
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Peter>netsh http add urlacl url=http://+:5454/ user=peter
Url reservation add failed, Error: 5
The requested operation requires elevation (Run as administrator).

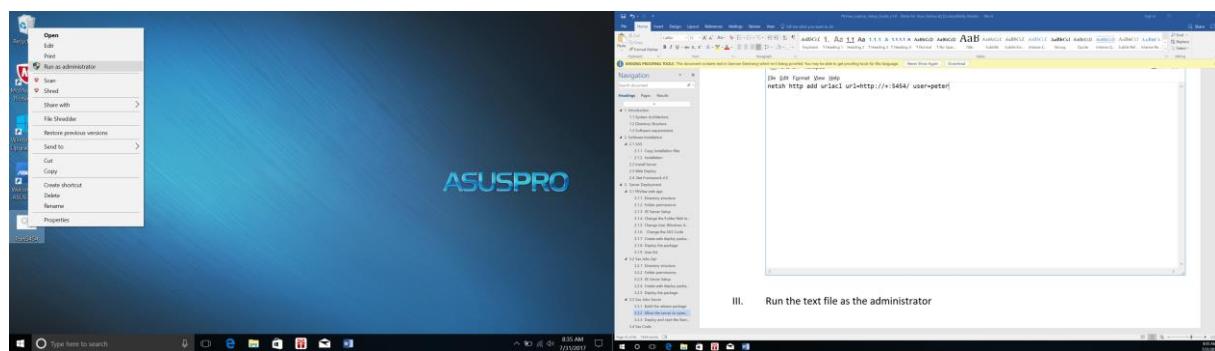
C:\Users\Peter>
```

II. Create a Text file named “Port5454.cmd”

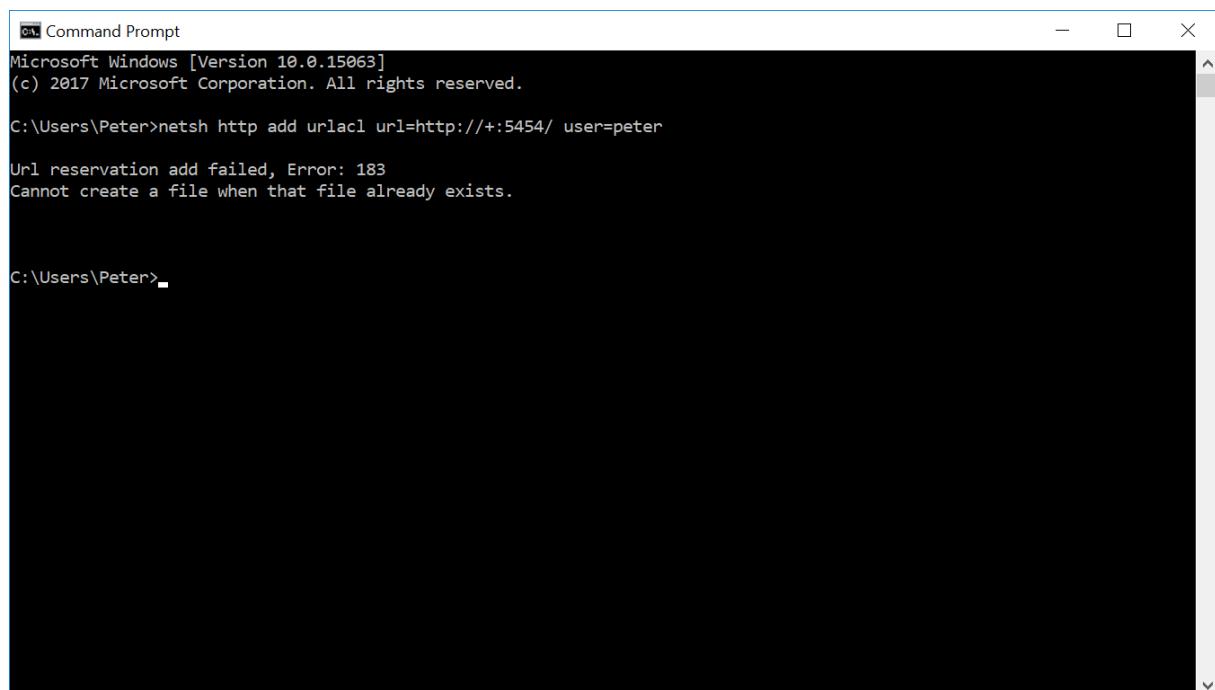


```
Port5454 - Notepad
File Edit Format View Help
netsh http add urlacl url=http://+:5454/ user=peter
```

III. Run the text file as the administrator



IV. Confirm



3.3.3 Deploy and start the Standalone Host

SasJobs.Standalone is already provided in “Installation package\OCP\Sasjobs.Standalone”. Skip this Section 3.3.3.

