

SPiDER Scanner User Guide

P/N MH900, v. 09.07.19



CUES Manhole Inspection Division

3600 Rio Vista Avenue
Orlando, Florida 32805



CUES® equipment is designed to be easy to use during day to day operation. However, it is powered electrically and thus must be operated with care and safety. PLEASE READ THE INFORMATION ON SAFETY AND MAINTENANCE EVEN IF THE SYSTEM IS SET UP BY SOMEONE ELSE.

Care was taken in the design of this product and in the production of this document and related materials. However, **CUES®** makes no warranty for the use of its products and assumes no responsibility for any errors or omissions in this document or for incidental or consequential damages resulting from the use of the products or the information contained in this document. Specifications may change without notice.

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We would be pleased to hear from you. If you see any errors or desirable extensions or improvements, please write us at the following address, C/O Operator's Manuals: **CUES®** Corporate Office 3600 Rio Vista Avenue Orlando, Florida 32805

More locations to serve you!

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770-945-9604 FAX

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CUES® toll free hot line for
Customer Service and ordering parts:
800-854-CUES (800-854-2837)

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Styles and specifications are subject to change without notice.

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SAFETY PRECAUTIONS

Precautions must always be taken when operating electronic equipment. Exposed wires, damaged equipment, or improper operation can lead to a dangerous situation.

Please take a few minutes and read this entire manual prior to operating the equipment. Follow all safety procedures and thoroughly inspect equipment prior to use each day. This will help the equipment retain it's full value and will reduce the risk of injury, property, and/or equipment damage.



- Read the entire manual before attempting to connect or operate any equipment.
- Connect and disconnect cables only when the electric power is turned OFF.
- Never remove protection covers from the equipment or power generator. Internal repairs should only be done by an authorized CUES technician.
- If using a portable generator, always place it in an open area away from other equipment, manholes or obstructions prior to start-up; do not use a portable generator in an enclosed area.
- Upon receipt of the equipment, check for visible damage. If there is any evidence of rough handling, if damage is found, or if any equipment is missing, please contact the CUES Customer Service at 1-800-327-7791.

PERSONAL SAFETY EQUIPMENT & TRAINING

CUES stresses the use of appropriate safety equipment while working in and around manholes and during system operation. Safety should constantly remain the utmost priority. NOTE: The user of CUES products is responsible for all training and operation under federal, state and local guidelines and regulations for both confined space entry and traffic control. Recommended safety equipment includes but is not limited to the following:

- Safety goggles
- Work gloves
- Steel-toed boots
- Reflective vests
- Hard hats
- Filter masks (full respirators may be necessary)
- Flashlights
- Safety lines
- Traffic warning signs
- Traffic cones
- Gas detectors
- Ventilation fans

CUES ® makes no warranty for the use of its products and assumes no responsibility for any errors or omissions in this document or for incidental or consequential damages resulting from misuse of the products.



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SPiDER SPECIFICATIONS	
Hardware	
Tablet Control of Camera Functions and Data Management	YES
Tablet of Video Review Only	YES
Wireless (Can be attached to any deployment system)	YES
On Board Battery	YES
On Board Processing Unit	YES
On Board Data Storage	YES (5TB)
On Board Pre-Processing of Data	YES
On Board Post-Processing of Data	YES
Dependant on payout / data cable	NO
Stable deployment to 50 ft	YES
Digital Camera	YES
Number of Cameras	8
Resolution Density	1 mm per pixel
Resolution per scan	1 Billion Points
Camera Type	Stereoscopic with Visual Odometry
Camera Weight	35 LBS
Depth of Deployment	50 ft
Maximum manhole diameter (ft)	15 FT
Input I/F	Wi-Fi and Ethernet
Output I/F	Wi-Fi and Ethernet
Input/Output Connector	USB 2.0 / Ethernet
Dimensions (H x W)	11" x 18"
Temperature	Operation: STD temp: 0°~70°C; W/T temp: -40°C ~ +85°C Storage: -55°C ~ +95°C
Environment	Vibration: 5G @7~2000Hz Shock: 50G @ 0.5ms

SPiDER SPECIFICATIONS - continued	
SPiDER to Tablet Communication:	WPA2 WiFi with AES Encryption
SPiDER to Processing Appliance Download Communication:	Ethernet with HTTPS Encryption
Processing Appliance Download Media:	Portable drive or direct Ethernet connection to network
WIFI SECURITY:	Independent password protection with modification settings
HTTPS Encryption:	Custom Generated Certificates To Match Existing Client Certificates (User configurable)
SPiDER Operating System:	Linux 4.19 Kernel Security Hardened
Processing Appliance Operating System:	Linux 4.17 Kernel Security Hardened
Malware Protection:	Only running executables from the root file system
	Root file system and Kernel are digitally signed and verified at system startup
Firmware Upgrades:	Downloaded from CUES website and digitally signed to ensure validity of upgrade
Support:	Remote Access to Processing Appliance via internal or external network internet connection
Compatible Control Device:	Wi-Fi enabled device with web browser such as tablet, laptop, or computer running Apple, Android, or Windows operating system.

FEATURES	
Distance to bottom alert	YES
Manhole Metrics Report at end of inspection	YES
Actual Manhole Outline in Metrics Report	YES
Media Stitching using 3D Point Cloud	YES
Media Stitching using vertical payout	NO
Motion Tolerance / Compensation	YES

DELIVERABLES	
3D Color Point Cloud	YES
3D B/W Point Cloud	NO
3D Video	YES
3D Imagery	YES
Measuring Capabilities	YES
Measurement Accuracy	1 mm
MPEG 2D Video	YES

Start of day / Install charged batteries:

1. Connect the two fully charged batteries into the SPiDER.
2. Ensure the tablet Wi-Fi is connected to 'CUES-SPIDER-XXXX'.
3. If prompted for password by tablet, please enter password as "SPIDER@CUES". Verify the tablet date and time are current.
4. Turn ON the tablet SPiDER user interface using a web browser and browsing to SPIDER.com, or anywebsite.com - as long as it ends in .com
5. Replace the batteries every four hours.



Remember to check the batteries every (4) hours!

At each manhole, perform the following:

1. Open the manhole.
2. Erect the tripod to the side of the open manhole, not above it.
3. Clean all 4 SPiDER camera lens well.
4. Mount the SPiDER to the tripod and connect using the push pin tethered to the carbon fiber pole.
5. Move the tripod over the open hole, level it, and add an extension C-F Pole.
6. Enter the Project, Manhole Number and Operator Field using the tablet to unlock the "Start Recording" button.
7. Turn on the lighting to default 20% if it is a standard 4-6 foot wide manhole. LED intensity should be increased if the manhole is wider or dark than normal.
8. Raise the SPiDER as high as possible.
9. Block any sun glare from appearing inside the manhole to minimize loss of point cloud using the supplied light diffuser (black side facing the sun).
10. Deploy the SPiDER using the drill at speed 1 and half press on the trigger for approximately 7 feet/min descent.
11. Add a carbon fiber pole, as needed, for every 4 feet descent.
12. When the scanner reaches the chimney and the pavement is no longer visible in the tablet, stop the descent of the SPiDER for a few seconds to allow the scanner to adjust to the darker surroundings.
13. Continue to deploy the SPiDER until you reach the bottom of the manhole (ideally 6 inches from bottom) and the channel is clearly visible in the tablet.
14. Press "Stop Recording".
15. Lights will flash 3 times to indicate the SPiDER has stopped recording. If so, raise the SPiDER at drill speed 2 out of the manhole. NOTE: If the lights do not flash, then the unit is still recording and the batteries must be removed. If the lights flash 10 times, it means less than 10% recording space remains on the SPiDER. If the SPiDER flashes continuously, the SPiDER is out of hard drive space.
16. When the SPiDER reaches the surface, turn off the lights.
17. Store the equipment, remove the SPiDER, close the manhole and proceed to the next manhole.



For help and support, contact CUES Customer Service at 800.327.7791



Always block direct sunlight into the manhole!



Clean all (4) SPiDER lens before each scan is started!

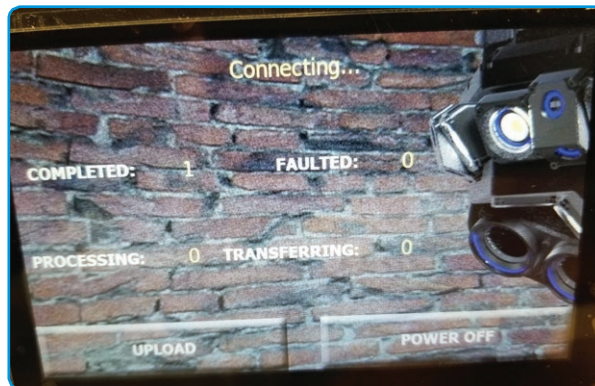


The SPiDER does not have user-serviceable parts! DO NOT OPEN THE COMPONENTS!



