

<https://www.halvorsen.blog>



ASP.NET Core

Web Server IIS Deployment

Hans-Petter Halvorsen

Introduction

- Introduction to IIS deployment
- If you have never used ASP.NET Core, I suggest the following Videos:
 - ASP.NET Core - Hello World
<https://youtu.be/lcQsWYgQXK4>
 - ASP.NET Core – Introduction
<https://youtu.be/zkOtiBcwo8s>

Scenario

Development Environment

Test/Production Environment

Local PC with Windows 10

Windows 10/Windows Server

ASP.NET Core
Web Application

Visual Studio

SQL Server Express



IIS



SQL Server



ASP.NET Core
Web Application



~~Visual Studio~~

Web Server

- A web server is server software that can satisfy client requests on the World Wide Web.
- A web server can contain one or more websites.
- A web server processes incoming network requests over HTTP and several other related protocols.
- The primary function of a web server is to store, process and deliver web pages to clients.
- The communication between client and server takes place using the Hypertext Transfer Protocol (HTTP).
- Pages delivered are most frequently HTML documents, which may include images, style sheets and scripts in addition to the text content.

Web Pages and Web Applications

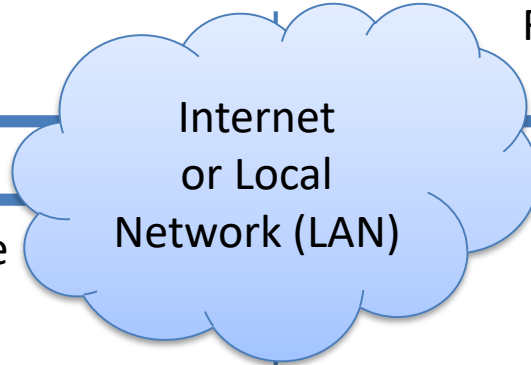
Web Server

Web Server software, e.g., Internet Information Services (IIS)



Response
(HTML)

Operating System, e.g., Windows Server



Client



PC with Windows 10, macOS or Linux
Smartphone with Android or iOS, etc.

Request
(URL)

Web Server Software



(pronounced "engine x")
- Has become very popular lately

Cross-platform: UNIX, Linux, OS X, Windows, ...



PHP

Apache



Microsoft IIS

Internet Information Services

ASP.NET

The term web server can refer to either the hardware (the computer) or the software (the computer application) that helps to deliver web content that can be accessed through the Internet.

The most common use of web servers is to host websites, but there are other uses such as gaming, data storage or running enterprise applications.

Web Servers Market share*

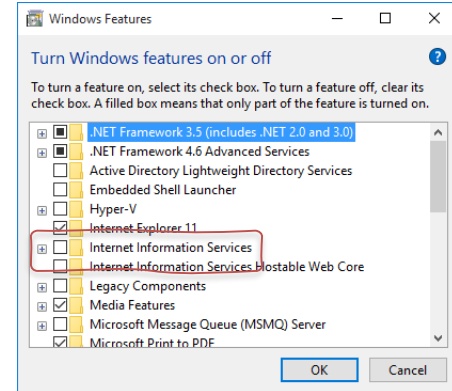
Product	Vendor	Platform	Percent
Apache	Apache	Open Source Cross Platform	44.3%
Nginx	Nginx, inc	Free + Paid versions Cross Platform	41.0%
IIS (Internet Information Services)	Microsoft	Windows, Included with Windows (Windows Server, Windows 10 Pro)	8.9%
LiteSpeed	LiteSpeed	Proprietary, Linux	3.9%
GWS (Google Web Server)	Google	Custom Linux-based Web server that Google uses for its online services	0.9%

https://en.wikipedia.org/wiki/Web_server

*February 2019

Internet Information Services (IIS)

- Web Server software
 - “Included” (you need to activate/turn it on in Windows Features) in Windows 10 and Windows Server
- Created by Microsoft
- You use Internet Information Services (IIS) Manager to configure the system



Installation

- Turn on **Internet Information Services** in Windows Features
- Install the **.NET Core Hosting Bundle** on the IIS server.
 - If the Hosting Bundle is installed before IIS, the bundle installation must be repaired. Run the Hosting Bundle installer again after installing IIS.



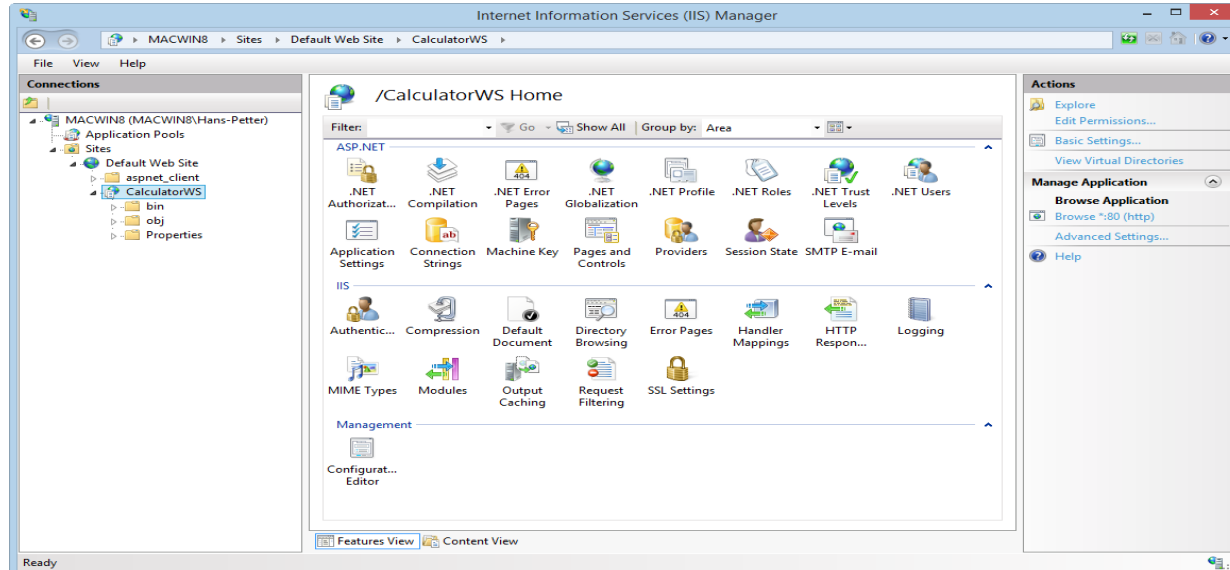
Internet Information Services (IIS)