We will simply copy the Release folder to the D:\CompanyName directory of the production app server and rename it to “SasJobs.Standalone”. Then, for easy access when we need to start up the server we will create a shortcut in the desktop called “Start Sas Jobs Service” pointing to “D:\CompanyName\SasJobs.Standalone\ SasJobs.BackgroundWorker.Host.exe

If it doesn’t exist yet, create a folder called “Stored Procedures” inside the “SasJobs.Standalone” folder. This is where the SAS code will be located and the server needs to find this folder upon start.

To start the host as the service account, shift+right click on the desktop icon -> Run as different user. Start it as “[Current User Account](#)” with the corresponding password.

3.4 Sas Code

SAS code library is already provided in “Installation package\OCP\Sasjobs.Standalone\Stored Procedures”. Skip this Section 3.4.

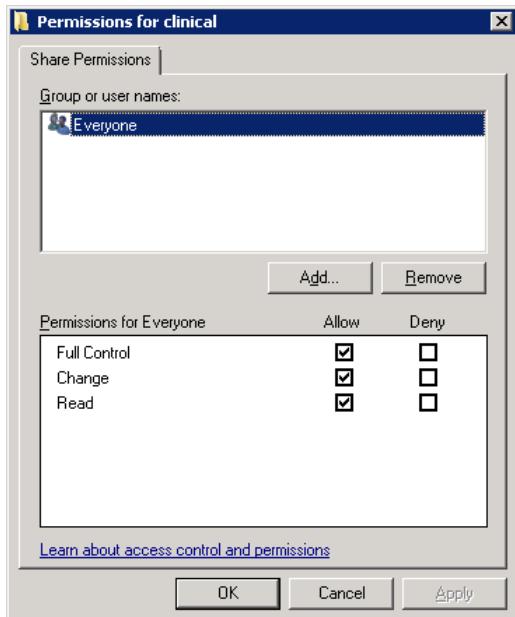