Daily Data Transfer

1. Connect the shore-power plugs to the SPiDER (instead of batteries).
2. Plug in the green data transfer cable from the SPiDER server (DELL-PPA) to the Ethernet port of the SPiDER.
3. Wait until the server status changes from "Connecting" to "Downloading" on the screen:



4. When the server indicates "No Active Downloads", the SPiDER has been emptied.
5. The SPiDER can be disconnected anytime during data transfer and it will resume when it is connected.
6. Allow the server time to process the data.
7. Plug in a portable drive (not flash drive) to the USB port in the front of the server.
8. Press "Upload" on the touch screen of the server to transfer any of the processed data to the portable drive.
9. Any uncompleted logs will continue to be processed.
10. The processed data will saved in the folder "CUESDATA".



Preparing For The Next Day

- Charge all SPiDER Batteries
- Charge the tablet
- Charge the winch drill batteries



▶ LOCAL INSTALLATION INSTRUCTIONS

MINIMUM SERVER REQUIREMENTS

- Windows 10 or later
- 1.4 GHz 64-bit processor
- 4 GB
 - Dual Core CPU
 - 100 GB System drive space
 - (2 GB for Server with Desktop Experience installation option)
 - ECC (Error Correcting Code) type or similar technology
- Network Adapter
 - An Ethernet adapter capable of at least gigabit throughput

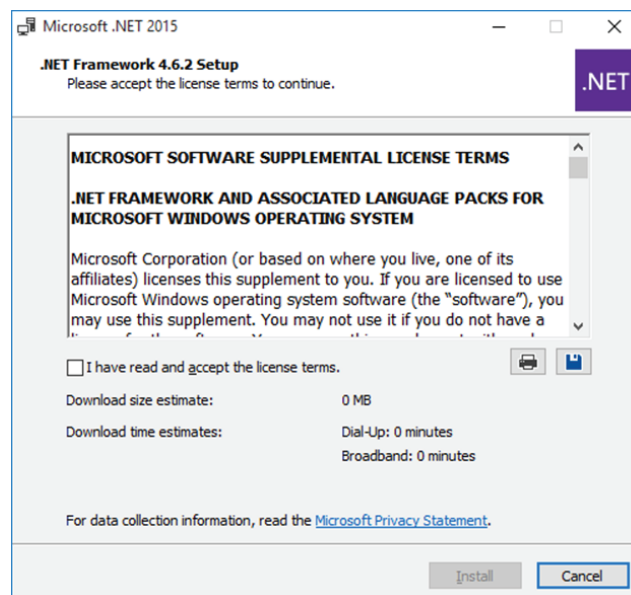
LOCAL INSTALLATION

The SPiDER Viewer application requires that the following be software be installed on the server prior to installation:

- .NET Framework 4.6 or later
- SQL Server Express
- Internet Information Services

.NET FRAMEWORK 4.7

Download and run the .NET Framework 4.7.2 Installer from the following location:
<https://dotnet.microsoft.com/download/dotnet-framework/net472>



Accept the license terms and click “Install” to install the .NET Framework.

▶ LOCAL INSTALLATION INSTRUCTIONS

INSTALL SQL SERVER EXPRESS

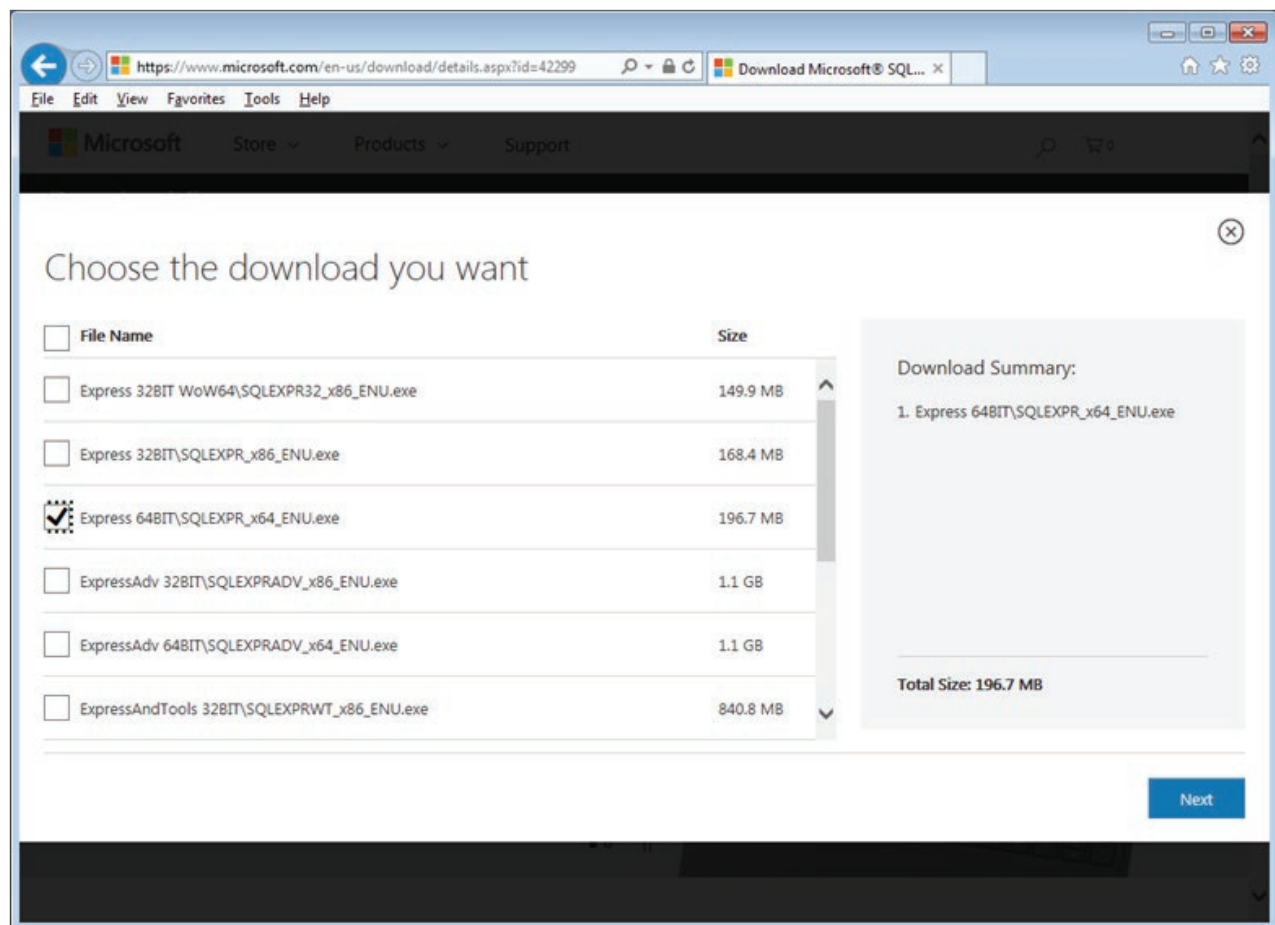
The SPiDER Viewer application is compatible with SQL Server 2005 or later. If you do not have access to an instance of SQL Server, you will need to download and install SQL Express. These instructions will guide you through installing and configuring SQL Server 2014 Express Edition.

Download and run the SQL Server 2017 Express Edition installer from the following URL:

<https://www.microsoft.com/en-us/sql-server/sql-server-editions-express>

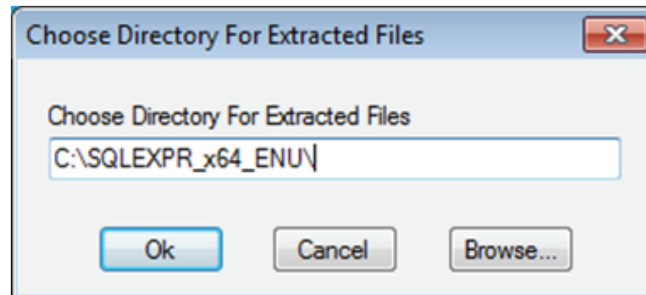
Select an appropriate installer file for your system. If you are running a 32-bit version of Windows, you should choose the "Express 32BIT\SQLEXPR_x86_ENU.exe" file. If you are running a 64-bit version of Windows, you should choose the "Express 64BIT\SQLEXPR_x86_ENU.exe" file.

You may choose download the "ExpressAndTools 32BIT\SQLEXPR_x86_ENU.x86" or "ExpressAndTools 64BIT\SQLEXPR_x64_ENU.x86" files. This download will also install SQL Server Management Studio, which is not necessary for the SPiDER Viewer, but eases some tasks associated with the management of a SQL Server installation.