Hans-Petter Halvorsen, M.Sc.

Internet Information Services (IIS)

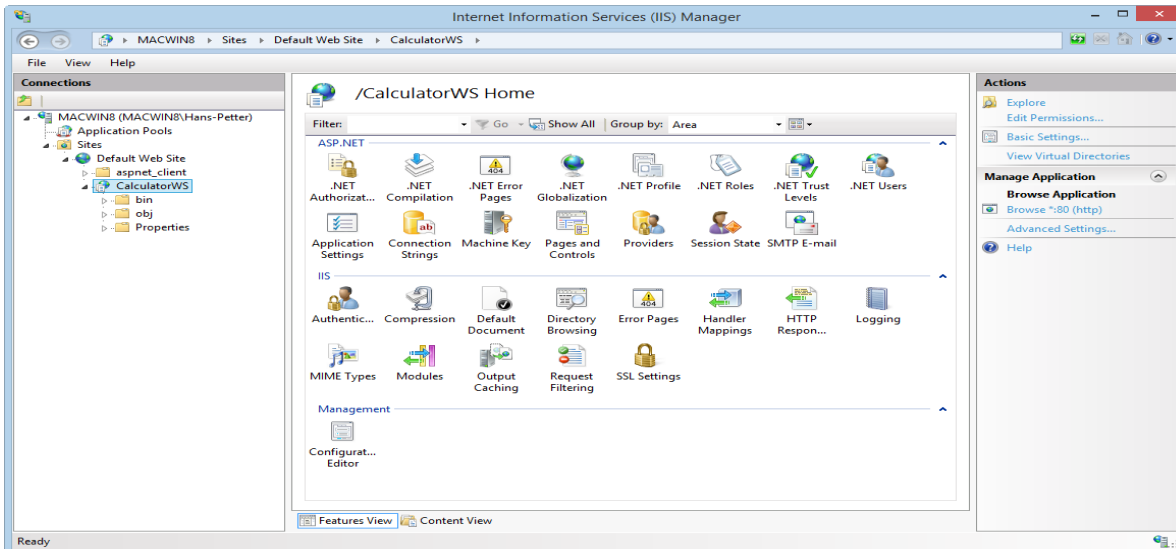
https://en.wikipedia.org/wiki/Internet_Information_Services

- Web Server from Microsoft
- Integrated with Windows



Internet Information Services (IIS)

