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SEAtS Service Broker – Deployment Guide

This document outlines the deployment options, technical considerations and deployment procedure for the on-premise SEAtS Service broker.

Distribution: Internal and SEAtS Clients

Version: 9.3

Last Updated: 17/10/2023

Document Owner: Javier Matarrese

Version Control

DATE	VERSION	CHANGE SUMMARY	CREATED BY
4/8/2017	4.0	Complete rewrite for intro of new devices	Ollie Castle
4/8/2020	9.0		Javier Matarrese
29/10/2021	9.1	Migrated to .NET 5	Javier Matarrese
27/4/2023	9.2	Site binding added	Javier Matarrese
16/10/2023	9.3	Design and content review	Matt Wood
17/10/2023	9.3	Not supported devices removed. Supported software info updated.	Javier Matarrese

Table of Content

Introduction

This document outlines the deployment options, technical considerations and deployment procedure for the on-premise SEAtS Service broker.

The purpose of this SEAtS Service Broker is to handle incoming requests from devices (e.g card readers and bio metric scanners) installed within the client's estate. The service broker handles all the card swipes (each card swipe is a record of a student swiping a card or presenting a fingerprint on a device to mark their attendance) and stores all data in the database which is then sent on to the SEAtS Cloud Platform for attendance management and report generation.

Device Types

SEAtS currently supply these devices: SSW102, SSW104.

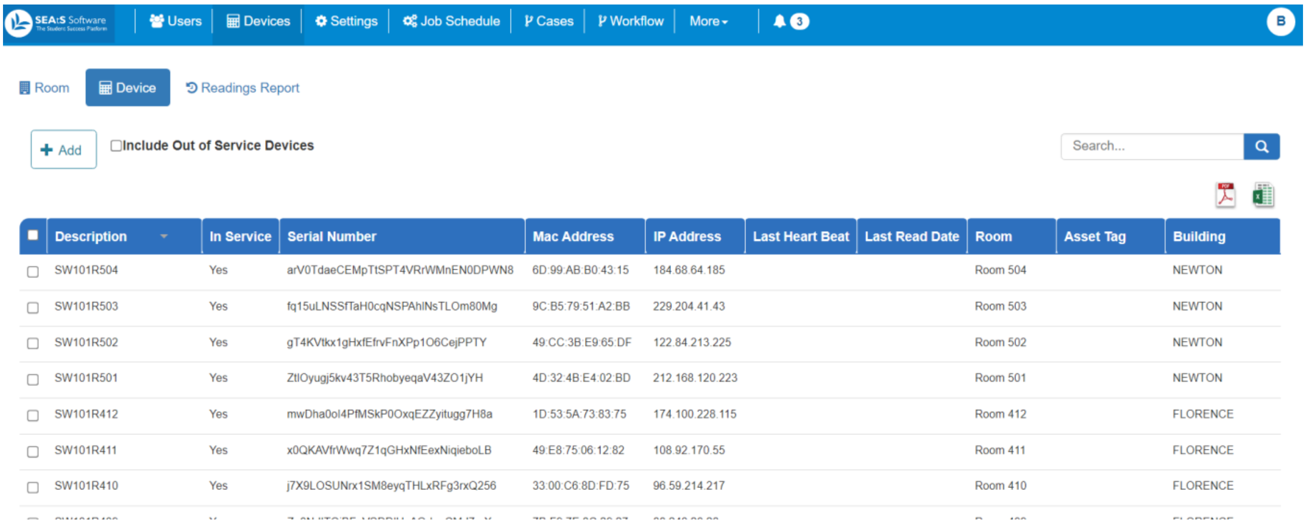
There are other device types in existence across clients, but these devices are now considered deprecated and no longer supplied by SEAtS.

Device	Picture
SSW102	
SSW104	

Service Broker Components

The SEAtS Service Broker is written in using the Microsoft Technology stack (.NET 5 / ASP.NET Core 5 and utilises Microsoft SQL Server for its database. The deployment model for the SEAtS service broker is broken up into three components; web application, database and network topology:

- Web Application (Core)



☐ Include Out of Service Devices

☐	Description	In Service	Serial Number	Mac Address	IP Address	Last Heart Beat	Last Read Date	Room	Asset Tag	Building
☐	SW101R504	Yes	arV0TdaeCEMpTtSPT4VRrWMnEN0DPWN8	6D:99:AB:B0:43:15	184.68.64.185			Room 504		NEWTON
☐	SW101R503	Yes	fq15uLNSSfTaH0cqNSPAhlNsTLOm80Mg	9C:B5:79:51:A2:BB	229.204.41.43			Room 503		NEWTON
☐	SW101R502	Yes	gT4KVtkx1gHxfEfrvFnXPp1O6CejPPTY	49:CC:3B:E9:65:DF	122.84.213.225			Room 502		NEWTON
☐	SW101R501	Yes	ZtlOyugj5kv43T5RhobyeqaV43ZO1jYH	4D:32:4B:E4:02:BD	212.168.120.223			Room 501		NEWTON
☐	SW101R412	Yes	mwDha0ol4PfMSkP0OxqEZZyitugg7H8a	1D:53:5A:73:83:75	174.100.228.115			Room 412		FLORENCE
☐	SW101R411	Yes	x0QKAVfrWwq7Z1qGHxNfEexNiqieboLB	49:E8:75:06:12:82	108.92.170.55			Room 411		FLORENCE
☐	SW101R410	Yes	j7X9LOSUNrx1SM8eyqTHLxRFg3rxQ256	33:00:C6:8D:FD:75	96.59.214.217			Room 410		FLORENCE

The web application provides the interface for device management provides a user interface for SEAtS and University staff to carry out administration and view the status of all devices deployed throughout the client's estate.

The web application has the following requirements:

- ○ Windows Server 2019 (or higher)
- ○ Internet Information Services (IIS)
- ○ .NET 5

- Database

The database provides a central storage for card swipes sent from devices before they are sent to the cloud. It also acts as the central coordination between requests to the web application for device administration tasks to be carried out, and the windows service which carries out the administration tasks.

The system supports the following versions of SQL Server:

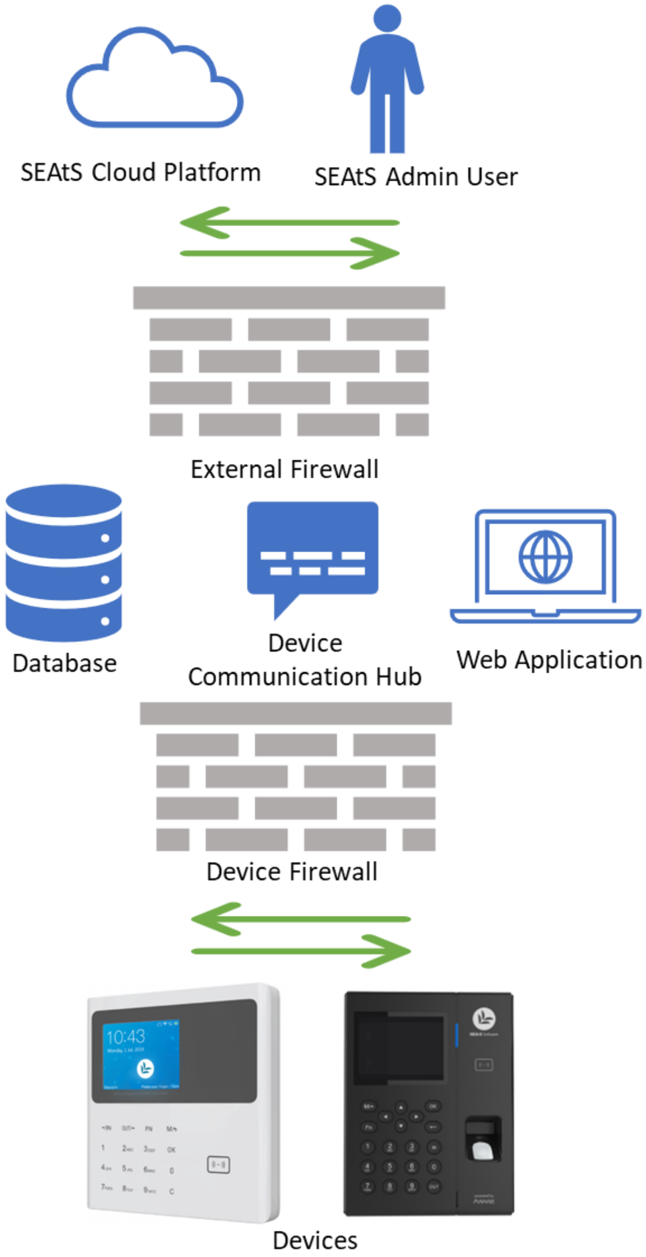
Microsoft SQL Server 2014 (not recommended as reached EOL)	Web Standard Enterprise
Microsoft SQL Server 2016 (not recommended as reached EOL)	Web Standard Enterprise
Microsoft SQL Server 2017	Web Standard Enterprise
Microsoft SQL Server 2019	Web Standard Enterprise
Microsoft SQL Server 2022	Web Standard Enterprise

The functionality used in the database engine are all part of the base install of SQL server and is compatible with all HA options offered by SQL Server (eg. Mirroring, Log Shipping, Always On)

We ask that the university manage the health, backups and maintenance of the database instances. It is very important that a backup schedule is put in place to ensure that log files of the databases to not grow beyond the size of the server.

- Network Topology

The network design and setup for the deployment of devices into a University site varies from client to client, dependant on number of sites, security considerations and existing infrastructure. The suggested deployment for a University is to have a private internal network which is used for device communication to the on-premise service broker. Then a second public internal network which may already exist which is used by administration staff to access the web application d also communication to the SEAtS cloud-based platform.