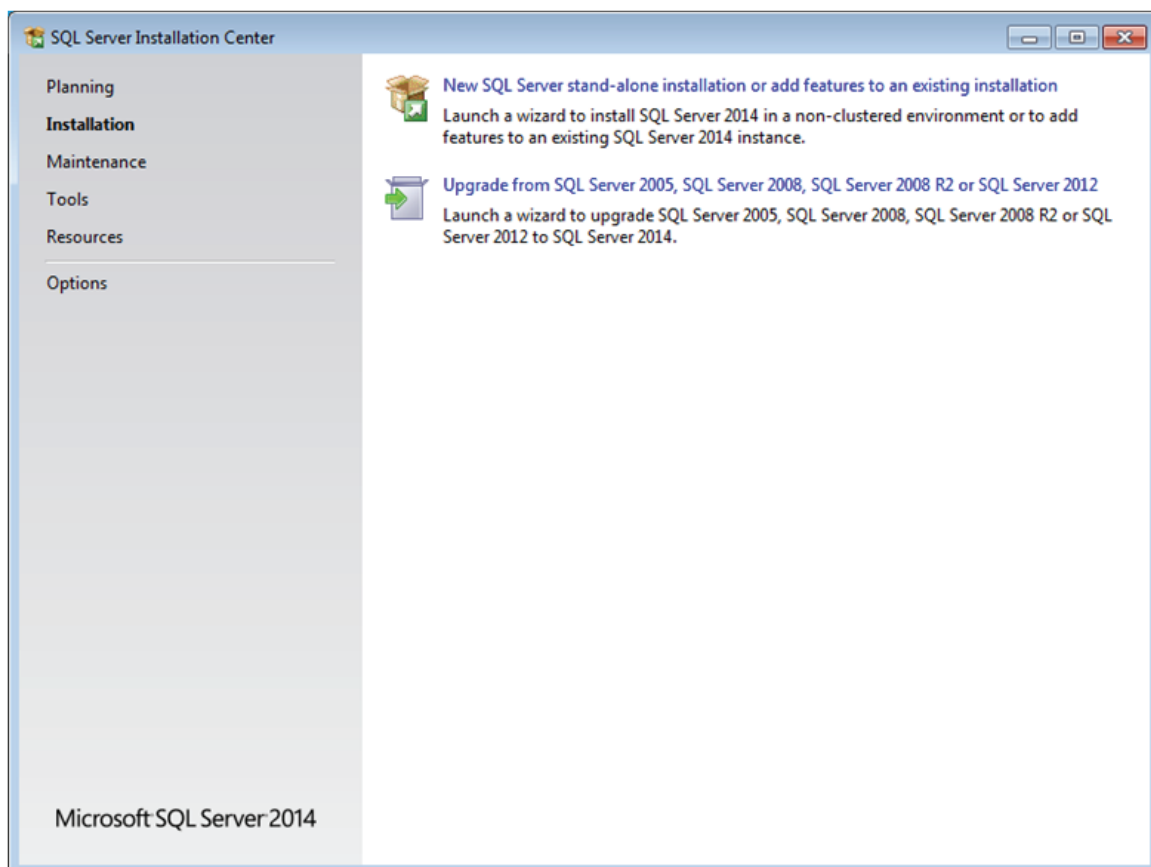


▶ LOCAL INSTALLATION INSTRUCTIONS

You will be prompted to choose a directory for extract files. Enter the name of a folder to extract the installation files and press OK.

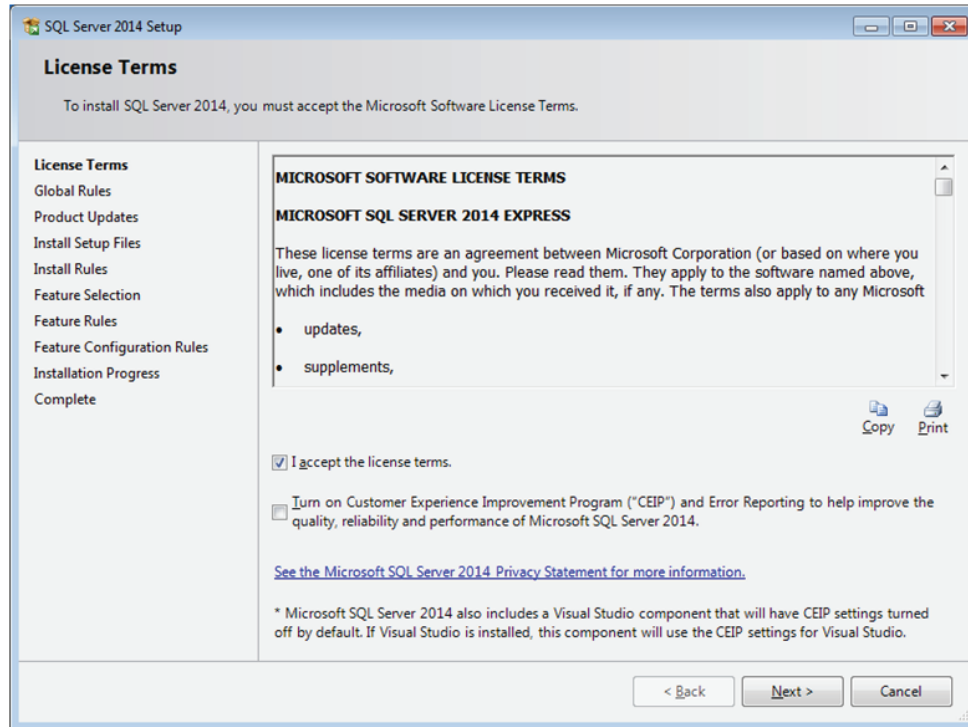


After everything is extracted, you will be presented with the following screen. Click the link for "New SQL Server stand-alone installation or add features to an existing installation".

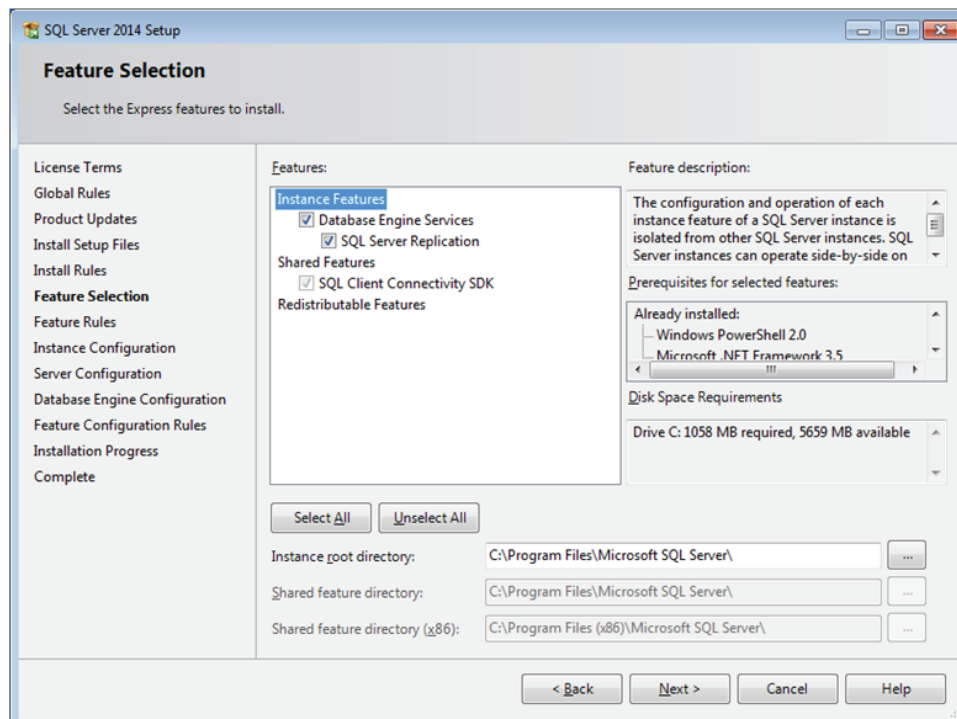


▶ LOCAL INSTALLATION INSTRUCTIONS

On the License Terms page, accept the license terms and click “Next” to continue.



On the Feature Selection page, check the box for “Database Engine Services”. Accept the defaults for all of the directory paths and click “Next” to continue.



▶ LOCAL INSTALLATION INSTRUCTIONS

On the Instance Configuration page, accept the default values for the Named instance and the Instance ID, and click "Next" to continue.