To deploy a particular version of the SAS code, just replace the “D:\CompanyName\SasJobs.Standalone\Stored Procedures” directory with the updated version of the code.

The folder “D:\CompanyName\SasJobs.Standalone\Stored Procedures\Output Files\PkView” must be created if not present.

4. Additional configuration actions

4.1 Share clinical data

Currently PkView relies on the clinical data folder of the app server to be available as a network share in order to upload clinical data. Right click the ‘D:\CompanyName\data\clinical’ folder (create it if not existing) and select Properties -> Sharing -> Advanced Sharing -> Permissions. With ‘Everyone’ Selected, check ‘Full control’.

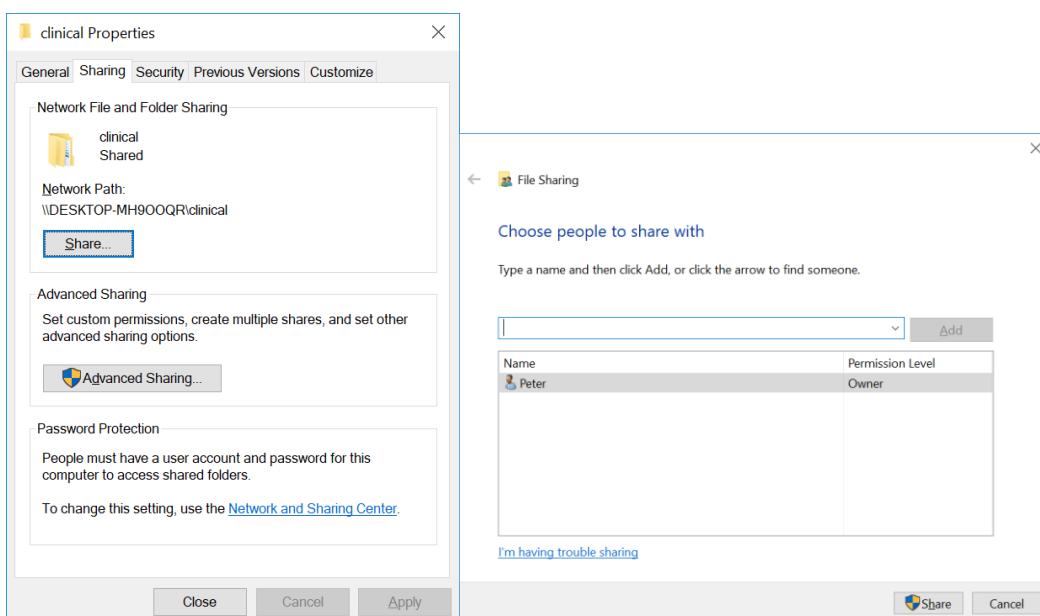


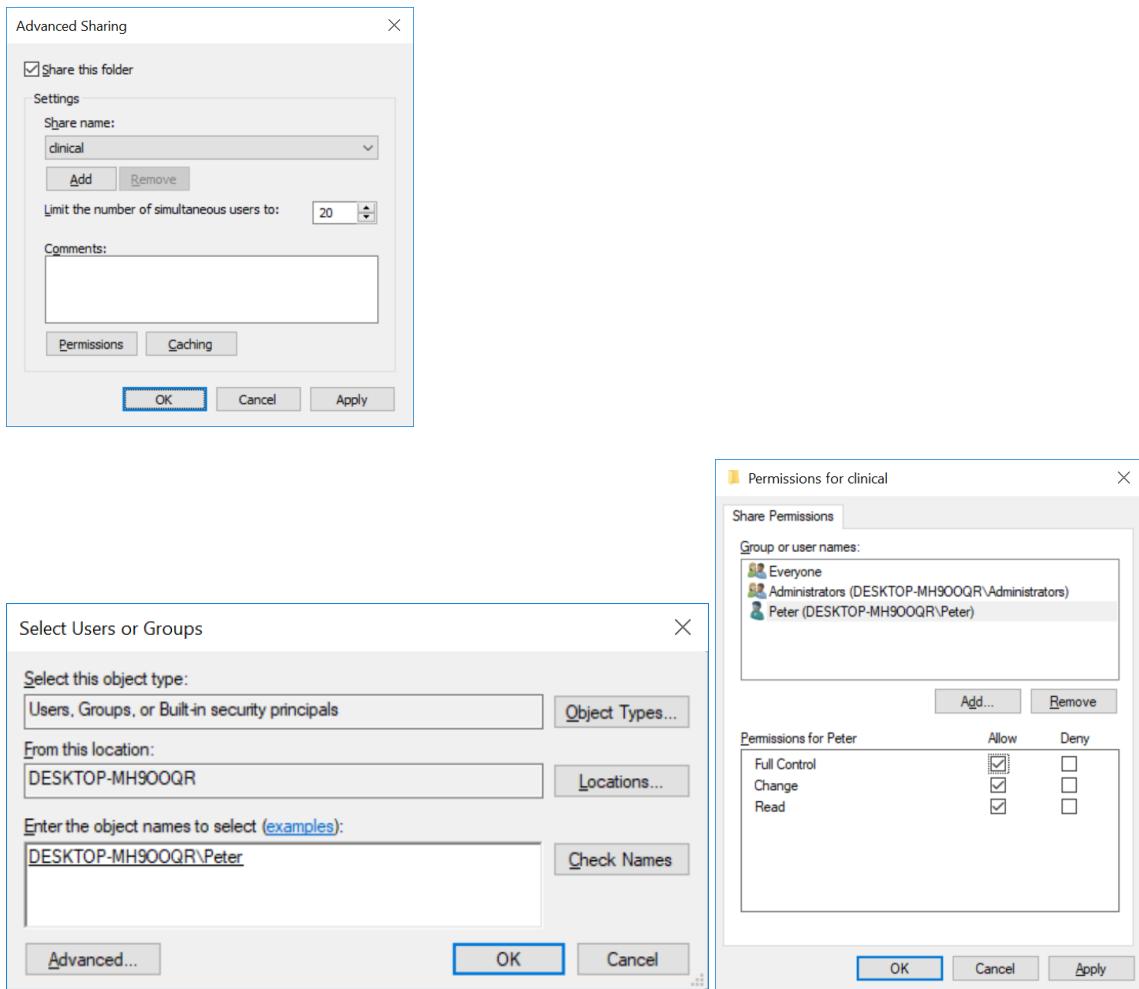
If in PROD Server, We can't share this folder to everyone because the security reason, need share to administrators only, only these administrators can upload NDA data to clinical data folder.

Current User Account must add to share permissions on Laptop.