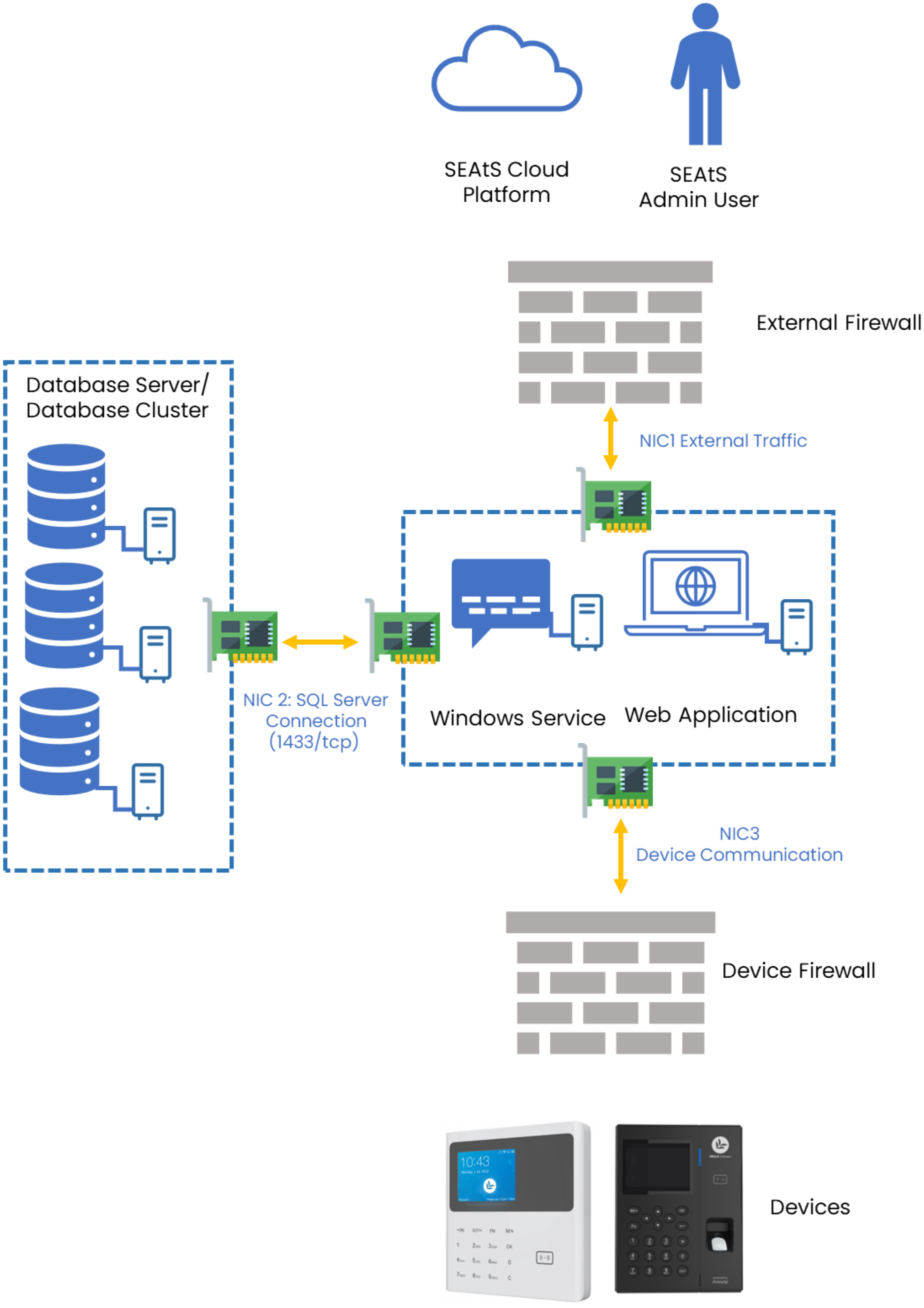


Device Selection	External Firewall	Device Firewall
SSW102 / SSW104	https://XXbusinessapi.seats.cloud/ should be accessible (please check this if you have any DNS-layer security in place). XX to be replaced depending on client location	5010/tcp bidirectional 80/tcp out to device IMCP out to device

The SEAtS operations team will require access to the deployed infrastructure either through RDP over VPN or via Team Viewer. This is to enable device configuration and upgrade as required to the components of the application. Updates and changes are done through the existing University 'Release Management' or 'Change Control' process to ensure SEAtS are in full compliance with University standards.

A typical configuration for the SEAtS service broker would be to deploy a separate database server or utilise an existing SQL Server cluster and then deploy a server with two or three network interfaces connected to the required networks:

- **NIC 1:** Web based admin traffic through external firewall and external traffic to the SEAtS cloud based platform
- **NIC 2:** SQL Server Connection (1433/tcp)
- **NIC 3:** Device traffic through device firewall


SEAtS Cloud Platform
SEAtS Admin User
External Firewall
NIC1 External Traffic
Database Server/ Database Cluster
NIC 2: SQL Server Connection (1433/tcp)
Windows Service
Web Application
NIC3
Device Communication
Device Firewall
Devices

Deployment Configurations

The deployment of the on-premise service broker can vary from, installation on a single server, to a dual data centre high availability setup with each component deployed on a separate machine. With a single server deployment, although it does not have true high availability, the card readers have an inbuilt memory of 10,000+ swipes so if the on-premise server is down, it will keep retrying until it has successfully sent data.

The three components can be configured in a multitude of configurations depending on the high availability requirements of the University and the underlying platform it is deployed onto. The following configurations would be the most used configurations to date.

- **Single Machine**

  All components are deployed onto a single machine

- **Two Machines**

  The database is broken out into a second machine and the web application

- **Load Balanced HA**

  The web application is hosted on N+1 machines which connects to a HA cluster of SQL server.

The recommended deployment and considered best practise in any application is to host the SQL Server database on a separate server. This reduces contention for CPU and memory between IIS and SQL Server when under high load.

Each component can coexist or be separated on single or multiple machines. The only consideration in deploying the solution as described in the network topology section is the firewall and network setup deployed in the University.

Capacity Planning

The sizing and capacity planning for the deployment of the service broker is dependent on the number of devices deployed into the University. The card reader will send a request to the server every time a card is swiped against the reader and will also send a heartbeat to the server every 5 minutes. At peak, a card reader will accept a swipe around every 5 seconds but the distribution of swipes on entry into a lecturer theatre of 200 people can be spread over a period of 10-20 mins so max usage is not a realistic metric.

The on-premise Service Broker has undergone a significant amount of load testing and performance profiling and has be optimised to handle heavy load. It is generally recommended for deployment onto a virtual environment following our default configurations and then tweak the specification as required.

Server	**10-200 devices**	**200-600 devices**	**600+ devices**
Web Application & Windows Service	2 vCPU 4 GB RAM OS Disk – 100GB Data Disk – 80GB	4 vCPU 8 GB RAM OS Disk – 100GB Data Disk – 80GB	8 vCPU 16 GB RAM OS Disk – 100GB Data Disk – 80GB
Database Server	2 vCPU 4 GB RAM OS Disk – 100GB Data Disk – 80GB	4 vCPU 8 GB RAM OS Disk – 100GB Data Disk – 80GB	8 vCPU 16 GB RAM OS Disk – 100GB Data Disk – 80GB

The service broker acts as a relay for sending communications to the SEAtS cloud based platform. There are no specific growth rates on the database because it is designed to remove swipes after a defined period of time which can be configured. In general, the database never grows larger than 1GB for 6 months of usage.

Service Broker Install

The preference is that the SEAtS operations team carry the install and maintenance of the SEAtS Service Broker installed on-premise. The guide is supplied for reference so clients can understand how the application is deployed and configured.

Pre-Install Checklist

Ensure all files have been moved to the Data drive. Here we will use the D: drive as the data drive.

- Website

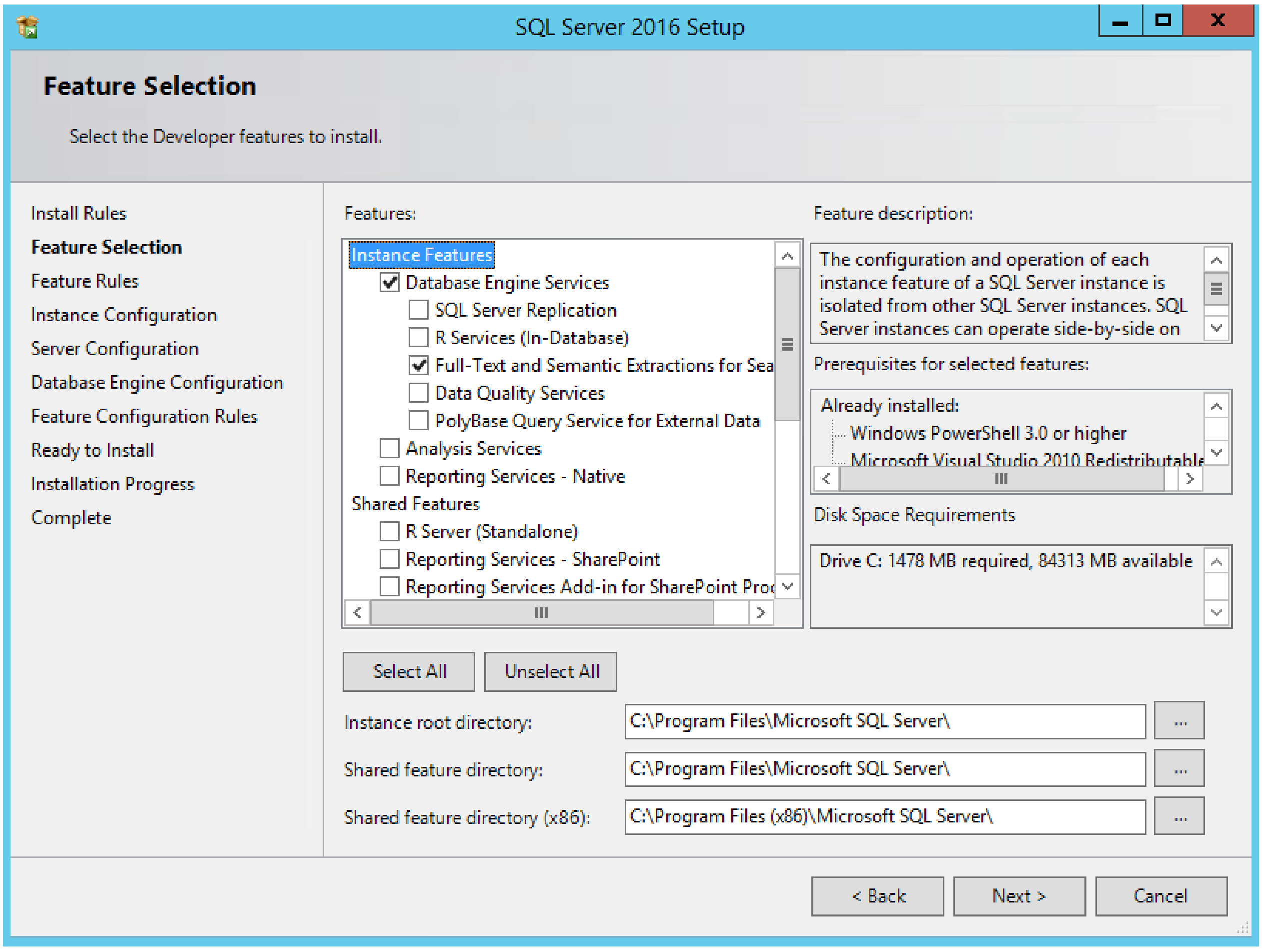
  D:\SEAtS\Website\{build number}

- Database

  D:\SEAtS\Database\{build number}

Database Setup

The edition of SQL Server used for the service broker is dependent on the client and their Microsoft licencing agreements. It is recommended that the university deploy SQL Server 2019 Standard edition (or higher) and take ownership of the SQL Server instance and ensure there is a regular backup schedule in place following the university and Microsoft best practises.



SQL Server 2016 Setup

Feature Selection

Select the Developer features to install.