SQL Server 2014 Setup

Instance Configuration

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

License Terms
Global Rules
Product Updates
Install Setup Files
Install Rules
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

☐ Default instance
☒ Named instance:

Instance ID:

SQL Server directory:

Installed instances:

Instance Name	Instance ID	Features	Edition	Version
---------------	-------------	----------	---------	---------

< Back Next > Cancel Help

On the Server Configuration page, accept the default values for the service accounts and collation and click "Next" to continue.

SQL Server 2014 Setup

Server Configuration

Specify the service accounts and collation configuration.

License Terms
Global Rules
Product Updates
Install Setup Files
Install Rules
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

Service Accounts Collation

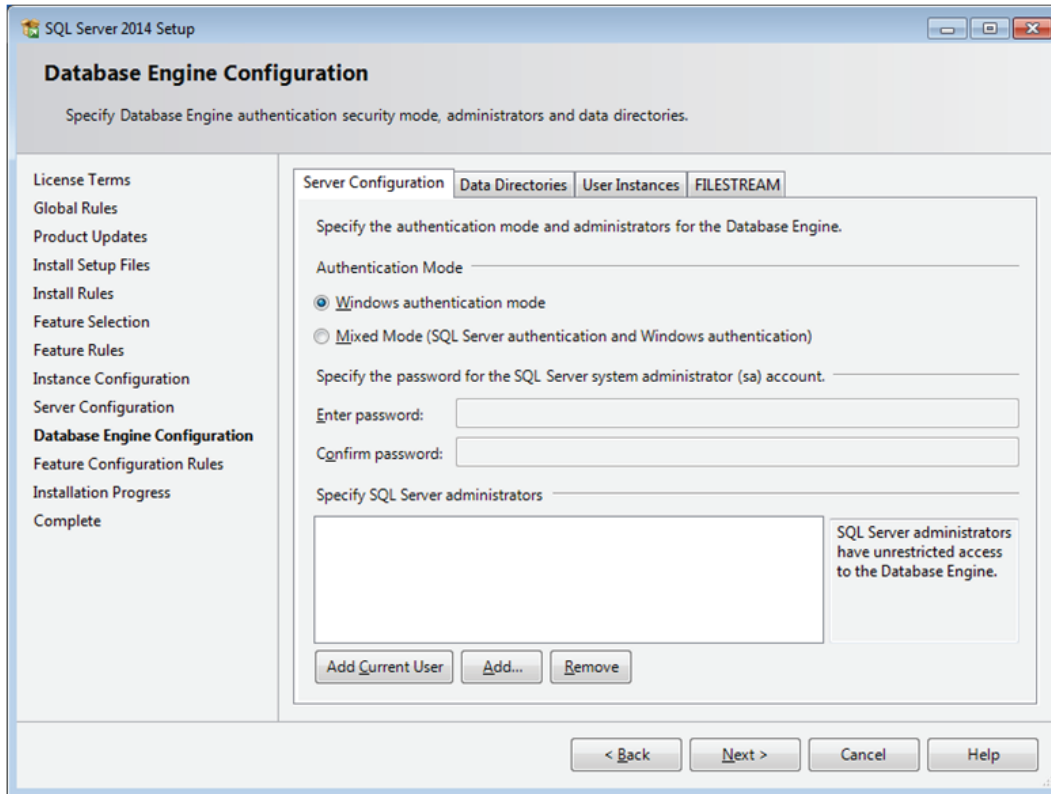
Microsoft recommends that you use a separate account for each SQL Server service.

Service	Account Name	Password	Startup Type
SQL Server Database Engine	NT Service\MSSQLSSQL...		Automatic ▼
SQL Server Browser	NT AUTHORITY\LOCAL ...		Disabled ▼

< Back Next > Cancel Help

▶ LOCAL INSTALLATION INSTRUCTIONS

The Database Engine Configuration page allows you to specify the user accounts that can be used to access this installation of SQL Server. This installation guide assumes that this installation of SQL Server is only used for the SPiDER viewer software. To keep things simple, the application runs with SQL administrative privileges. Savvy users can make use of additional user accounts to lock things down.



RECOMMENDED: If you are running the Home Edition of Windows 7 or Windows 10, or your computer is not part of a domain, you should select the Mixed Mode for the SQL Server authentication mode, and choose a strong password for the system administrator (sa) account.

If your computer is part of a domain, you should choose Windows authentication mode for more security. If you are using Windows Authentication mode, you must also specify one or more users to be SQL Server administrators. Either add the current user or specify a different user account to be used as the administrator account. Make a note of this account, as it will be needed to configure Internet Information Services.

Accept all of the default values on the Data Directories, User Instances, and FILESTREAM tabs, then click "Next" to continue, then wait patiently while SQL Server installs.

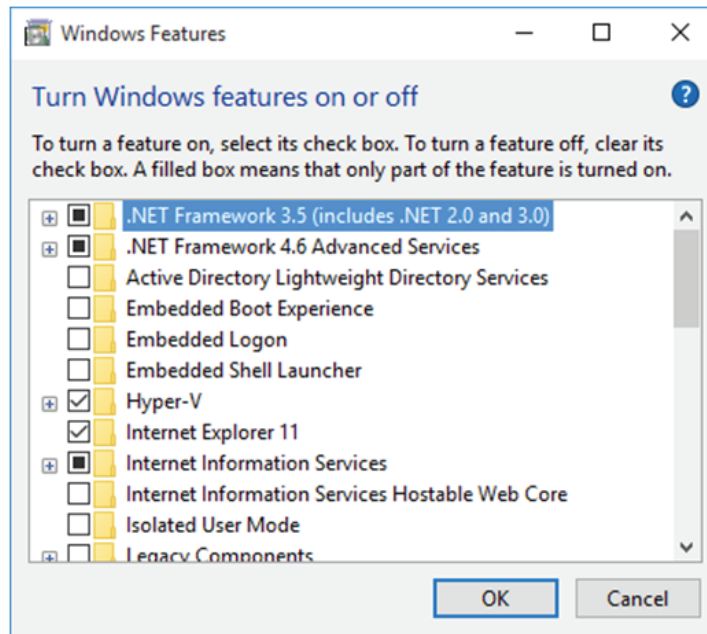


▶ LOCAL INSTALLATION INSTRUCTIONS

INSTALL INTERNET INFORMATION SERVICES

Windows 7/Windows 8/Windows 10

Run the "Turn Windows features on or off" control panel applet. You should see a screen similar to this:



NOTE: The version of the .NET Framework installed on your computer may be newer than 4.6. If this is the case, just select the newer version.

Expand "Internet Information Services" and make sure the following items are selected:

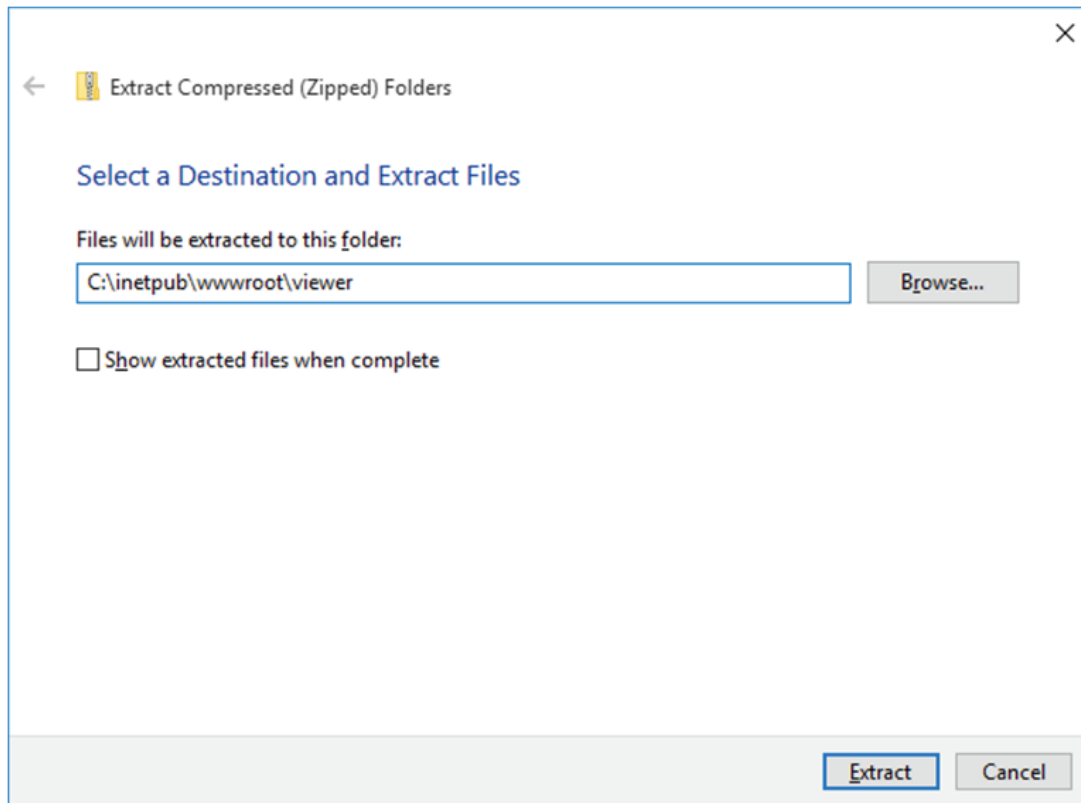
- Web Management Tools / IIS Management Console
- World Wide Web Services / Application Development Features / .NET Extensibility 4.6
- World Wide Web Services / Application Development Features / ASP.NET 4.6
- World Wide Web Services / Application Development Features / ISAPI Extensions
- World Wide Web Services / Application Development Features / ISAPI Filters
- World Wide Web Services / Common HTTP Features / Default Document
- World Wide Web Services / Common HTTP Features / HTTP Errors
- World Wide Web Services / Common HTTP Features / Static Content
- World Wide Web Services / Security / Request Filtering

Click OK to install the required features.