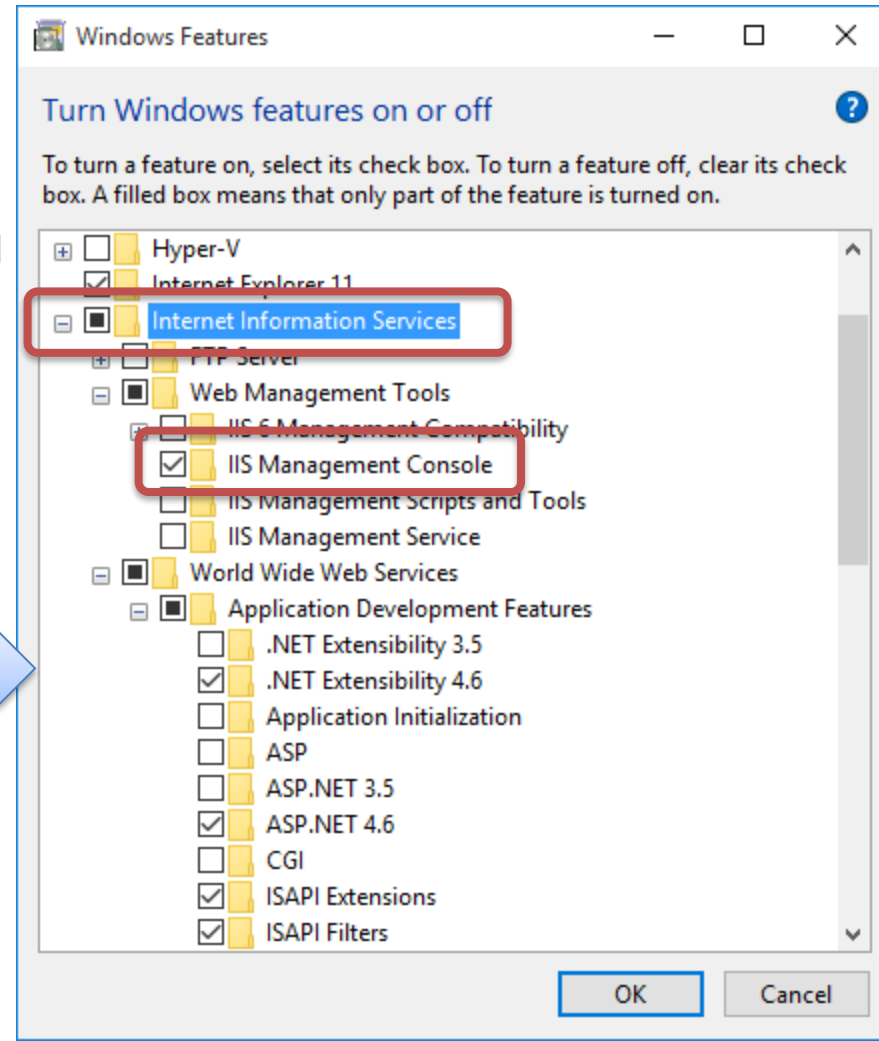
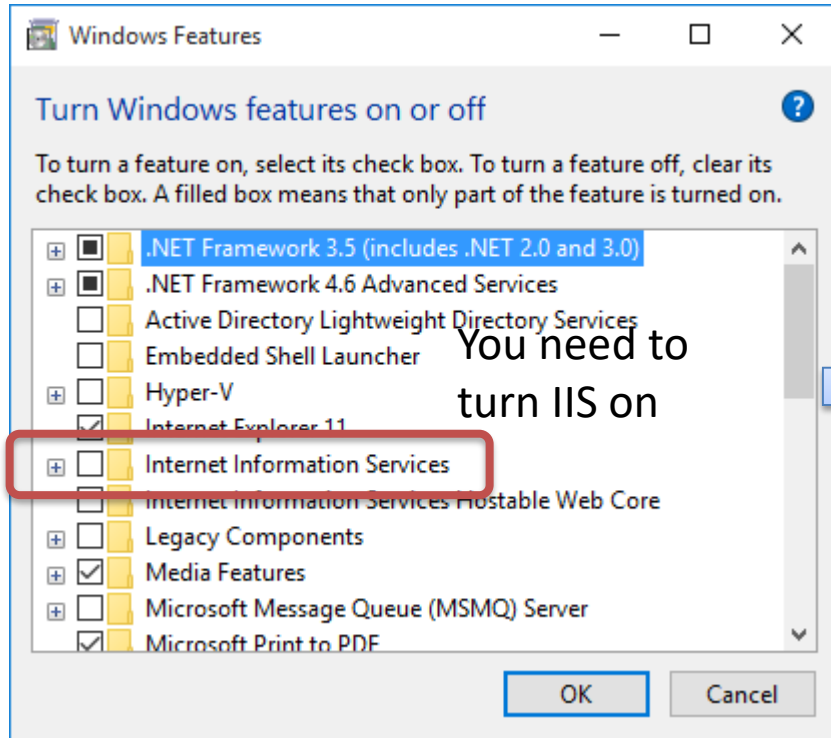
- IIS – Internet Information Services
- Web Server that host the Web Pages/Web Site
- Make sure to have the IIS Role installed with ASP.NET subcomponents



Default IIS Directory:
C:\inetpub\wwwroot

Installation/ Configuration

Search for «Windows Features» or open the Control Panel



Publish an ASP.NET Core app to IIS

- Turn on **Internet Information Services** in Windows Features
- Install the **.NET Core Hosting Bundle** on the IIS server. The bundle installs the .NET Core Runtime, .NET Core Library, and the ASP.NET Core Module. The module allows ASP.NET Core apps to run behind IIS.

Internet Information Services (IIS) Manager

The screenshot displays the Internet Information Services (IIS) Manager interface. The main window shows the configuration for the 'Default Web Site Home'. The left-hand pane shows the 'Connections' tree with 'HANSPPH_LAPTOP (HANSPPH)' expanded to 'Sites' and 'Default Web Site' selected. The main area is titled 'Default Web Site Home' and contains a grid of configuration icons organized into sections: 'ASP.NET', 'IIS', and 'Management'. The 'ASP.NET' section includes icons for .NET Authorization, .NET Compilation, .NET Error Pages, .NET Globalization, .NET Profile, .NET Roles, .NET Trust Levels, .NET Users, Application Settings, Connection Strings, and Machine Key. The 'IIS' section includes icons for Authentication, Compression, Default Document, Directory Browsing, Error Pages, Handler Mappings, HTTP Response, ISAPI Filters, Logging, MIME Types, and Modules. The 'Management' section includes an icon for the Configuration Editor. The right-hand pane shows the 'Actions' menu with options like 'Explore', 'Edit Permissions...', 'Edit Site', 'Bindings...', 'Basic Settings...', 'View Applications', 'View Virtual Directories', 'Manage Website' (with sub-options 'Restart', 'Start', 'Stop'), 'Browse Website' (with sub-options 'Browse *:80 (http)', 'Advanced Settings...'), 'Configure' (with sub-option 'Limits...'), and 'Help'. The status bar at the bottom indicates 'Ready' and shows 'Features View' and 'Content View' buttons.