Features:

Instance Features
- ☑ Database Engine Services
  - ☐ SQL Server Replication
  - ☐ R Services (In-Database)
  - ☑ Full-Text and Semantic Extractions for Sea
  - ☐ Data Quality Services
  - ☐ PolyBase Query Service for External Data
- ☐ Analysis Services
- ☐ Reporting Services - Native

Shared Features
- ☐ R Server (Standalone)
- ☐ Reporting Services - SharePoint
- ☐ Reporting Services Add-in for SharePoint Proc

Feature description:

The configuration and operation of each instance feature of a SQL Server instance is isolated from other SQL Server instances. SQL Server instances can operate side-by-side on

Prerequisites for selected features:

Already installed:
- Windows PowerShell 3.0 or higher
- Microsoft Visual Studio 2010 Redistributable

Disk Space Requirements

Drive C: 1478 MB required, 84313 MB available

Instance root directory: C:\Program Files\Microsoft SQL Server\

Shared feature directory: C:\Program Files\Microsoft SQL Server\

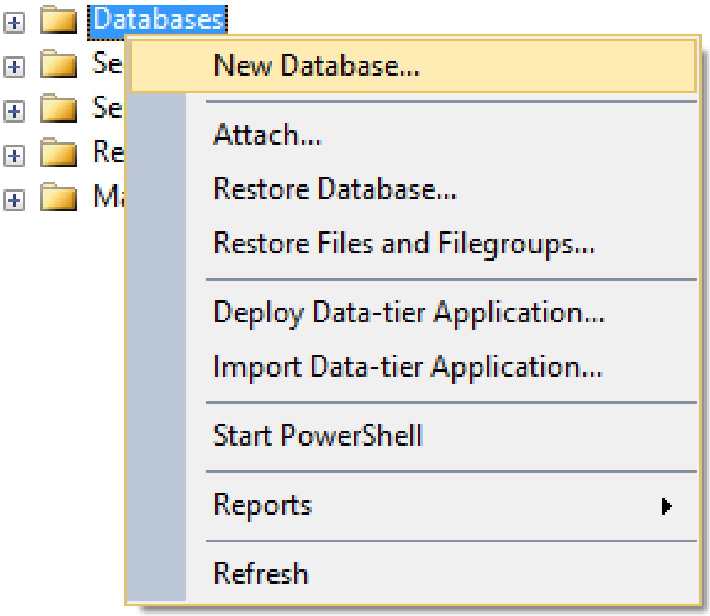
Shared feature directory (x86): C:\Program Files (x86)\Microsoft SQL Server\

When SQL Server is installed, we require two databases to be created:

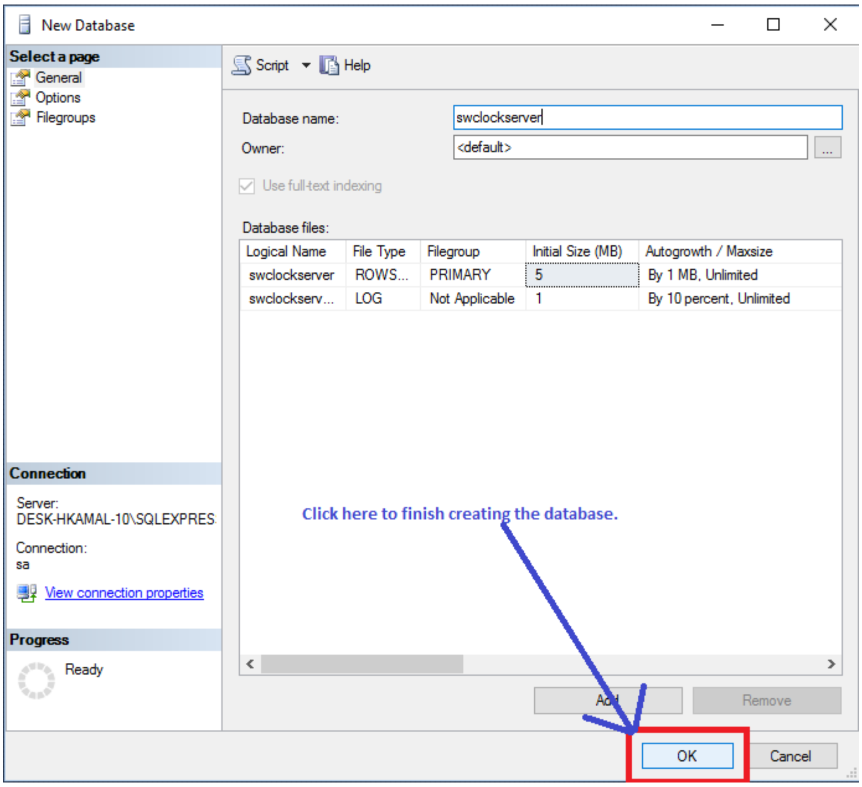
1. **swclockserver** – The primary database for storing swipe data

2. **swhangfire**_– The database for the background processing engine

- Click on “New Database”, a new window will open up where you can enter the database name.


Databases
Se
Se
Re
Ma
New Database...
Attach...
Restore Database...
Restore Files and Filegroups...
Deploy Data-tier Application...
Import Data-tier Application...
Start PowerShell
Reports
Refresh

- Ensure that the database file and the transaction log file is created in the D: drive (data drive) instead of the OS drive.
- Click “OK” to create the database.



Database name: swclockserver

Owner: <default>

☑ Use full-text indexing

Database files:

Logical Name	File Type	Filegroup	Initial Size (MB)	Autogrowth / Maxsize
swclockserver	ROWS...	PRIMARY	5	By 1 MB, Unlimited
swclockserv...	LOG	Not Applicable	1	By 10 percent, Unlimited

Server:
DESK-HKAMAL-10\SQLEXPRES

Connection:
sa

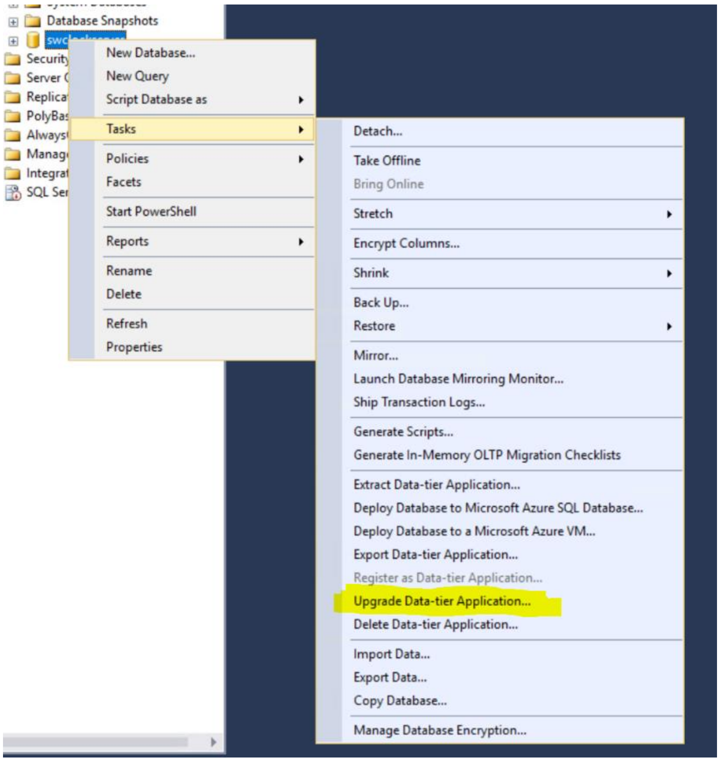
Click here to finish creating the database.

Now you have successfully created a database where all your data from the service broker will be stored.

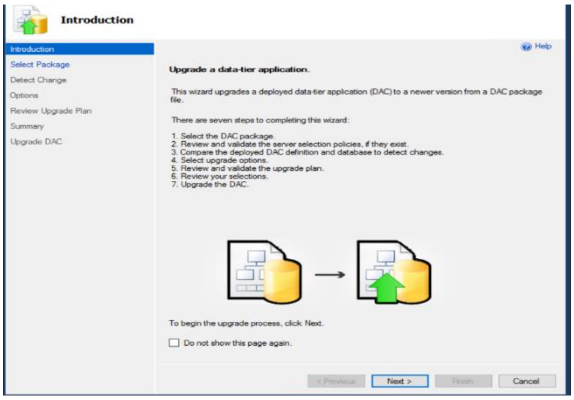
Upgrading the DAC

Once the ‘swclockserver’ database has been created you will need to import the datapac file which contains the schema of the SEAtS.ServiceBroker database.

- In SQL Management Studio right click on the database
- Select Tasks > Upgrade Data-tier Application



- Click Next



Upgrade a data-tier application.

This wizard upgrades a deployed data-tier application (DAC) to a newer version from a DAC package file.

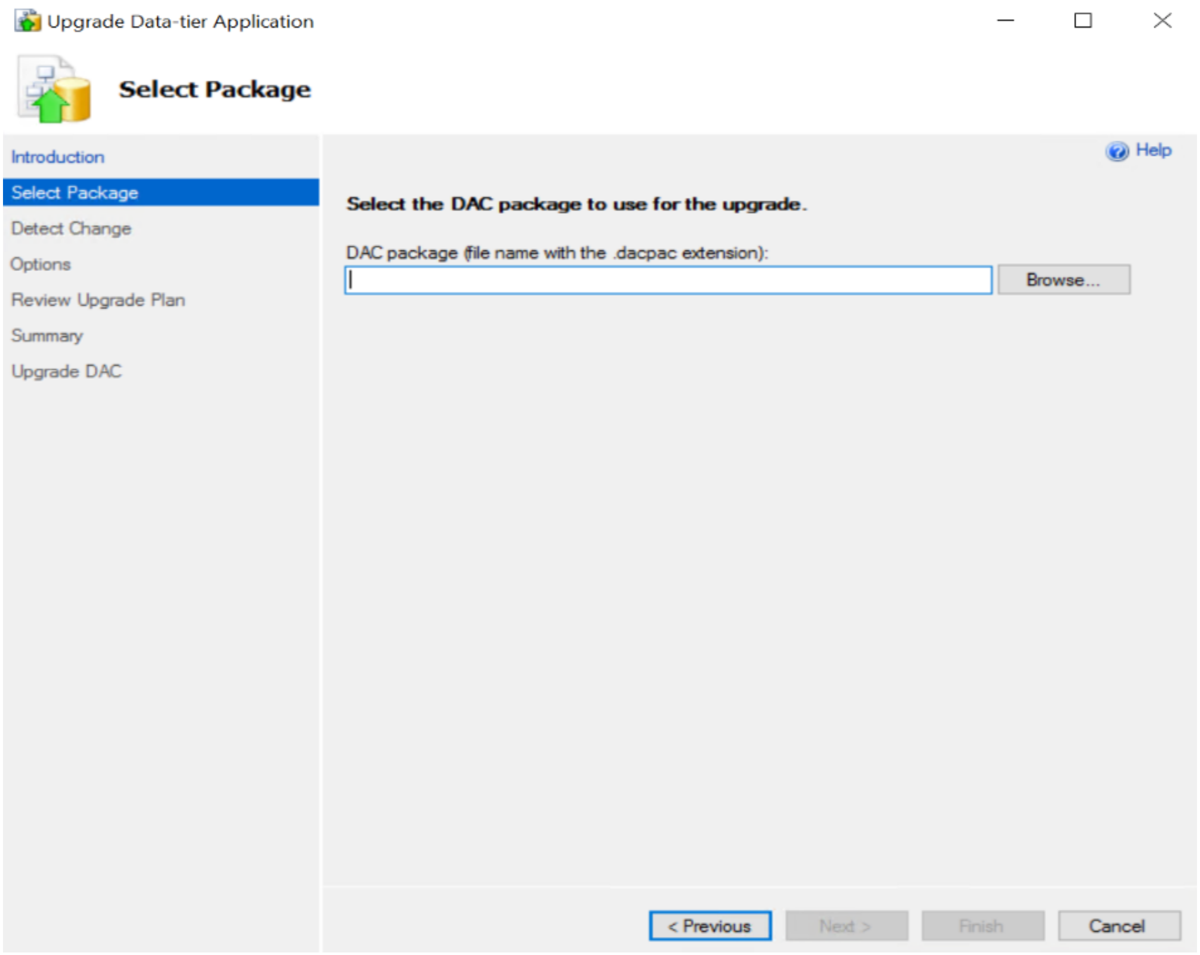
There are seven steps to completing this wizard:

1. Select the DAC package.
2. Review and validate the server selection policies, if they exist.
3. Compare the deployed DAC definition and database to detect changes.
4. Select upgrade options.
5. Review and validate the upgrade plan.
6. Review your selections.
7. Upgrade the DAC.

To begin the upgrade process, click Next.

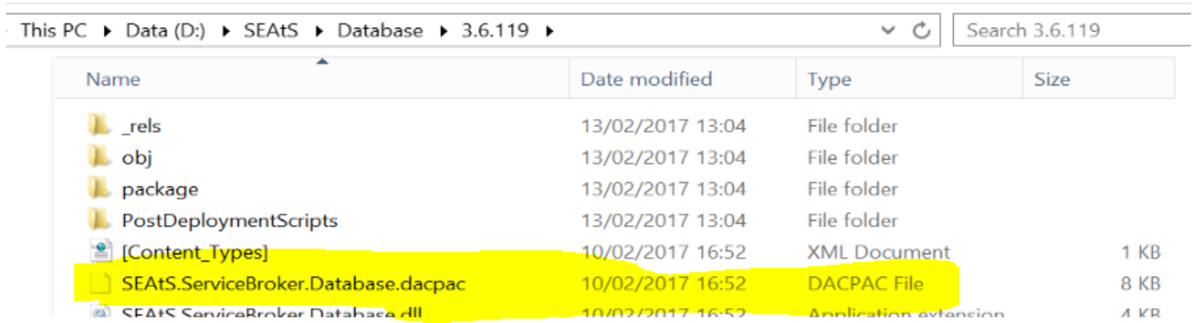
☐ Do not show this page again.

- Browse to find the SEAtS.ServiceBroker.Database file stored in **D:\SEAtS\Database\{build number}**



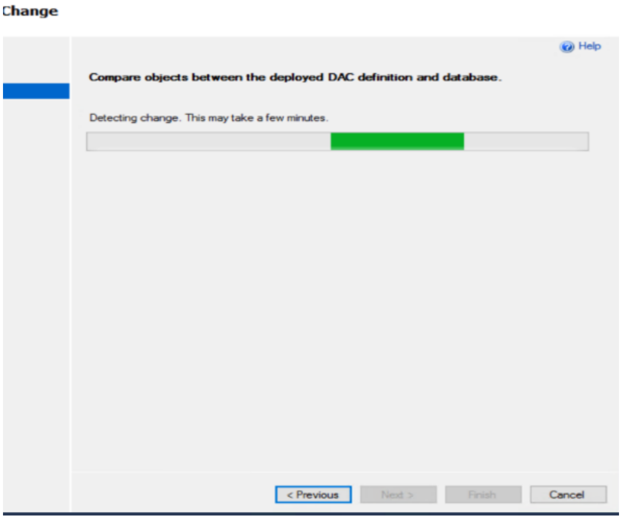
Select the DAC package to use for the upgrade.

DAC package (file name with the .dacpac extension):



Name	Date modified	Type	Size
_rels	13/02/2017 13:04	File folder	
obj	13/02/2017 13:04	File folder	
package	13/02/2017 13:04	File folder	
PostDeploymentScripts	13/02/2017 13:04	File folder	
[Content_Types]	10/02/2017 16:52	XML Document	1 KB
SEAtS.ServiceBroker.Database.dacpac	10/02/2017 16:52	DACPAC File	8 KB
SEAtS.ServiceBroker.Database.dll	10/02/2017 16:52	Application extension	4 KB

- Click Next . The deployment of the DAC may take some time.

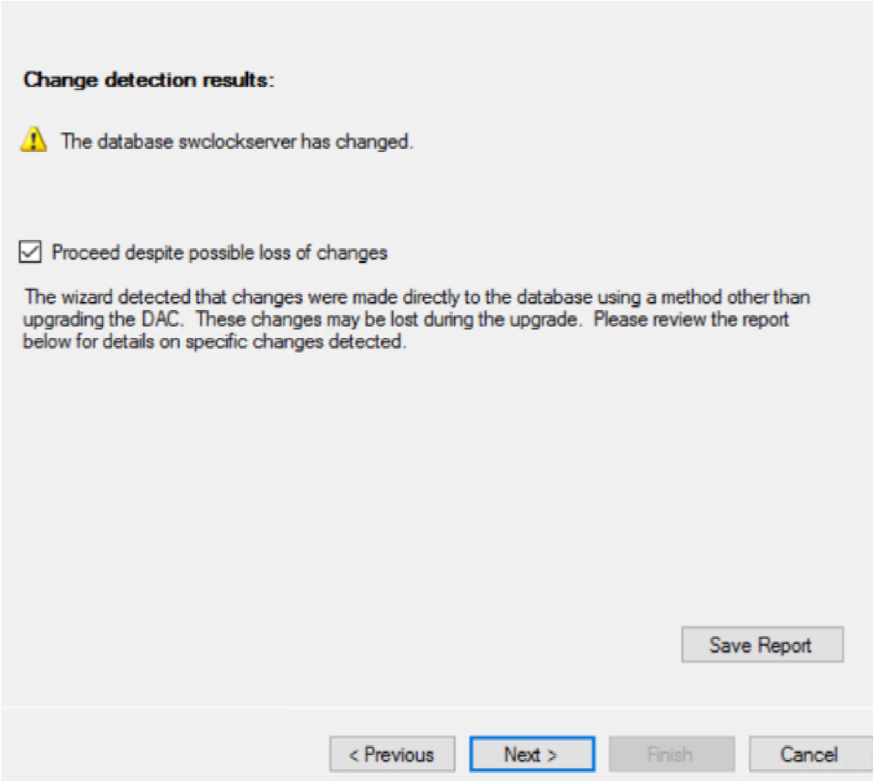


Change

Compare objects between the deployed DAC definition and database.

Detecting change. This may take a few minutes.

- You must tick the 'Proceed despite possible loss of changes' tick box to continue to the next step



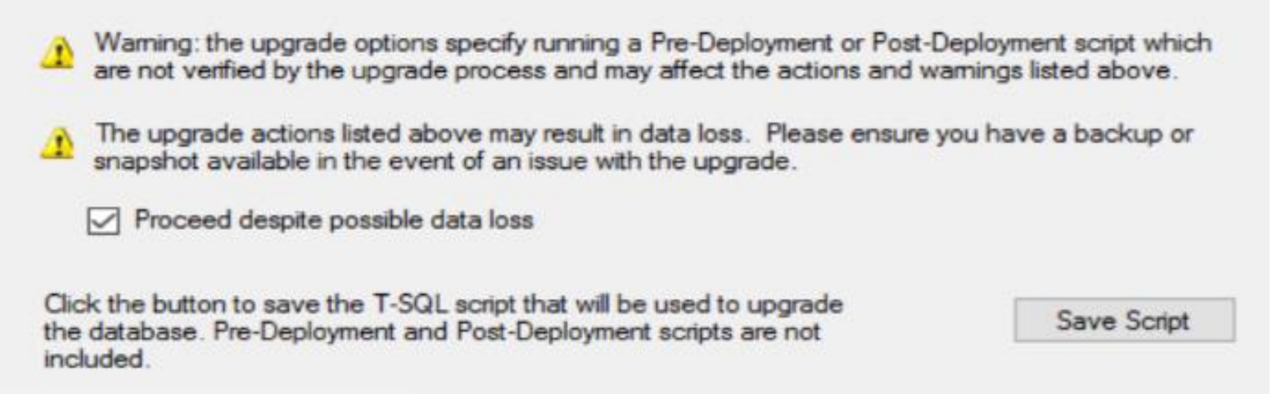
Change detection results:

The database swclockserver has changed.

☑ Proceed despite possible loss of changes

The wizard detected that changes were made directly to the database using a method other than upgrading the DAC. These changes may be lost during the upgrade. Please review the report below for details on specific changes detected.

- Tick the 'Rollback on failure' option box to allow rollback to previous version in case of an issue with the deployment.
- You may receive warnings of potential data loss as part of the upgrade plan review, you should proceed despite this warning.



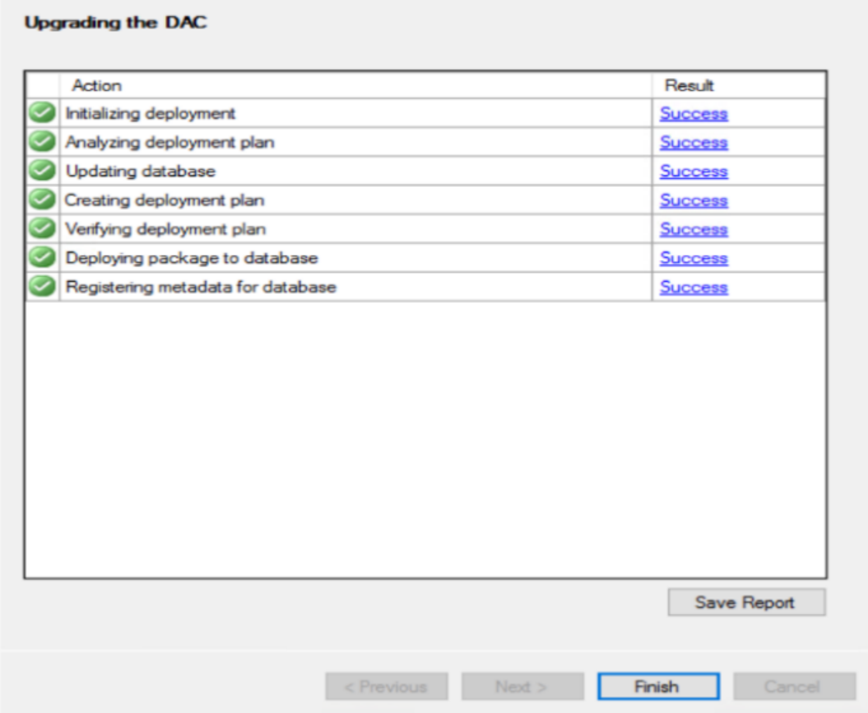
Warning: the upgrade options specify running a Pre-Deployment or Post-Deployment script which are not verified by the upgrade process and may affect the actions and warnings listed above.