LOCAL INSTALLATION INSTRUCTIONS

EXTRACT THE INSTALLATION FILES

Right click SPiDER.zip deployment package and choose "Extract All...". You will be presented with a screen similar to the following:



Extract the files to the following folder:

- C:\inetpub\wwwroot\viewer

NOTE: You may choose to use a different folder to hold the SPiDER viewer application files. This manual assumes that the above folder is used.

After extracting the files, please double click on the file "DBConnectionSetup.exe" which generates the ConnectionStrings.config file.



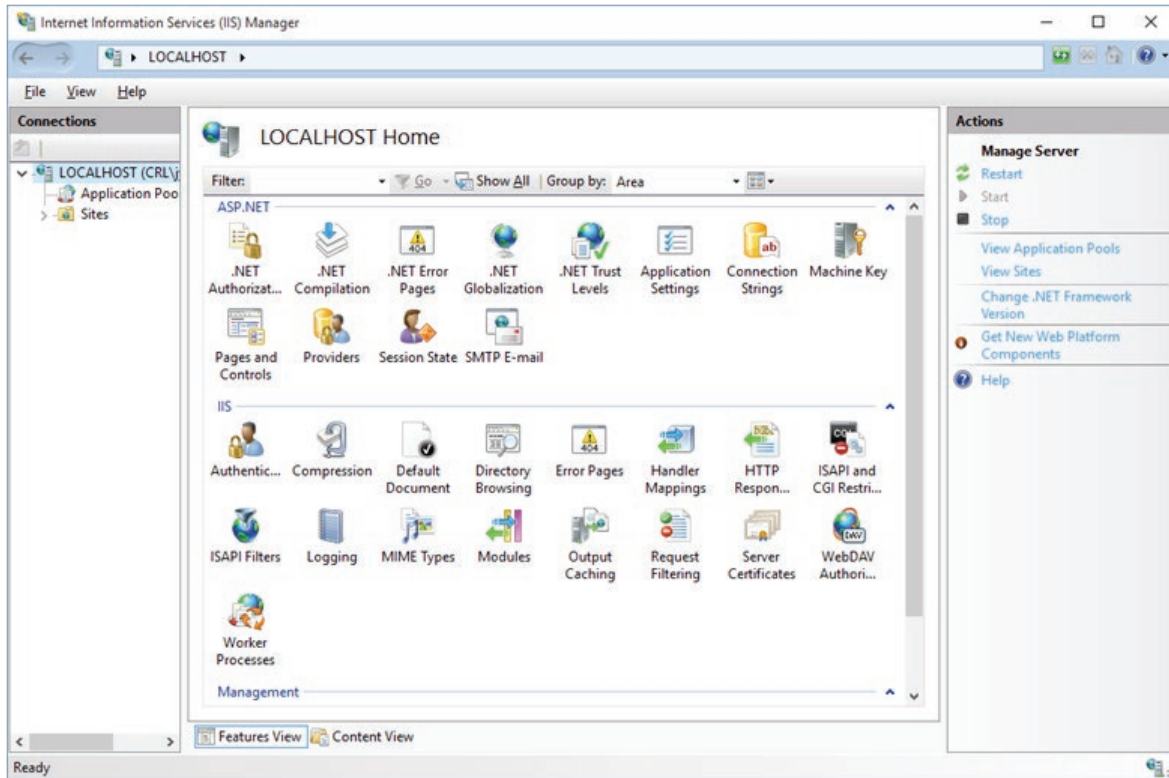


LOCAL INSTALLATION INSTRUCTIONS

CONFIGURE INTERNET INFORMATION SERVICES

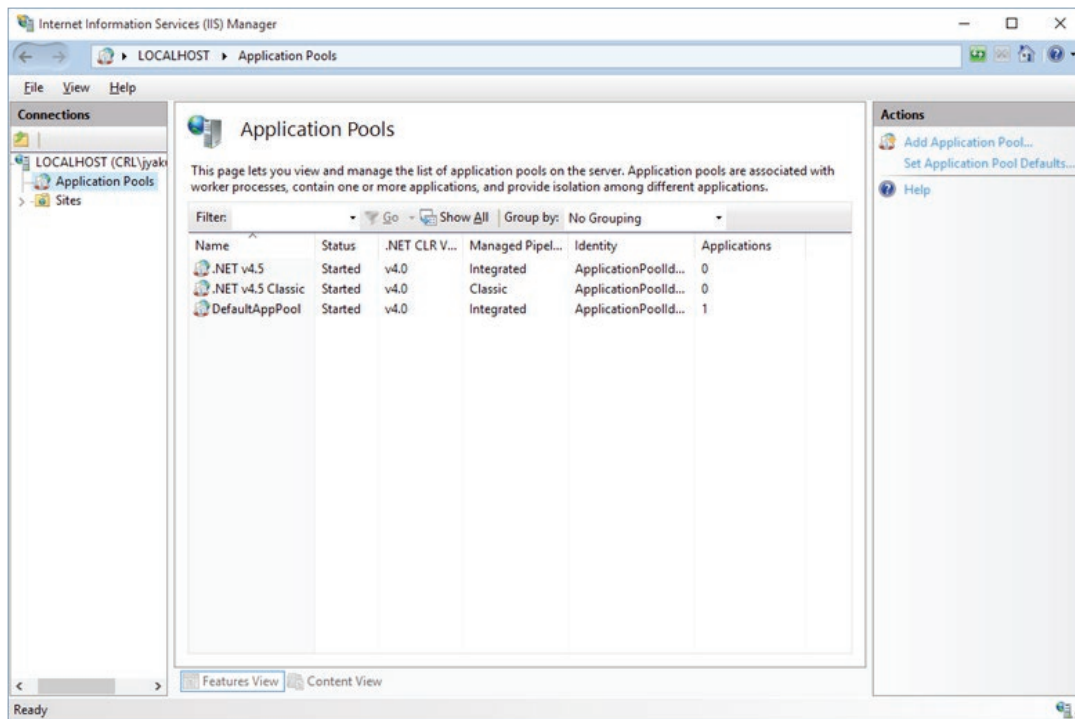
Run Internet Information Services (IIS) Manager. You may need to run this tool as an administrator.

Expand your computer node on the left side of the window.

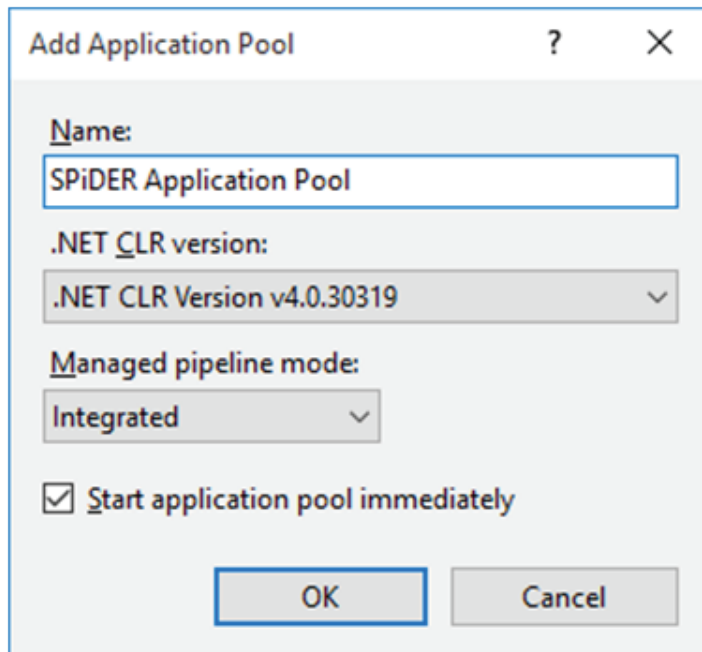


▶ LOCAL INSTALLATION INSTRUCTIONS

Click on the Application Pools node on the left side, then click the Add Application Pool in the Action pane on the right.