Internet Information Services (IIS) Manager

HANSPPH_LAPTOP > Sites > Default Web Site

File View Help

Connections

HANSPPH_LAPTOP (HANSPPH)

Application Pools

Sites

Default Web Site

Default Web Site Home

Filter: Go Show All Group by: Area

ASP.NET

- .NET Authorization
- .NET Compilation
- .NET Error Pages
- .NET Globalization
- .NET Profile
- .NET Roles
- .NET Trust Levels
- .NET Users
- Application Settings
- Connection Strings
- Machine Key

Pages and Controls

- Providers
- Session State
- SMTP E-mail

IIS

- Authentication
- Compression
- Default Document
- Directory Browsing
- Error Pages
- Handler Mappings
- HTTP Response
- ISAPI Filters
- Logging
- MIME Types
- Modules

Output Caching

- Request Filtering
- SSL Settings
- WebDAV Authorization

Management

- Configuration Editor

Actions

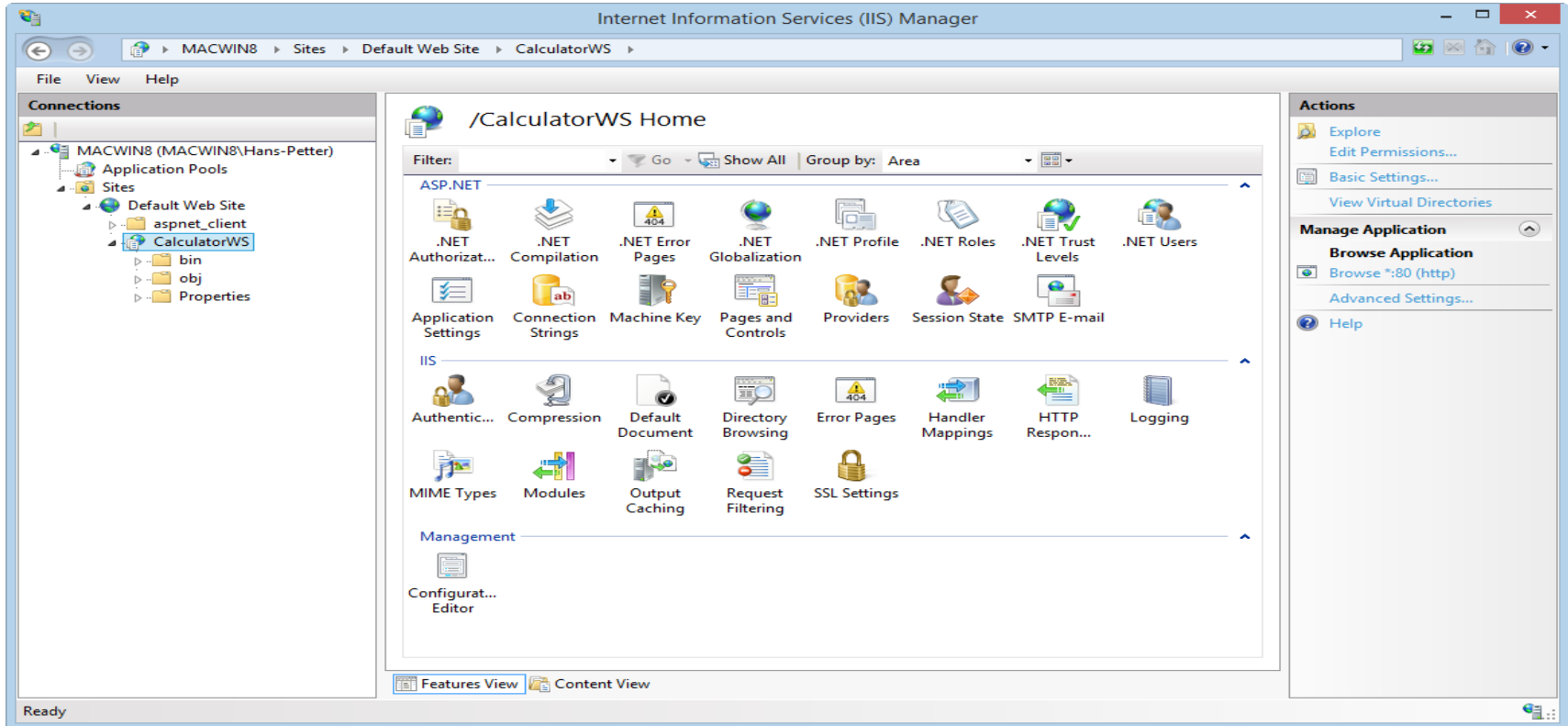
- Explore
- Edit Permissions...
- Edit Site**
- Bindings...
- Basic Settings...
- View Applications
- View Virtual Directories
- Manage Website**
- Restart
- Start
- Stop
- Browse Website**
- Browse *:80 (http)
- Advanced Settings...
- Configure**
- Limits...
- Help

Features View Content View

Ready

Deploy/Publish Web Service to IIS

Copy Web Service Files (Project) to default IIS Directory: `C:\inetpub\wwwroot`



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ASP.NET Core Web Application in Visual Studio

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Books

Below you see all the Books in the Book Store:

Bookid	Title	ISBN	Publisher	Author	Category	Action
1	Introduction to Linear Algebra	0-07-066781-0	Prentice Hall	Gilbert Strang	Science	Delete Book
2	Modern Control System	1-08-890781-0	Wiley	Dorf Bishop	Programming	Delete Book
-	The Hobbit	0-04-270042-0	McGraw-Hill	J.R.R Tolkien	Novel	Delete Book
-	Introduction to Programming	0-08-048661-0	Halvorsen	Hans-Petter	Programming	Delete Book