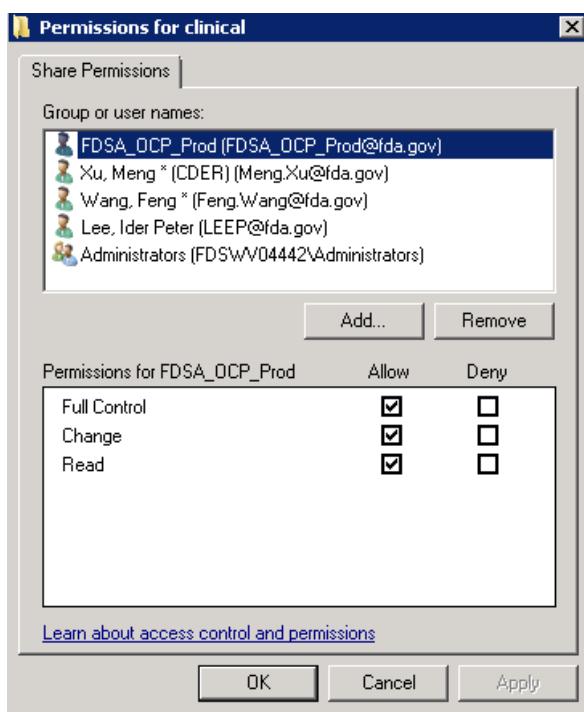
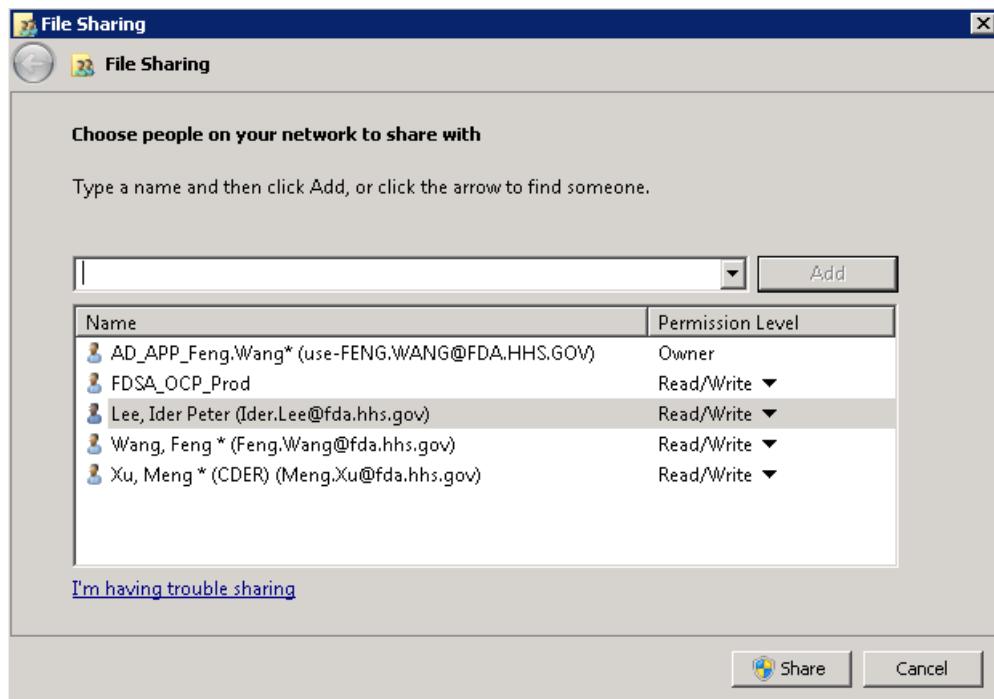
Please notice: we must share the folder first(Properties -> Sharing -> Share), add users who you wat to share, then add the users in “Properties -> Sharing -> Advanced Sharing -> Permissions”, if you make the Advanced Sharing first, it will sharing to everyone automatically!