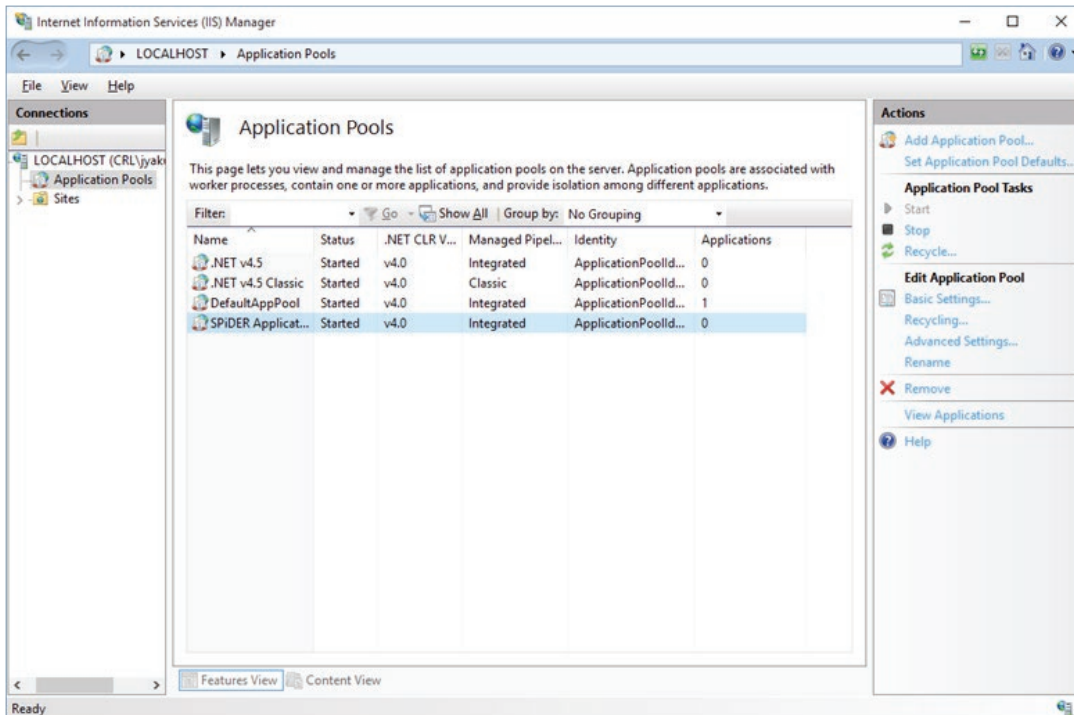
Enter "SPiDER Application Pool" as the name of the new application pool, then click OK. Leave the .NET CLR version and Managed pipeline mode at their default values.



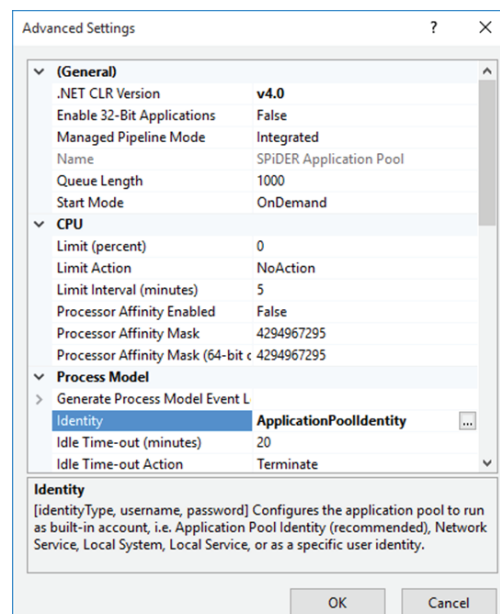
LOCAL INSTALLATION INSTRUCTIONS

This step is optional if you have chosen Mixed Mode authentication as part of the SQL Express installation, or if you are using a SQL Server instance that is configured to use Mixed Mode authentication.

Select the newly created SPiDER Application Pool from the list, then click "Advanced Settings" in the Action pane at the right.

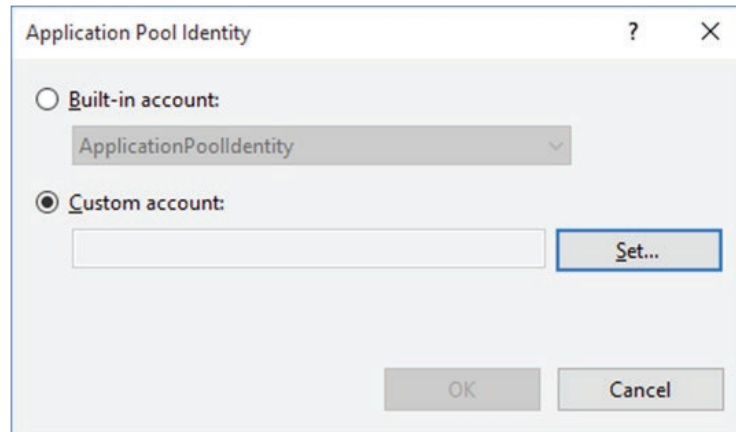


Scroll down to the Identity property and click the "..." button at the right to set the user account.



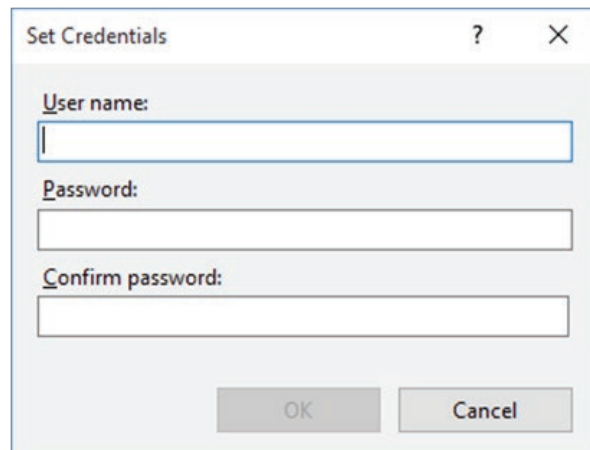
▶ LOCAL INSTALLATION INSTRUCTIONS

Click the radio button to use a Custom account, then click the Set button.



The 'Application Pool Identity' dialog box has a title bar with a question mark and a close button. It contains two radio buttons: 'Built-in account:' and 'Custom account:'. The 'Built-in account:' option is currently selected, and a dropdown menu below it shows 'ApplicationPoolIdentity'. The 'Custom account:' option is unselected. Below the 'Custom account:' radio button is a text input field and a 'Set...' button. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Enter the credentials of the user account that you configured as an administrator for SQL Server, then click OK.



The 'Set Credentials' dialog box has a title bar with a question mark and a close button. It contains three text input fields labeled 'User name:', 'Password:', and 'Confirm password:'. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Click OK again in the Application Pool Identity window, and once more on the Advanced Settings window to commit your changes and return to the Internet Information Services (IIS) manager window.

After creating the SPiDER application pool, please run the following command from a command prompt (run in Admin mode):

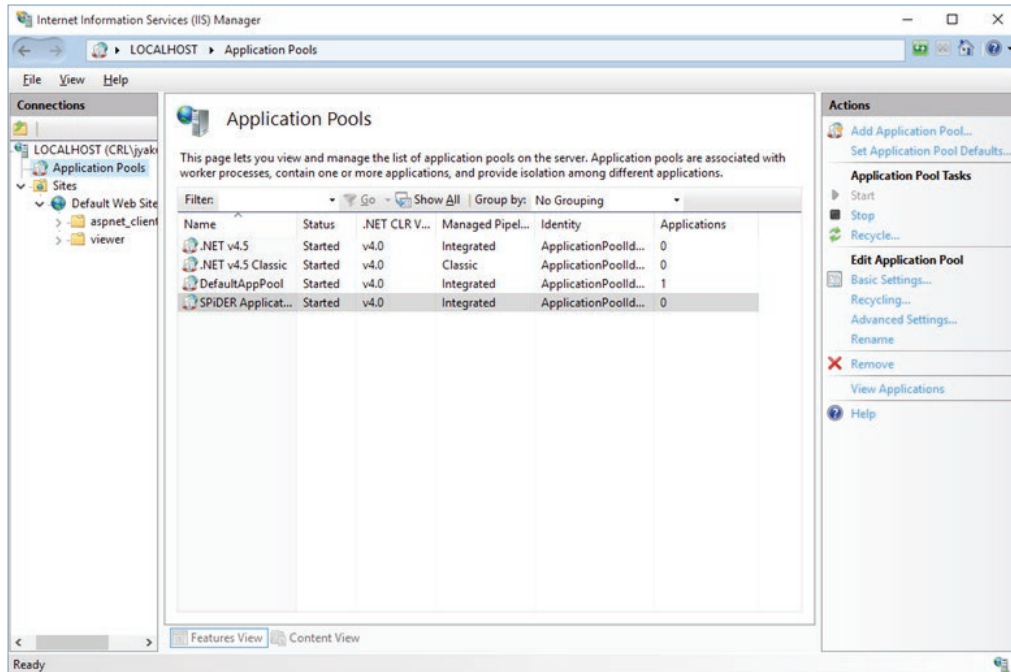
```
cd \Windows\Microsoft.NET\Framework64\v4.0.30319 aspnet_regiis -i
```