Book Store

Welcome to my Book Store



BookApp

BookApp

- ASP.NET Core - Database CRUD Application
- YouTube: <https://youtu.be/k5TCZDwTYcE>
- Blog: <https://halvorsen.blog/>
- ASP.NET Core Resources:
https://halvorsen.blog/documents/programming/web/asp_net.php

Visual Studio

The screenshot displays the Visual Studio IDE with a C# Razor view named `Books.cshtml` open. The code defines a page model and a table to display a list of books. The page model sets the title to "Books". The table has columns for Book ID, Title, ISBN, Publisher, Author, Category, and an Action column. The Action column contains a link to edit the book and a button to delete the book.

```
1 @page
2 @model BookApp.Pages.BooksModel
3 @{
4     ViewData["Title"] = "Books";
5 }
6
7
8 <div>
9
10 <h1>Books</h1>
11
12 Below you see all the Books in the Book Store:<br />
13
14 <table class="table">
15     <thead>
16         <tr>
17             <th>BookId</th>
18             <th>Title</th>
19             <th>ISBN</th>
20             <th>Publisher</th>
21             <th>Author</th>
22             <th>Category</th>
23             <th>Action</th>
24         </tr>
25     </thead>
26     <tbody>
27         @foreach (var book in Model.books)
28         {
29             <tr>
30                 <td> @book.BookId </td>
31
32                 <td> <a href="."/EditBook?bookid=@book.BookId">@book.Title</a> </td>
33
34                 <td> @book.Isbn </td>
35                 <td> @book.PublisherName </td>
36                 <td> @book.AuthorName </td>
37                 <td> @book.CategoryName </td>
38                 <td> <a href="."/DeleteBook?bookid=@book.BookId" class="btn btn-danger" role="button">Delete Book</a> </td>
39             </tr>
40         }
41     </tbody>
42 </table>
```

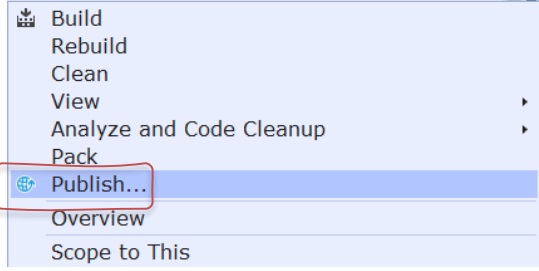
The Solution Explorer on the right shows the project structure for `BookApp`, including folders for `Pages` and `Shared`, and files for `Books.cshtml`, `DeleteBook.cshtml`, `EditBook.cshtml`, `Index.cshtml`, `NewBook.cshtml`, `Privacy.cshtml`, `appsettings.json`, `Program.cs`, and `Startup.cs`.

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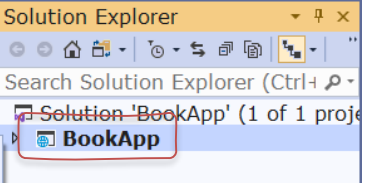


Make Deployment Package

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Right-click on the Project in the Solution Explorer and select "Publish"



Publish

Deploy your app to a folder, IIS, Azure, or another destination. [More info](#)

BookSystem - Web Deploy Publish

New Edit Rename Delete

Summary

Site URL	https://booksys...
Resource Group	usn
Configuration	Rel... ✎
Target Framework	netcore... ✎
Deployment Mode	Framework-D...

Continuous Delivery

Automatically publish your application
[Configure](#)

Pick a publish target

Folder or File Share
Publish your app to a folder or file share

Choose a folder
 Browse...

[Advanced...](#)

Import Profile... Create Profile Cancel

- App Service
- App Service Linux
- Azure Virtual Machines
- IIS, FTP, etc
- Folder**

Publish

Deploy your app to a folder, IIS, Azure, or another destination. [More info](#)

FolderProfile

Publish

[New](#) [Edit](#) [Rename](#) [Delete](#)

Publish

> This PC > OS (C:) > WebApps > BookApp

	Name	Date modified	Type	Size
Files	runtime	2020-02-26 09:53	File folder	
	wwwroot	2020-02-26 09:53	File folder	
	appsettings.Development.json	2019-12-11 10:50	JSON Source File	1 KB
	appsettings.json	2020-01-22 15:03	JSON Source File	1 KB
	BookApp.deps.json	2020-02-26 09:53	JSON Source File	111 KB
	BookApp.dll	2020-02-26 09:53	Application extens...	15 KB
	BookApp.exe	2020-02-26 09:53	Application	166 KB
	BookApp.pdb	2020-02-26 09:53	Program Debug D...	5 KB
	BookApp.runtimeconfig.json	2020-02-26 09:53	JSON Source File	1 KB
	BookApp.Views.dll	2020-02-26 09:53	Application extens...	52 KB
	BookApp.Views.pdb	2020-02-26 09:53	Program Debug D...	6 KB
	System.Data.SqlClient.dll	2019-11-15 08:38	Application extens...	262 KB
	web.config	2020-02-26 09:53	Configuration Sou...	1 KB