The upgrade actions listed above may result in data loss. Please ensure you have a backup or snapshot available in the event of an issue with the upgrade.

☑ Proceed despite possible data loss

Click the button to save the T-SQL script that will be used to upgrade the database. Pre-Deployment and Post-Deployment scripts are not included.

- The deployment should complete successfully.



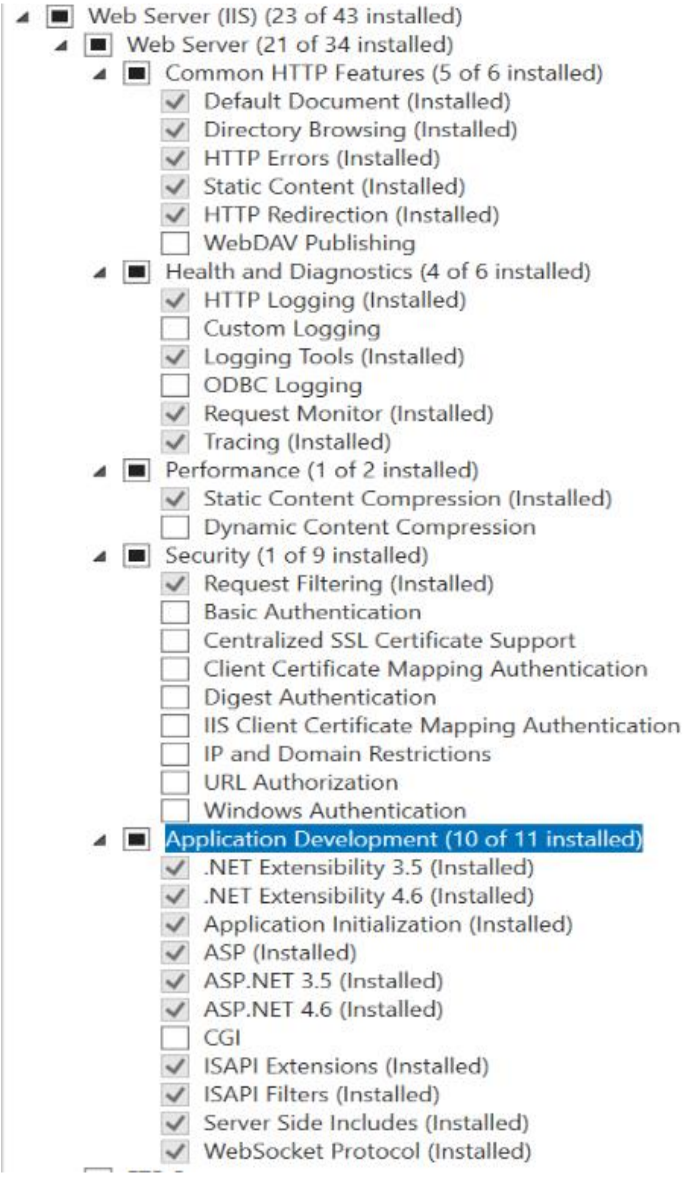
Upgrading the DAC

	Action	Result
✓	Initializing deployment	Success
✓	Analyzing deployment plan	Success
✓	Updating database	Success
✓	Creating deployment plan	Success
✓	Verifying deployment plan	Success
✓	Deploying package to database	Success
✓	Registering metadata for database	Success

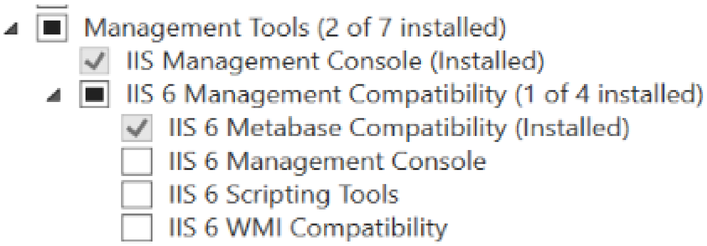
Website Setup

Make sure Internet Information Services (IIS) is installed on the web server of the service broker. If not, then follow these steps to install IIS:

The following features must be installed for IIS.



- ■ Web Server (IIS) (23 of 43 installed)
  - ■ Web Server (21 of 34 installed)
    - ■ Common HTTP Features (5 of 6 installed)
      - ☑ Default Document (Installed)
      - ☑ Directory Browsing (Installed)
      - ☑ HTTP Errors (Installed)
      - ☑ Static Content (Installed)
      - ☑ HTTP Redirection (Installed)
      - □ WebDAV Publishing
    - ■ Health and Diagnostics (4 of 6 installed)
      - ☑ HTTP Logging (Installed)
      - □ Custom Logging
      - ☑ Logging Tools (Installed)
      - □ ODBC Logging
      - ☑ Request Monitor (Installed)
      - ☑ Tracing (Installed)
    - ■ Performance (1 of 2 installed)
      - ☑ Static Content Compression (Installed)
      - □ Dynamic Content Compression
    - ■ Security (1 of 9 installed)
      - ☑ Request Filtering (Installed)
      - □ Basic Authentication
      - □ Centralized SSL Certificate Support
      - □ Client Certificate Mapping Authentication
      - □ Digest Authentication
      - □ IIS Client Certificate Mapping Authentication
      - □ IP and Domain Restrictions
      - □ URL Authorization
      - □ Windows Authentication
    - ■ Application Development (10 of 11 installed)
      - ☑ .NET Extensibility 3.5 (Installed)
      - ☑ .NET Extensibility 4.6 (Installed)
      - ☑ Application Initialization (Installed)
      - ☑ ASP (Installed)
      - ☑ ASP.NET 3.5 (Installed)
      - ☑ ASP.NET 4.6 (Installed)
      - □ CGI
      - ☑ ISAPI Extensions (Installed)
      - ☑ ISAPI Filters (Installed)
      - ☑ Server Side Includes (Installed)
      - ☑ WebSocket Protocol (Installed)

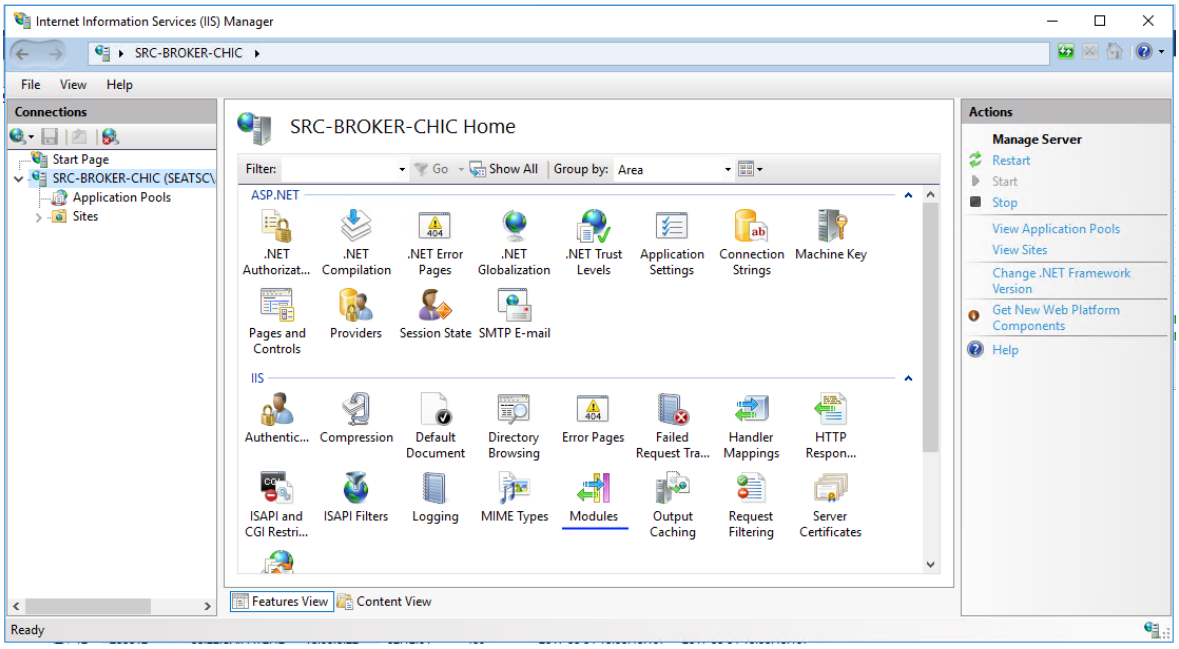


- ■ Management Tools (2 of 7 installed)
  - ☑ IIS Management Console (Installed)
  - ■ IIS 6 Management Compatibility (1 of 4 installed)
    - ☑ IIS 6 Metabase Compatibility (Installed)
    - □ IIS 6 Management Console
    - □ IIS 6 Scripting Tools
    - □ IIS 6 WMI Compatibility

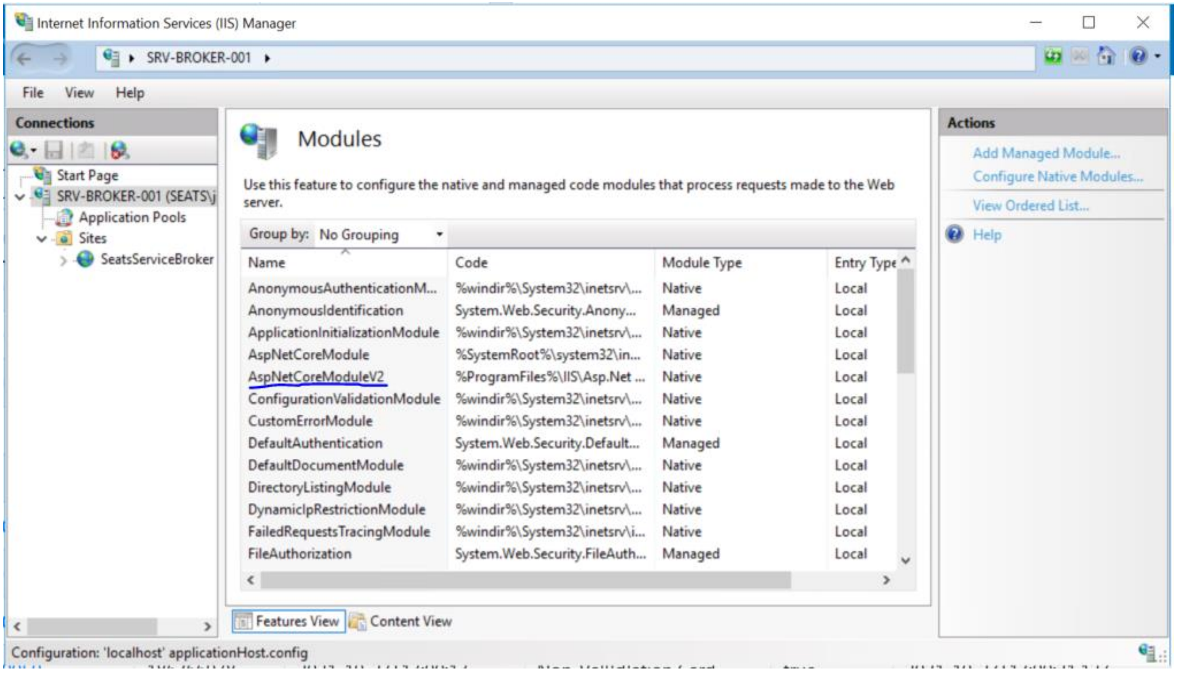
Download and install the dotnet-hosting-5.0.11-win.exe

Once IIS is enabled and .NET 5 installed, open the IIS Manager Console to proceed with the installation and verify .NET Core is installed correctly.