If command doesn't work, manually change directories until you are in the v4.0.30319 folder (or most similar subfolder in the Framework64 folder) and run the command "aspnet_regiis -i"



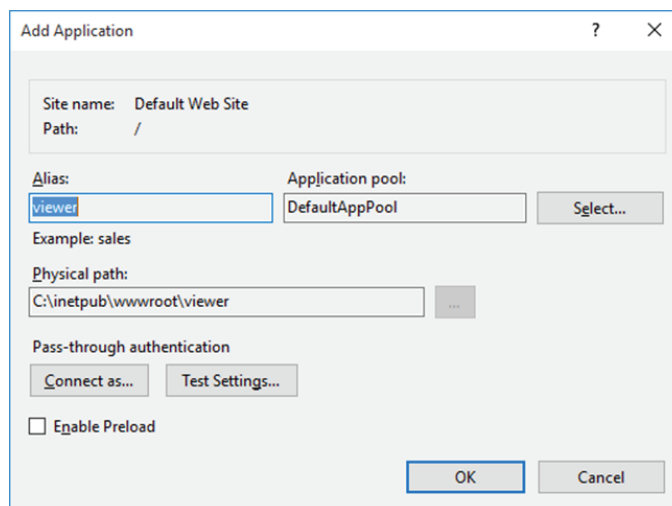
LOCAL INSTALLATION INSTRUCTIONS

Expand the Sites node in the Connections pane at the left of the window, then expand the Default Web Site node. If you unzipped the SPiDER Viewer package to the C:\inetpub\wwwroot\viewer folder, you will see it listed as a folder under Default Web Site.



Right click on the "Viewer" folder, and select "Convert to application" from the context menu.

In the Add Application Window that appears, press the Select button to change the application pool to the SPiDER Application Pool, then click OK to finish creating the application pool.



Open the recommended Firefox browser and enter: <http://localhost/viewer/Home/Index>

Bookmark this page as "Local SPiDER Viewer".

This page intentionally left blank.



SERVER INSTALLATION INSTRUCTIONS

MINIMUM SERVER REQUIREMENTS

- Windows Server 2012 or newer
- 1.4 GHz 64-bit processor
- 4 GB
 - Dual Core CPU
 - 100 GB System drive space
 - (2 GB for Server with Desktop Experience installation option)
 - ECC (Error Correcting Code) type or similar technology
- Network Adapter
 - An Ethernet adapter capable of at least gigabit throughput

SERVER INSTALLATION

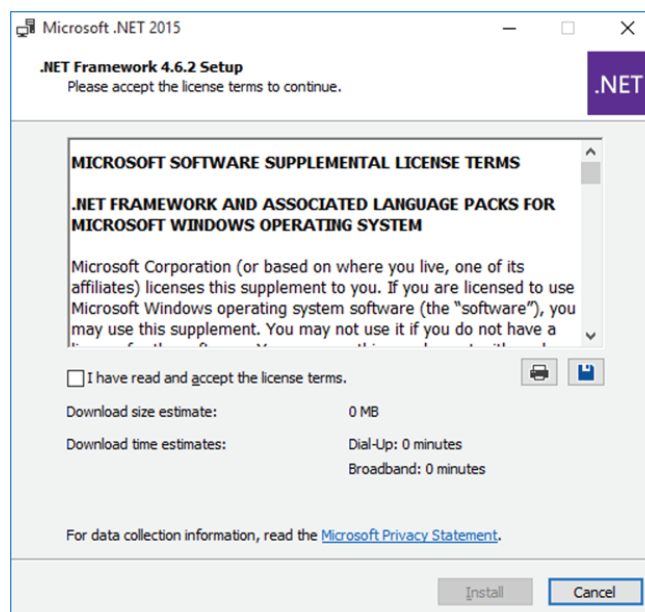
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SERVER INSTALLATION INSTRUCTIONS

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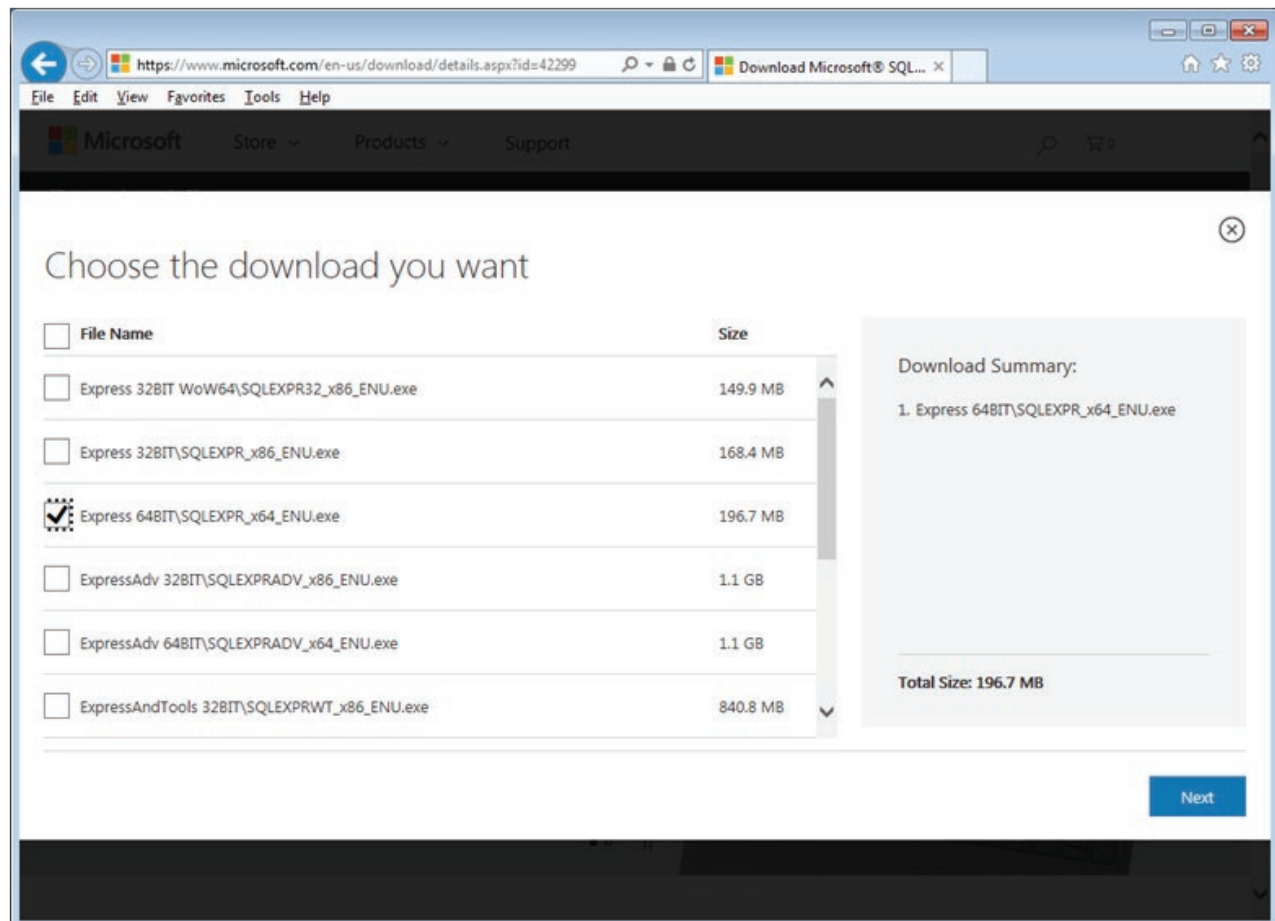
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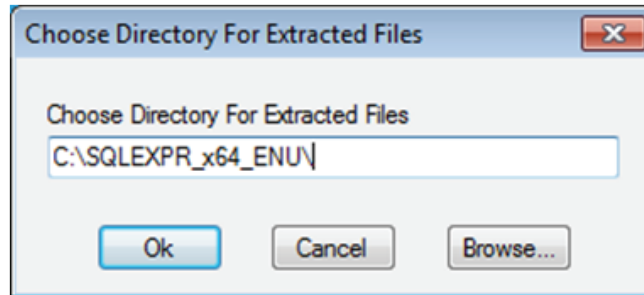
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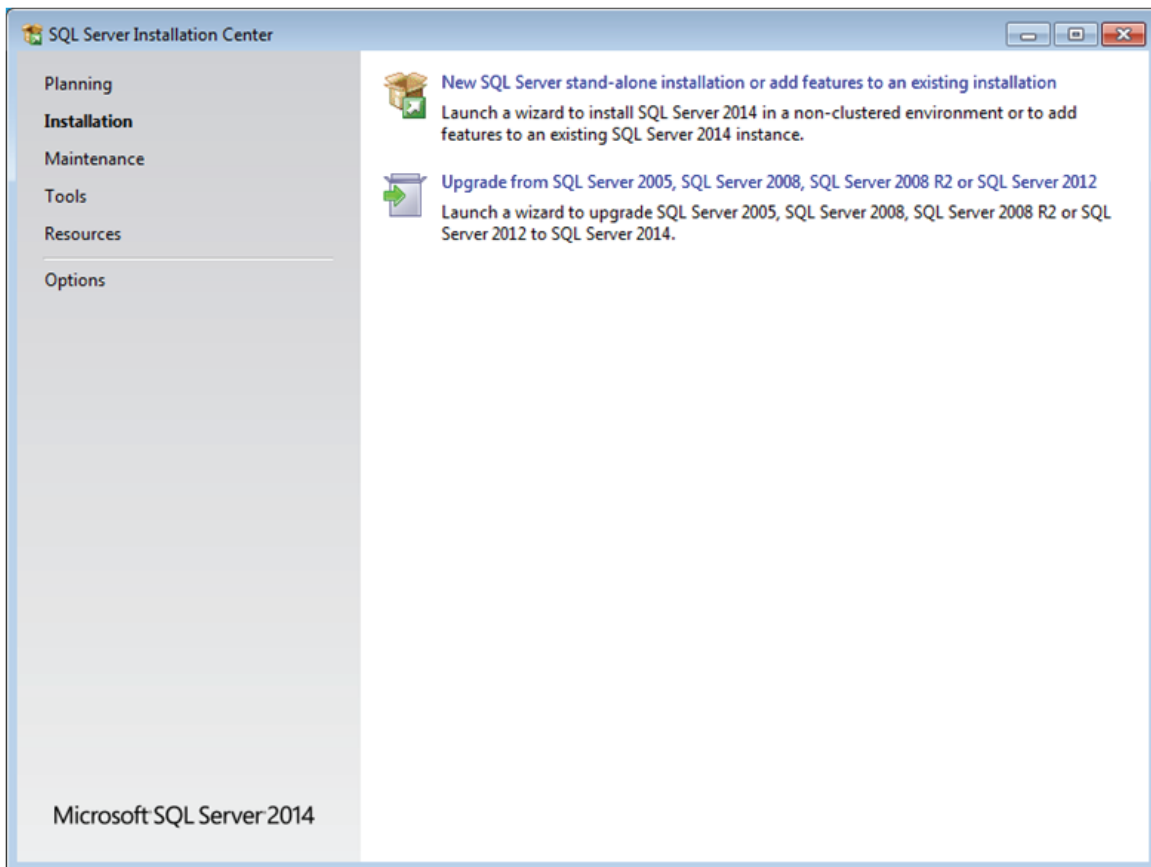
SPiDER