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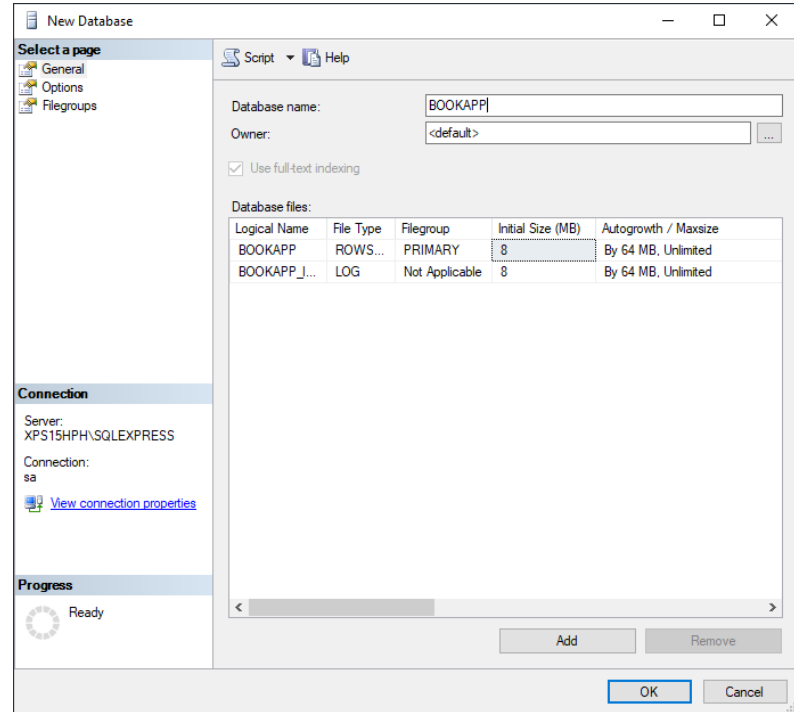


SQL Server

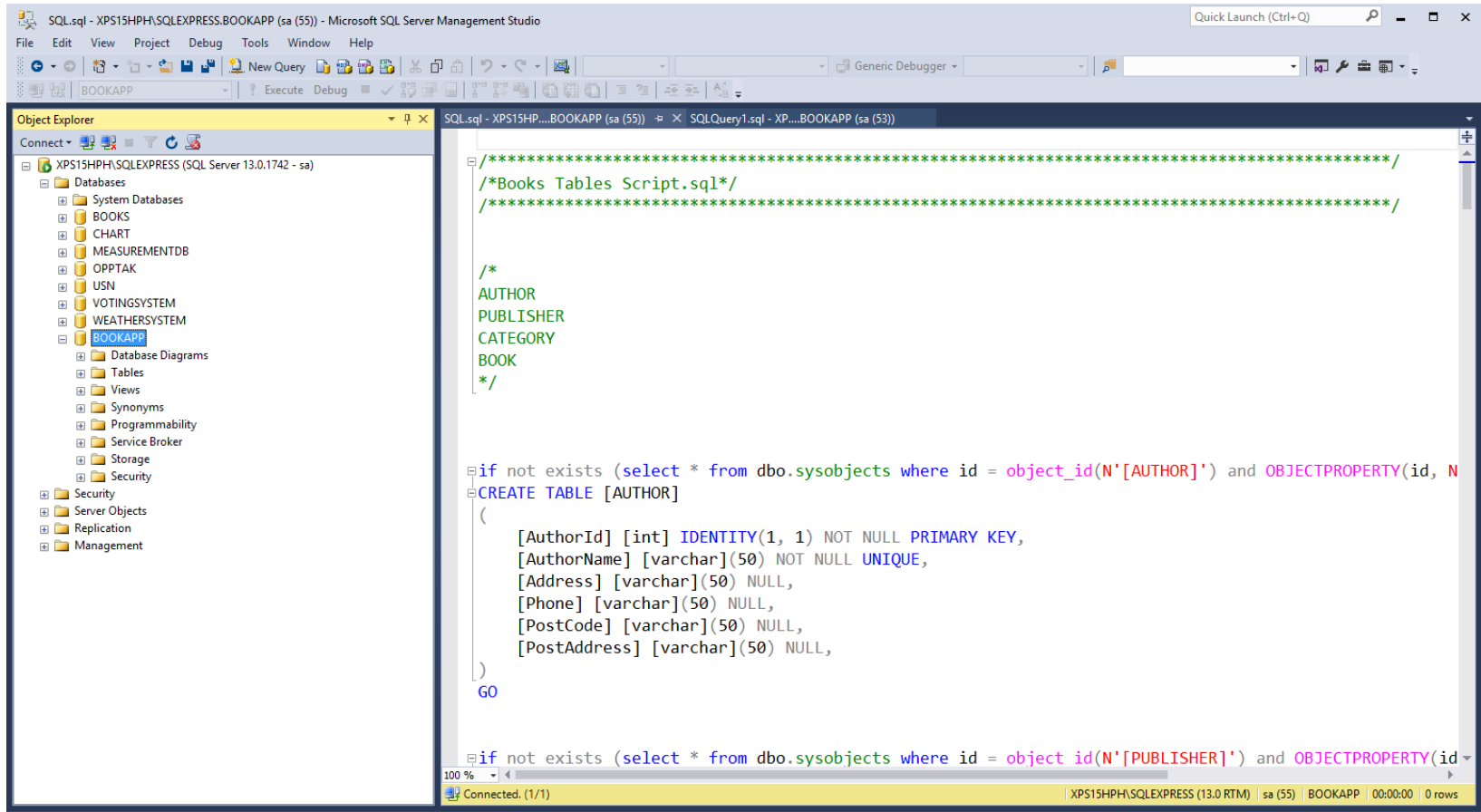
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Create Database

Use SQL Server Management Studio in order to create the Database



Create Tables, Views, Stored Procedures, etc.