- Open the IIS Manager Console and double click on modules



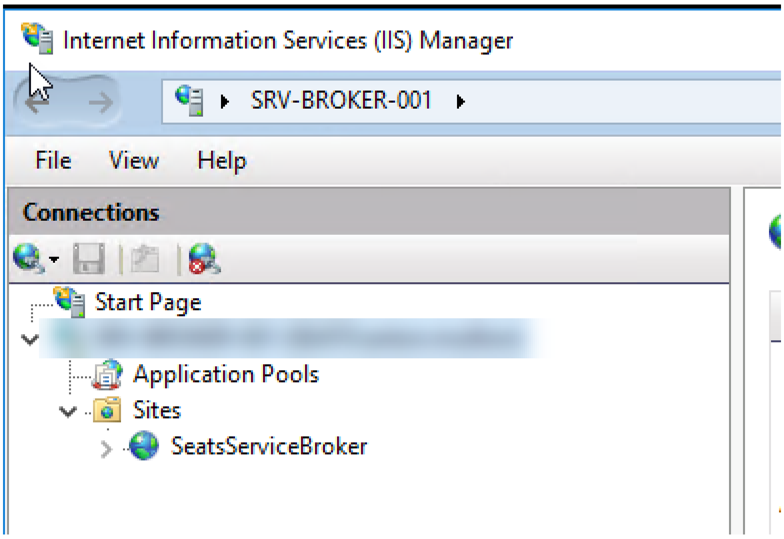
- Verify the “AspNetCoreModuleV2” exists



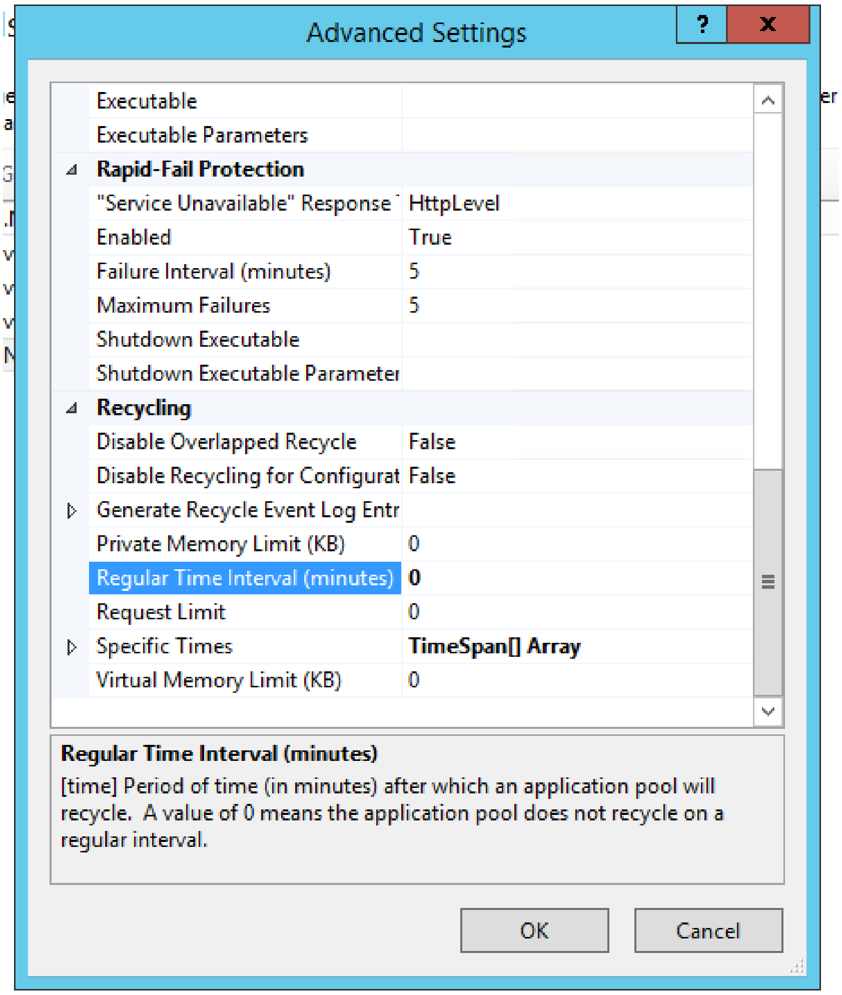
Use this feature to configure the native and managed code modules that process requests made to the Web server.

Name	Code	Module Type	Entry Type
AnonymousAuthenticationM...	%windir%\System32\inetsrv\...	Native	Local
AnonymousIdentification	System.Web.Security.Anony...	Managed	Local
ApplicationInitializationModule	%windir%\System32\inetsrv\...	Native	Local
AspNetCoreModule	%SystemRoot%\system32\in...	Native	Local
AspNetCoreModuleV2	%ProgramFiles%\IIS\Asp.Net ...	Native	Local
ConfigurationValidationModule	%windir%\System32\inetsrv\...	Native	Local
CustomErrorModule	%windir%\System32\inetsrv\...	Native	Local
DefaultAuthentication	System.Web.Security.Default...	Managed	Local
DefaultDocumentModule	%windir%\System32\inetsrv\...	Native	Local
DirectoryListingModule	%windir%\System32\inetsrv\...	Native	Local
DynamicIpRestrictionModule	%windir%\System32\inetsrv\...	Native	Local
FailedRequestsTracingModule	%windir%\System32\inetsrv\i...	Native	Local
FileAuthorization	System.Web.Security.FileAuth...	Managed	Local

- On the left-hand side, you will see a tab named Sites. Right click on that and select the option to “Add Website”.



- Set Recycling to = 0

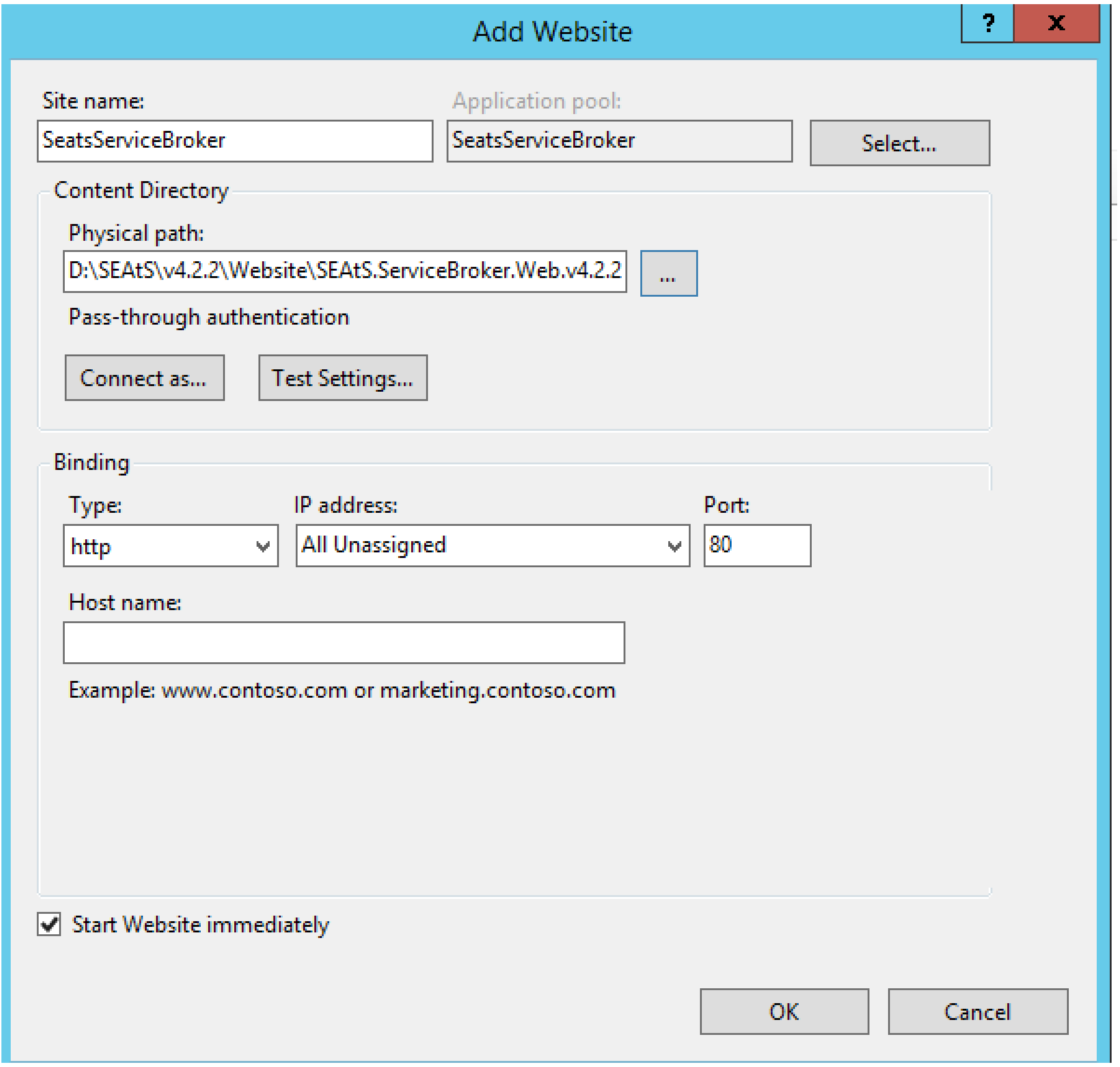


Executable	
Executable Parameters	
Rapid-Fail Protection	
"Service Unavailable" Response	HttpLevel
Enabled	True
Failure Interval (minutes)	5
Maximum Failures	5
Shutdown Executable	
Shutdown Executable Parameter	
Recycling	
Disable Overlapped Recycle	False
Disable Recycling for Configurat	False
Generate Recycle Event Log Entr	
Private Memory Limit (KB)	0
Regular Time Interval (minutes)	**0**
Request Limit	0
Specific Times	**TimeSpan[] Array**
Virtual Memory Limit (KB)	0

Regular Time Interval (minutes)
[time] Period of time (in minutes) after which an application pool will recycle. A value of 0 means the application pool does not recycle on a regular interval.