Windows 10 note:



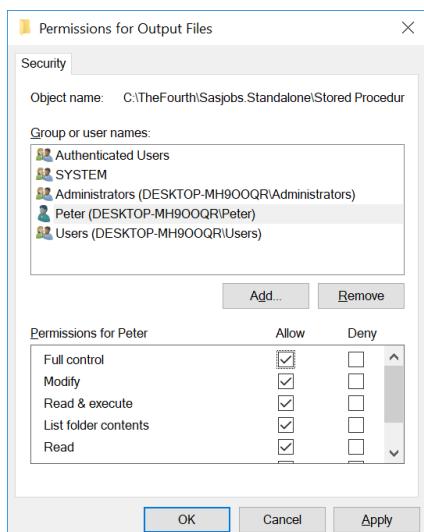
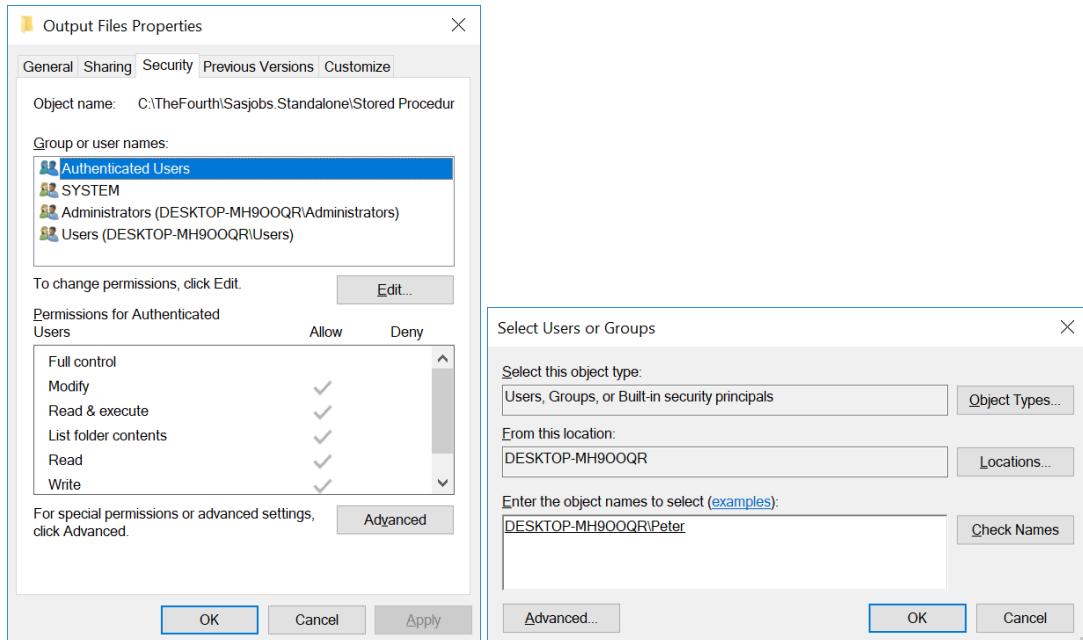


Tips: sometimes , you may also need share clinical data folder to “Everyone”, because SAS may need copy some files to this folder. You must keep the path of clinical folder correct. Repeat the above steps for “Everyone”



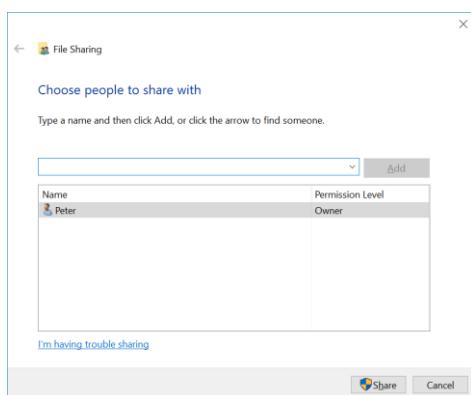
4.2 Share output folder

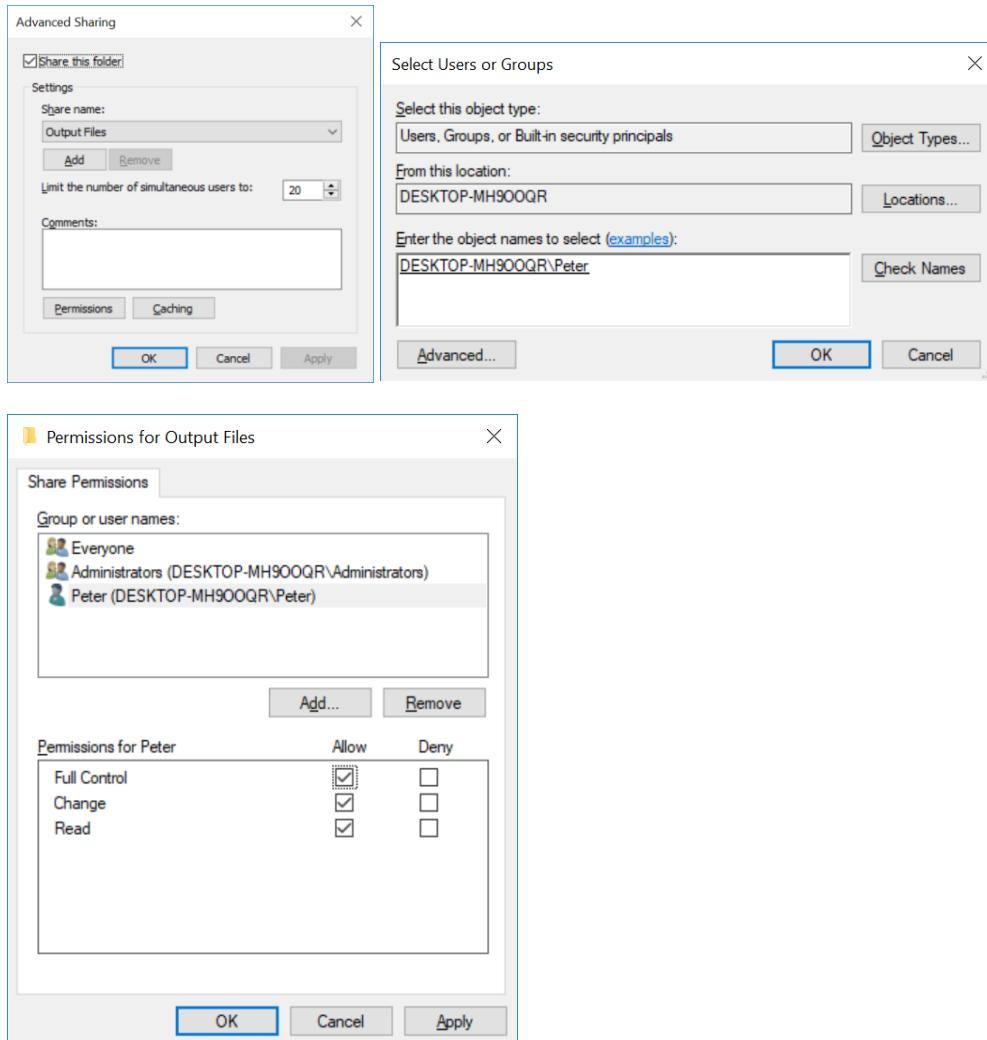
Currently pkView browses the output folder in the app server from the web server for a number of reasons. We have to give [Current User Account](#) full control of the folder "D:\CompanyName\SasJobs.Standalone\Stored Procedures\Output Files" like we did in 3.1.2.



After permissions are set we will proceed to share the folder with [Current User Account](#).

Tips: sometimes , you may need share output folder to “Everyone”. You must keep the path of output folder is correct. Repeat the above steps for “Everyone”.