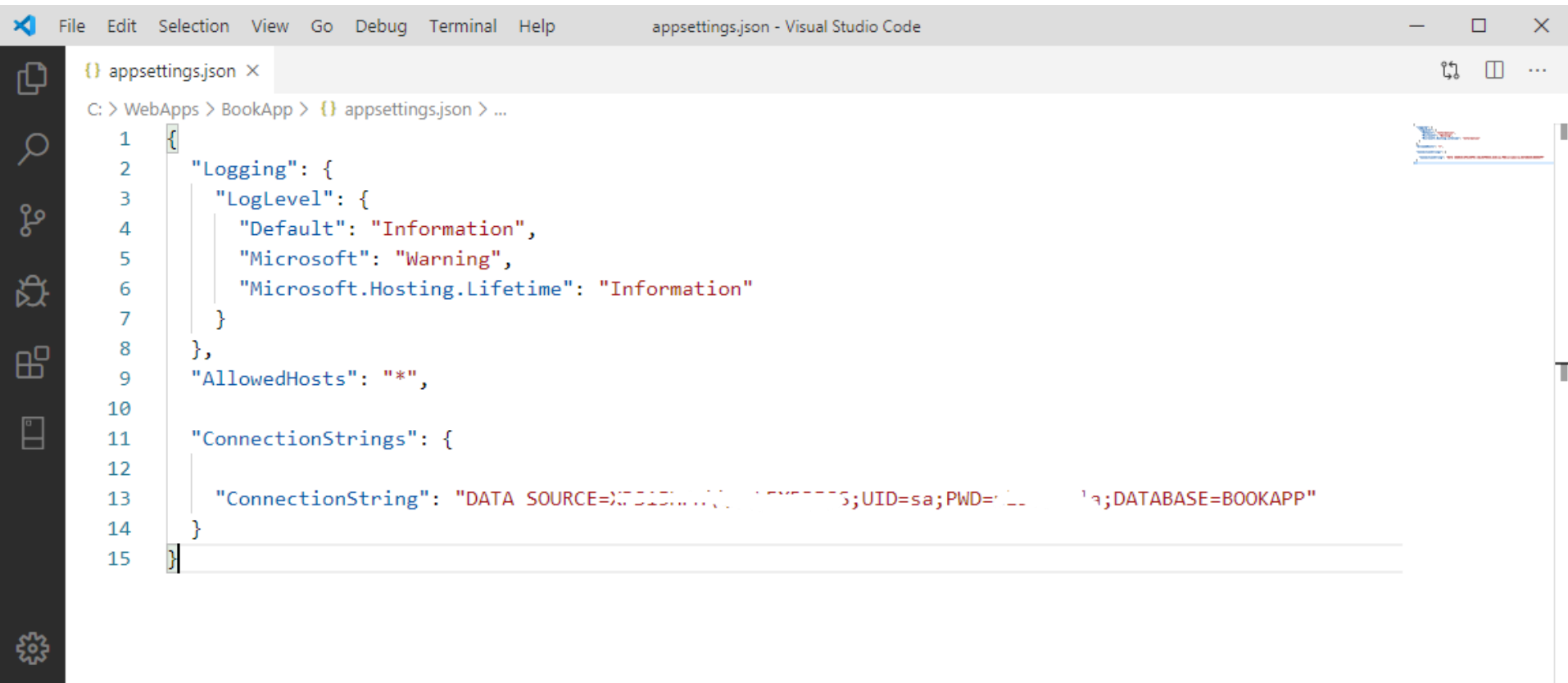


The screenshot displays the Microsoft SQL Server Management Studio (SSMS) interface. The left pane shows the Object Explorer with the 'BOOKAPP' database selected. The right pane shows a SQL query script in a text editor. The script is titled '/*Books Tables Script.sql*/' and contains the following SQL code:

```
/*  
AUTHOR  
PUBLISHER  
CATEGORY  
BOOK  
*/  
  
if not exists (select * from dbo.sysobjects where id = object_id(N'[AUTHOR]') and OBJECTPROPERTY(id, N'  
CREATE TABLE [AUTHOR]  
(  
    [AuthorId] [int] IDENTITY(1, 1) NOT NULL PRIMARY KEY,  
    [AuthorName] [varchar](50) NOT NULL UNIQUE,  
    [Address] [varchar](50) NULL,  
    [Phone] [varchar](50) NULL,  
    [PostCode] [varchar](50) NULL,  
    [PostAddress] [varchar](50) NULL,  
)  
GO  
  
if not exists (select * from dbo.sysobjects where id = object_id(N'[PUBLISHER]') and OBJECTPROPERTY(id,
```

The status bar at the bottom indicates the connection is successful and shows the current database context: 'XPS15HPH\SQLEXPRESS (13.0 RTM) | sa (55) | BOOKAPP | 00:00:00 | 0 rows'.

appSettings.json



The image shows a screenshot of the Visual Studio Code editor. The title bar at the top reads "appsettings.json - Visual Studio Code". The editor window displays the content of the "appsettings.json" file, which is a JSON configuration file. The file path in the breadcrumb is "C: > WebApps > BookApp > {} appsettings.json > ...". The JSON content is as follows:

```
1 {
2   "Logging": {
3     "LogLevel": {
4       "Default": "Information",
5       "Microsoft": "Warning",
6       "Microsoft.Hosting.Lifetime": "Information"
7     }
8   },
9   "AllowedHosts": "*",
10
11   "ConnectionStrings": {
12
13     "ConnectionString": "DATA SOURCE=XPB150117\\SQLSERVERS;UID=sa;PWD=123456789;DATABASE=BOOKAPP"
14   }
15 }
```