- This will open up a new window. Make sure **“Site name”** and **“Port”** are same as that in the screenshot below:

  Site name: SeatsServiceBroker
  Port: 80
  **Physical Path: D: \ SEAtS \ WebSite \ {build number} **



Site name: SeatsServiceBroker

Application pool: SeatsServiceBroker

Content Directory

Physical path: D:\SEAtS\v4.2.2\Website\SEAtS.ServiceBroker.Web.v4.2.2

Pass-through authentication

Binding

Type: http

IP address: All Unassigned

Port: 80

Host name:

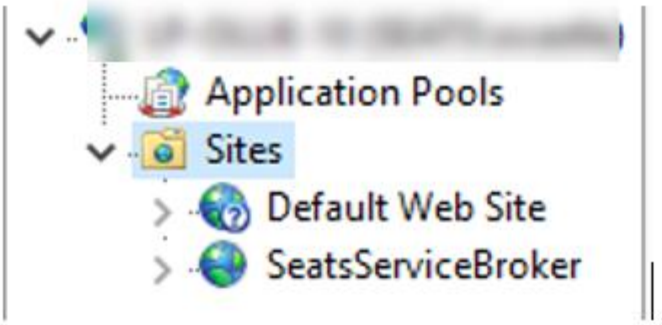
Example: www.contoso.com or marketing.contoso.com

☑ Start Website immediately

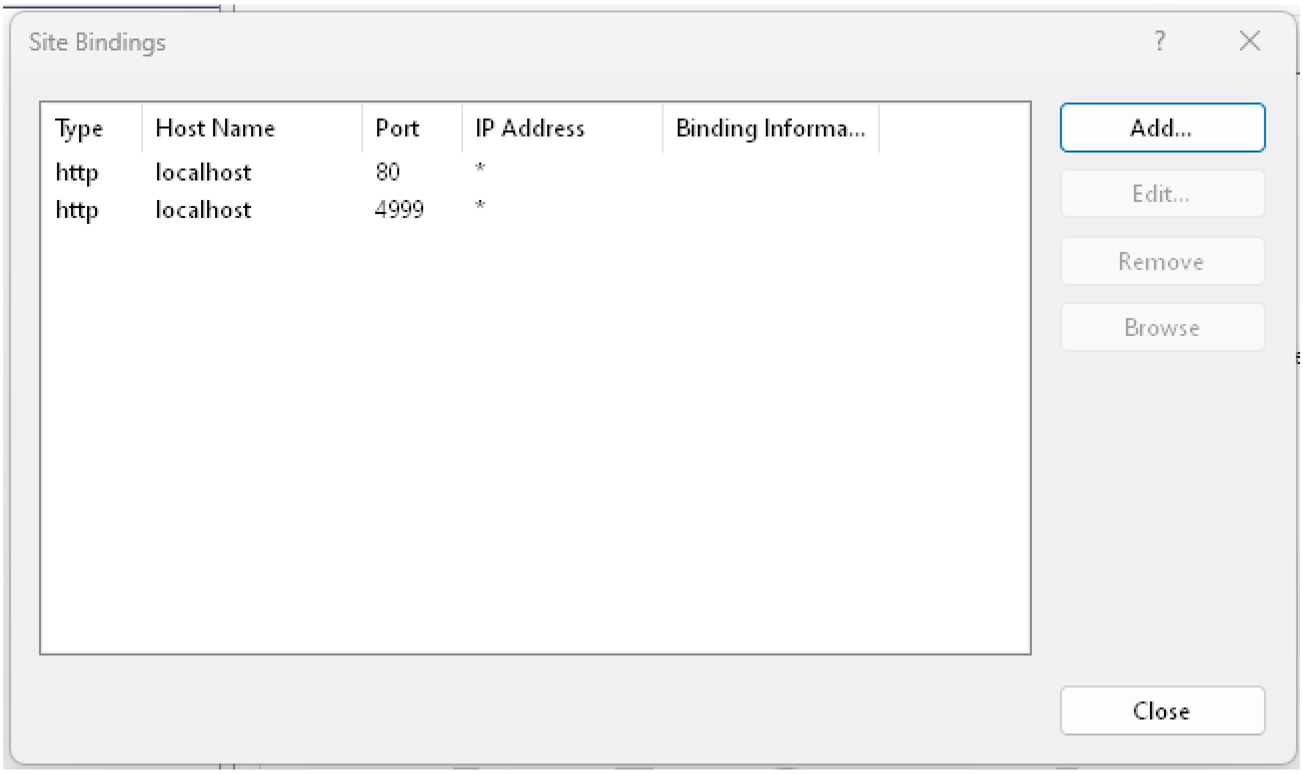
\

- The physical path needs to be specified. This is different for each client. The physical path indicates the directory where the Website files will be copied.

- Use the path where the website files were copied over during the Pre-Install Checks.
- Once the Site name, port number and physical path have been added, click Ok to create the Website which will now appear in the IIS Manager Console under the “Sites” tab as “SeatsServiceBroker”.

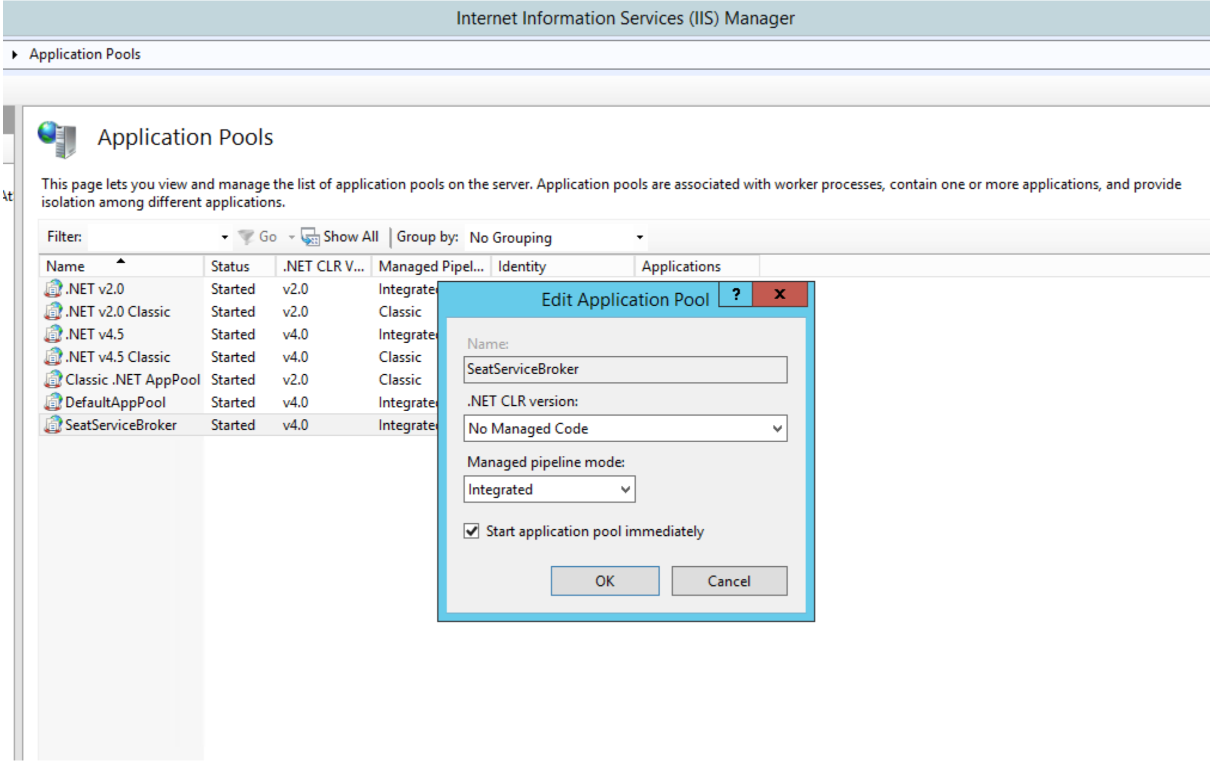


- Click on Sites/SeatsServiceBroker,
- Select “Bindings”
- Add one additional binding - **http/port:4999**



Type	Host Name	Port	IP Address	Binding Informa...
http	localhost	80	*	
http	localhost	4999	*	

- Click on application pools and double click the application pool
- Change the .NET CLR version to “**No Managed Code”**



Internet Information Services (IIS) Manager

Application Pools

Application Pools

This page lets you view and manage the list of application pools on the server. Application pools are associated with worker processes, contain one or more applications, and provide isolation among different applications.

Filter: Go Show All | Group by: No Grouping

Name	Status	.NET CLR V...	Managed Pipel...	Identity	Applications
.NET v2.0	Started	v2.0	Integrate		
.NET v2.0 Classic	Started	v2.0	Classic		
.NET v4.5	Started	v4.0	Integrate		
.NET v4.5 Classic	Started	v4.0	Classic		
Classic .NET AppPool	Started	v2.0	Classic		
DefaultAppPool	Started	v4.0	Integrate		
SeatServiceBroker	Started	v4.0	Integrate		