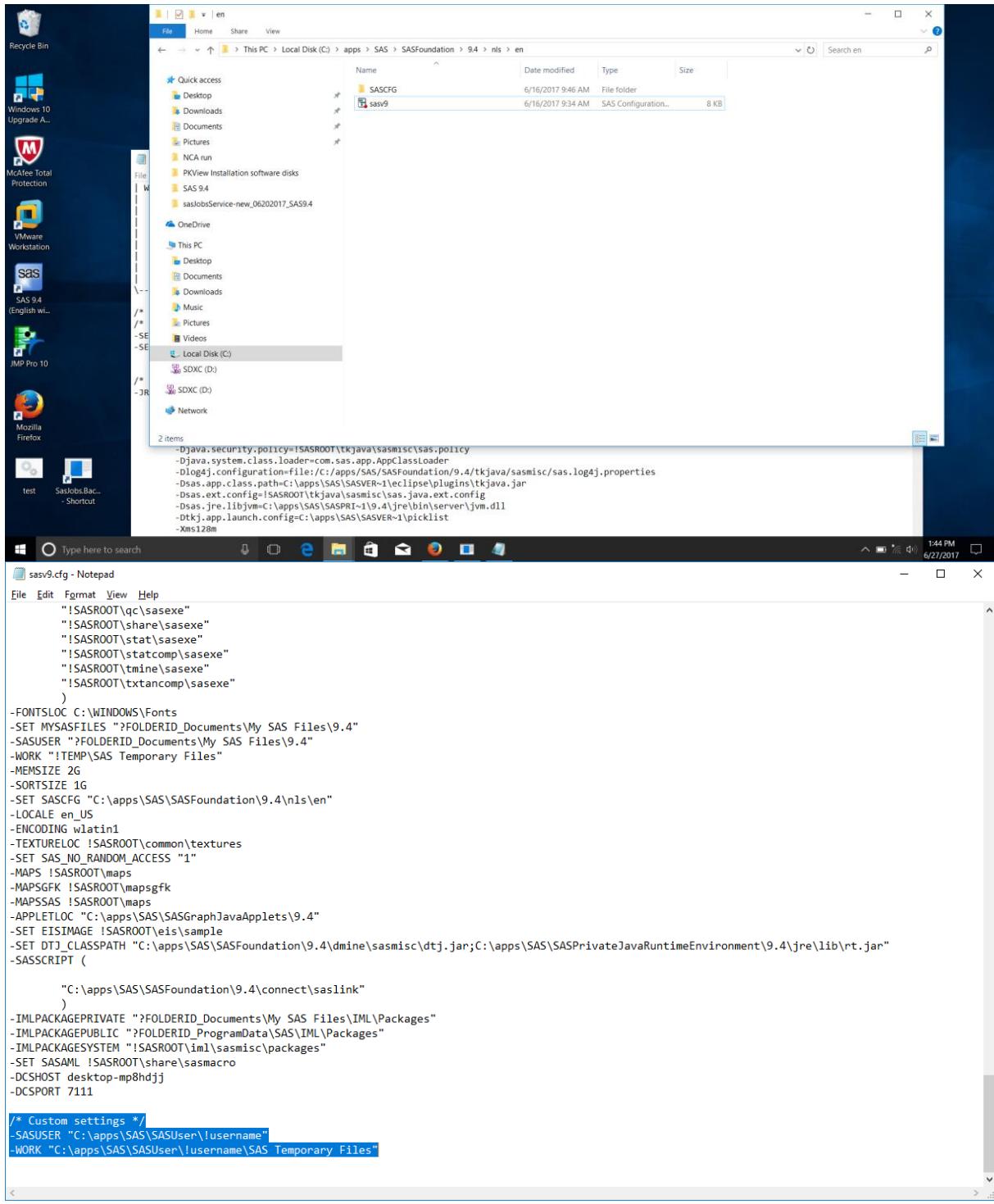




4.3 SAS

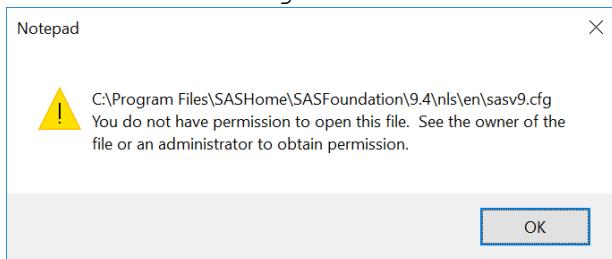
We will perform some customizations over the SAS default configuration. Please find the file name "sasv9" in the SAS installation folder, usually at "C:\Program Files\SASHome\SASFoundation\9.4\nls\en\sasv9". Append the following lines at the end:

```
/* Custom settings */
-SASUSER "D:\apps\SAS\SASUser\!username"
-WORK "D:\apps\SAS\SASUser\!username\SAS Temporary Files"
```



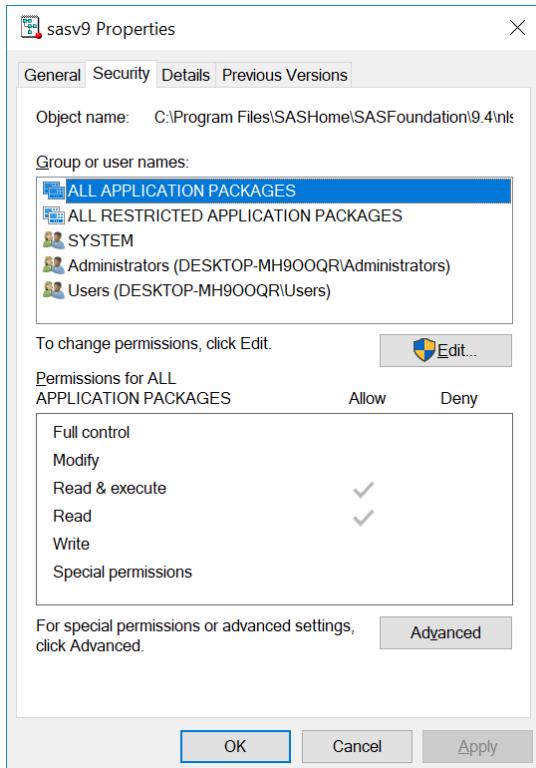
Windows 10 note:

I. Error message

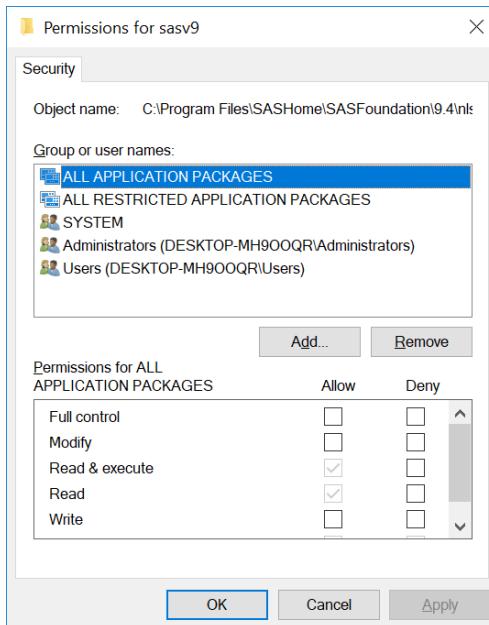


Solution:

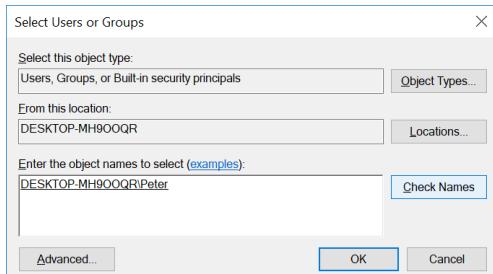
Right click Sasv9.cfg → property → security



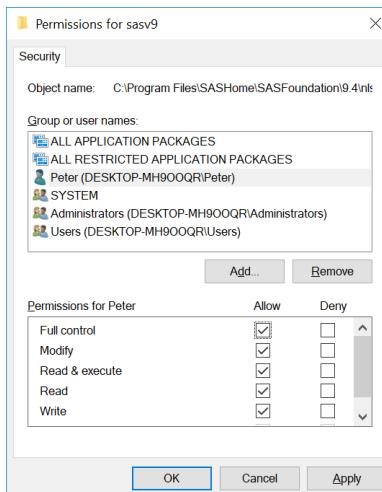
Edit



Add



Full control



Add custom setting to sasv9.cfg

```
sasv9 - Notepad
File Edit Format View Help