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Deploy to IIS

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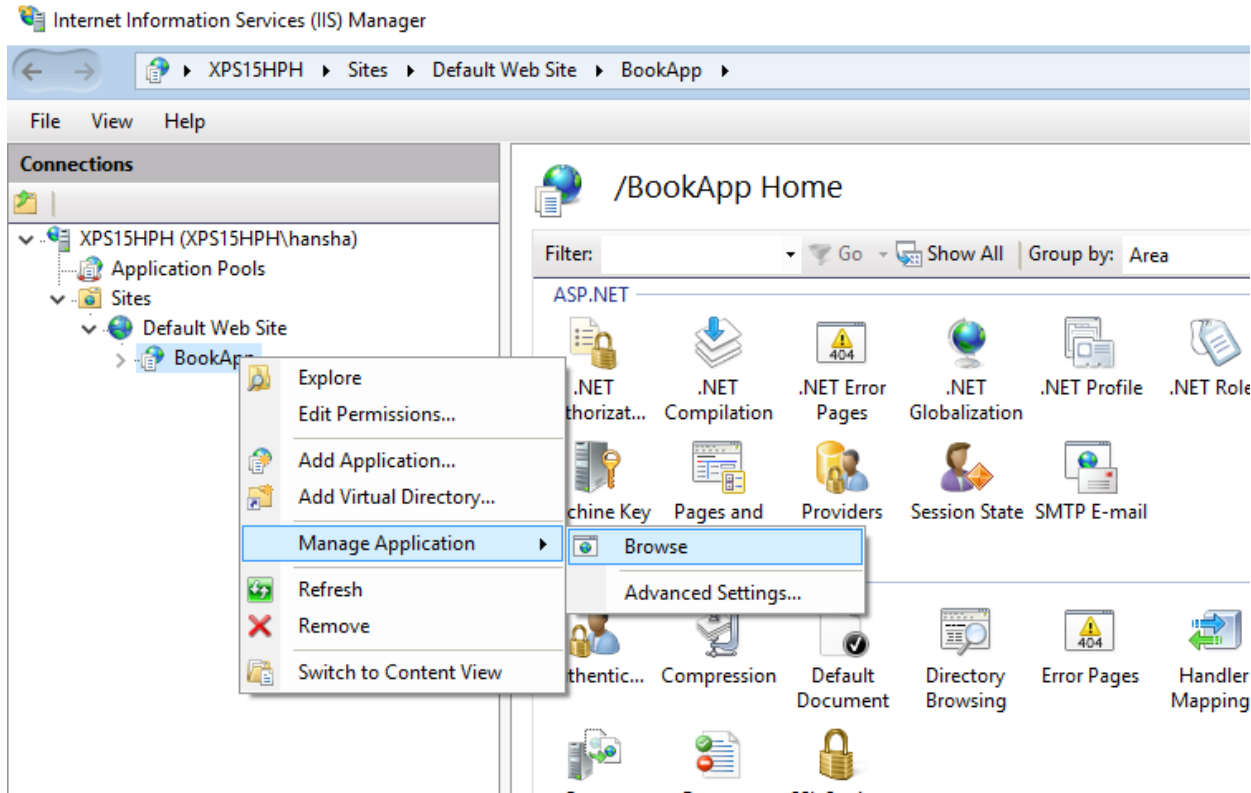
Internet Information Services (IIS) Manager

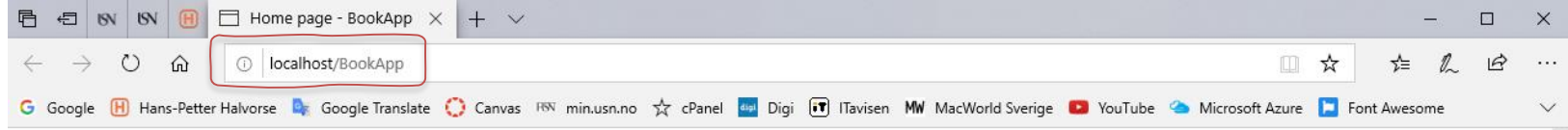
The screenshot displays the Internet Information Services (IIS) Manager interface. The main window shows the 'Default Web Site Home' page with a grid of application features like .NET Compilation, .NET Error Pages, and Globalization. A context menu is open over the 'Default Web Site' folder, with 'Add Application...' selected. An 'Add Application' dialog box is overlaid on the right, containing the following fields and options:

- Site name:** Default Web Site
- Path:** /
- Alias:** BookApp
- Application pool:** DefaultAppPool (with a 'Select...' button)
- Example:** sales
- Physical path:** C:\WebApps\BookApp (with a browse button '...')
- Pass-through authentication:** Includes 'Connect as...' and 'Test Settings...' buttons.
- Enable Preload:** An unchecked checkbox.

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Test Application





BookApp Home Books

Your Web Application is
running on the Web Server!

Book Store

Welcome to my Book Store



Resources

- IIS Web Site: <https://www.iis.net>
- Host ASP.NET Core on Windows with IIS: <https://docs.microsoft.com/en-us/aspnet/core/host-and-deploy/iis/>
- Publish an ASP.NET Core app to IIS: <https://docs.microsoft.com/en-us/aspnet/core/tutorials/publish-to-iis>

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