Edit Application Pool

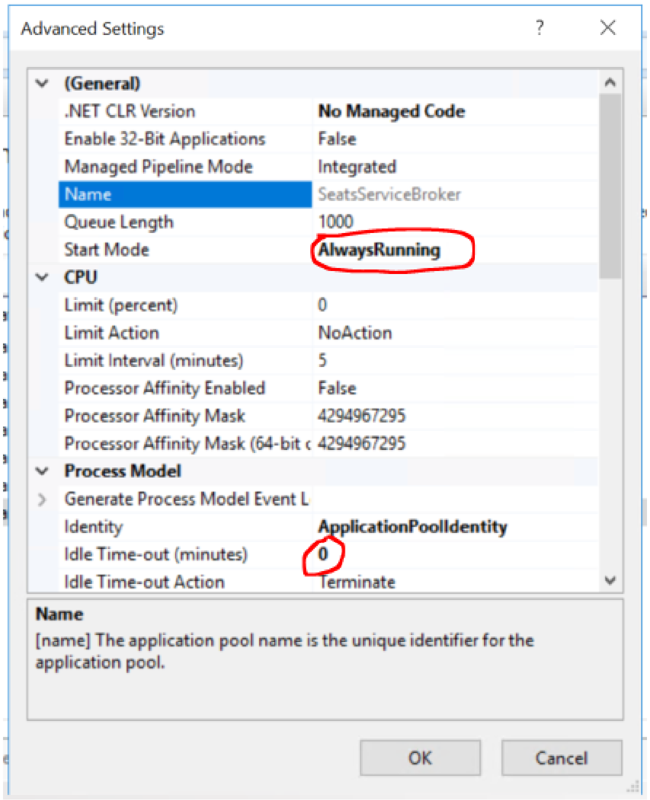
Name: SeatServiceBroker

.NET CLR version: No Managed Code

Managed pipeline mode: Integrated

☑ Start application pool immediately

- Click on advanced settings and change the Idle Timeout to be 0

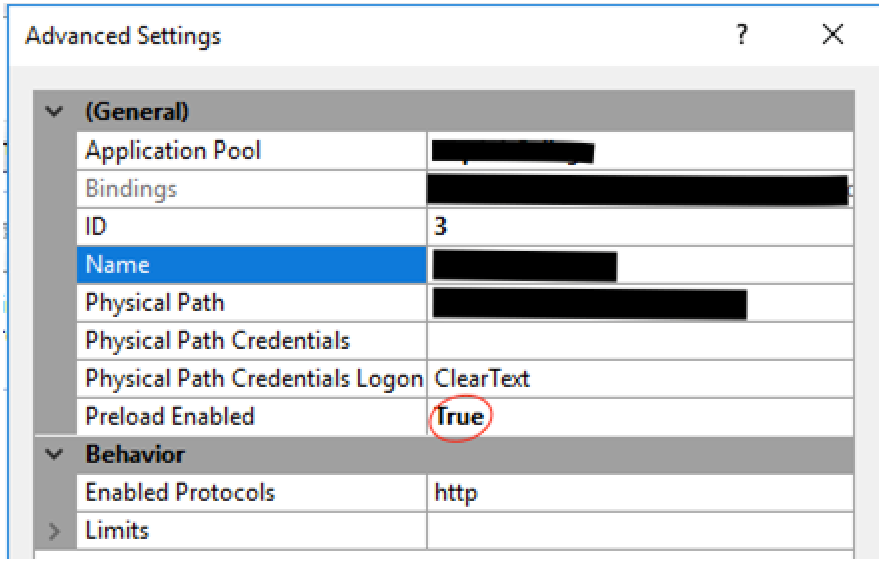


Advanced Settings

(General)	
.NET CLR Version	**No Managed Code**
Enable 32-Bit Applications	False
Managed Pipeline Mode	Integrated
Name	SeatsServiceBroker
Queue Length	1000
Start Mode	**AlwaysRunning**
CPU	
Limit (percent)	0
Limit Action	NoAction
Limit Interval (minutes)	5
Processor Affinity Enabled	False
Processor Affinity Mask	4294967295
Processor Affinity Mask (64-bit c	4294967295
Process Model	
Generate Process Model Event L	
Identity	**ApplicationPoolIdentity**
Idle Time-out (minutes)	**0**
Idle Time-out Action	Terminate

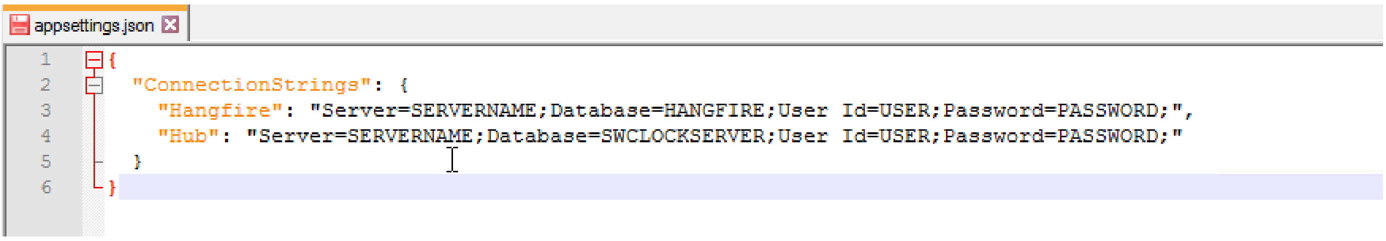
Name
[name] The application pool name is the unique identifier for the application pool.

- Right click on the site for the application, select “Manage Website” -> “Advanced Settings” and set the “Preload Enabled” value to true.



(General)	
Application Pool	[redacted]
Bindings	[redacted]
ID	3
Name	[redacted]
Physical Path	[redacted]
Physical Path Credentials	
Physical Path Credentials Logon	ClearText
Preload Enabled	True
Behavior	
Enabled Protocols	http
Limits	

- If you are using Windows Authentication to connect to the database server you need to change the “Identity” to be the user that you wish the connect to the database with.
- Edit **appSettings.json,** changing the connection strings based on the environment



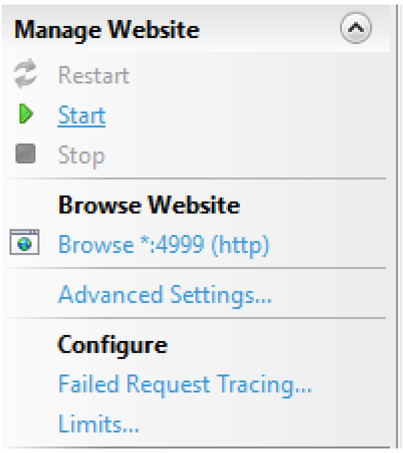
```
{
  "ConnectionStrings": {
    "Hangfire": "Server=SERVERNAME;Database=HANGFIRE;User Id=USER;Password=PASSWORD;",
    "Hub": "Server=SERVERNAME;Database=SWCLOCKSERVER;User Id=USER;Password=PASSWORD;"
  }
}
```

- The connection strings should have the following format:

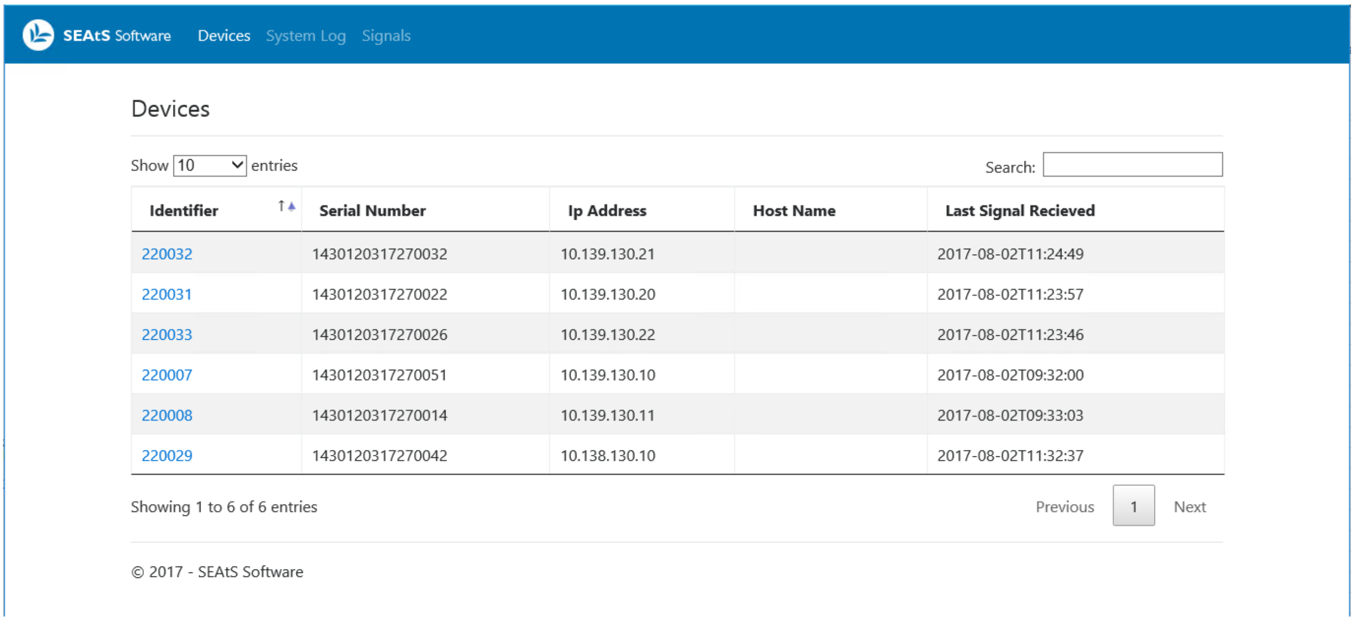
SQL Authentication:
Server=myServerAddress;Database=myDataBase;User Id=myUsername; Password=myPassword;

Windows Authentication:
Server=myServerAddress;Database=myDataBase;Trusted_Connection=True;

- Start this website so you can access it using any web browser.
- Select the site named ‘SeatsServiceBroker’ from the IIS Manager Console
- On the right-hand side tab, under the section named ‘Manage Website’ click on ‘Start’



- Once you have started the website, just click on the link to browse website and you will be redirected to the SEAtS Clock Server website that you just installed.
- The landing page should appear as below. If you see this page, then you have successfully installed the Web Site.



Devices

Show 10 entries Search:

Identifier	Serial Number	Ip Address	Host Name	Last Signal Recieved
220032	1430120317270032	10.139.130.21		2017-08-02T11:24:49
220031	1430120317270022	10.139.130.20		2017-08-02T11:23:57
220033	1430120317270026	10.139.130.22		2017-08-02T11:23:46
220007	1430120317270051	10.139.130.10		2017-08-02T09:32:00
220008	1430120317270014	10.139.130.11		2017-08-02T09:33:03
220029	1430120317270042	10.138.130.10		2017-08-02T11:32:37

Showing 1 to 6 of 6 entries

Previous 1 Next

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Check List

SEAtS would request that the checklist below is filled in and supplied to SEAtS prior to the initial install of the SEAtS Service Broker:

Servers:

Number of Servers? *e.g. 1 / 2 servers*	

Application Server:

Server Name:	
Server IP for VPN Access:	
Attached vLAN's: *if multiple nics, the ip range and subnet and its purpose*	
Server Device Communication IP and SubNet: *The IP the devices will communicate to the server on, this maybe the same as the server IP for VPN access but in may chanse will be different.*	
Has the firewall be configured to external communication to the SEAtS Cloud?	
Have the required firewall rules been put in place for device communication to the server?	
Have the required firewall rules been put in place for	

the communication to the SQL Server?	
Has the SEAtS user to access the server been give full local admin privileges? *This is required for instllation and upgrade purposes*	
Has Sql Server Management Studio been installed on the App Server? *Optional but is of great benefit to application maintaince*	
Has internet explorer enhanced security configuration been turn off on the server?	

Database Server (Only applicable if a separate server)

Server Name:	
Server IP for VPN Access:	
Attached vLAN's: *if multiple nics, the ip range and subnet and its purpose*	
SQL Server IP or named instance for communication?	
SQL Server Port Number?	
SQL Server Version & Edition?	
Have the required firewall rules been put in place for communication from the application server?	

Have the databased been created: • swclockserver • swhangfire	
Have the databases been created with db_owner access?	
Is SQL server authentication or Windows authentication being used?	
Has a backup schedule been put in place?	