    "!SASROOT\txtancomp\sasexe"
)
-FONTSLOC C:\WINDOWS\Fonts
-SET MYSASFILES "?FOLDERID_Documents\My SAS Files\9.4"
-SET MYSASUSER "?FOLDERID_Documents\My SAS Files\9.4"
-WORK "TEMP\SAS Temporary Files"
-MEMSIZE 2G
-SORTSIZE 1G
-SET SASCFG "C:\Program Files\SASHome\SASFoundation\9.4\nls\en"
-LOCALE en_US
-ENCODING wlatin1
-TEXTURELOC !SASROOT\common\textures
-SET SAS_NO_RANDOM_ACCESS "1"
-MAPS !SASROOT\maps
-MAPSGF !SASROOT\mapsgfk
-MAPSSAS !SASROOT\maps
-APPLETLOC "C:\Program Files\SASHome\SASGraphJavaApplets\9.4"
-SET EISIMAGE !SASROOT\eis\sample
-SET DTJ_CLASSPATH "C:\Program Files\SASHome\SASFoundation\9.4\dmine\sasmisc\dtj.jar;C:\Program Files\SASHome\SASPrivateJavaRuntimeEnvironment\9.4\jre\lib\rt
-SASSCRIPT (
    "C:\Program Files\SASHome\SASFoundation\9.4\connect\saslink"
)
-IMLPACKAGEPRIVATE "?FOLDERID_Documents\My SAS Files\IML\Packages"
-IMLPACKAGEPUBLIC "?FOLDERID_ProgramData\SAS\IML\Packages"
-IMLPACKAGESYSTEM "!SASROOT\iml\sasmisc\packages"
-SET SASAML !SASROOT\share\sasmacro
-DCSHOST 10.0.0.125
-DCSPORT 7111

/* Custom settings */
-SET MYSASUSER "D:\apps\SAS\SASUser\!username"
-WORK "D:\apps\SAS\SASUser\!username\SAS Temporary Files"
```

Save

5. Start SAS Service and Run PkView

5.1 Start SAS Service

Double click:

"D:\CompanyName\SasJobsService.WindowsService\SasJobs.BackgroundWorker.Host.exe"

5.2 Run PkView

Open PkView address: <http://localhost/>.

(IE explorer)

Message : Local host not responding

Wait for a few seconds to 1 minute

6. About SAS 9.4 & 9.3

If you use SAS 9.4, you need use the PkView codes and SAS codes for SAS 9.4, many codes are different from PkView under SAS 9.3 currently.

This guide is valid for user to deploy PkView under SAS 9.4, the setup method is same, just the PkView codes and SAS codes are not same.