SERVER INSTALLATION INSTRUCTIONS

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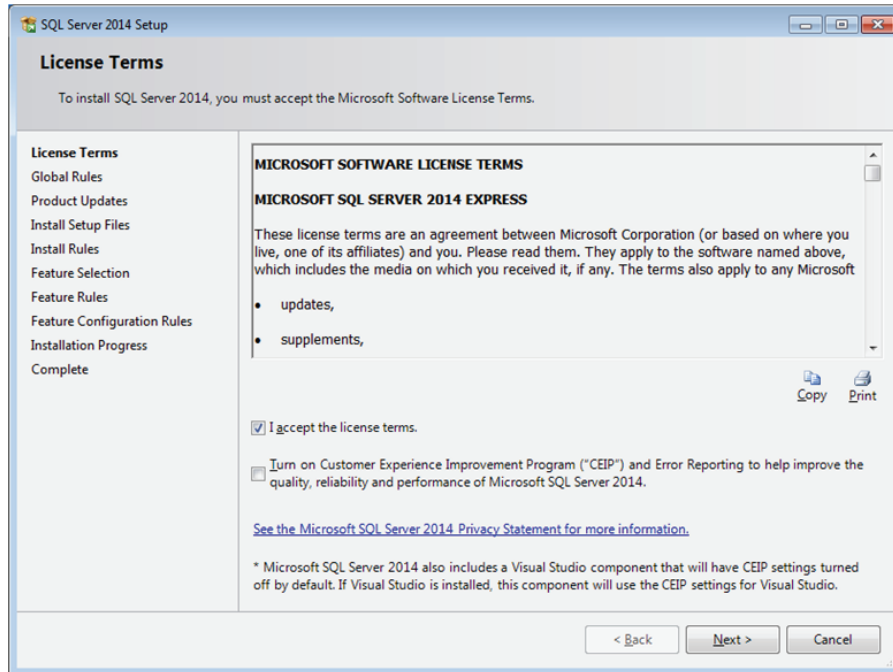


After everything is extracted, you will be presented with the following screen. Click the link for “New SQL Server stand-alone installation or add features to an existing installation”.

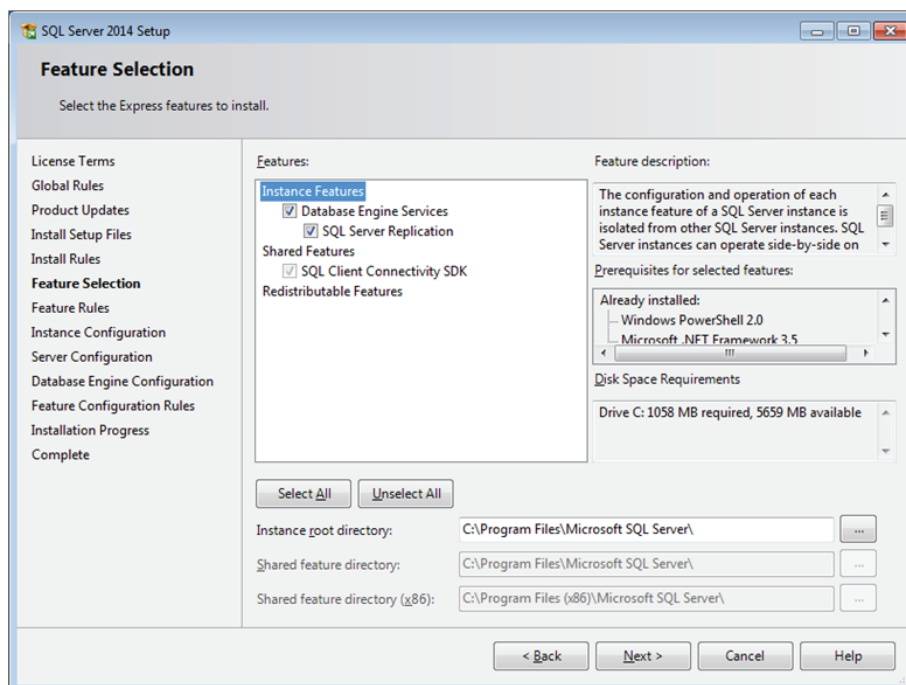


SERVER INSTALLATION INSTRUCTIONS

On the License Terms page, accept the license terms and click “Next” to continue.



On the Feature Selection page, check the box for “Database Engine Services”. Accept the defaults for all of the directory paths and click “Next” to continue.



SERVER INSTALLATION INSTRUCTIONS

On the Instance Configuration page, accept the default values for the Named instance and the Instance ID, and click "Next" to continue.

SQL Server 2014 Setup

Instance Configuration

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

License Terms
Global Rules
Product Updates
Install Setup Files
Install Rules
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

☐ Default instance
☒ Named instance:

Instance ID:

SQL Server directory: C:\Program Files\Microsoft SQL Server\MSSQL12.SQLEXPRESS

Installed instances:

Instance Name	Instance ID	Features	Edition	Version
---------------	-------------	----------	---------	---------

< Back Next > Cancel Help

On the Server Configuration page, accept the default values for the service accounts and collation and click "Next" to continue.

SQL Server 2014 Setup

Server Configuration

Specify the service accounts and collation configuration.

License Terms
Global Rules
Product Updates
Install Setup Files
Install Rules
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

Service Accounts Collation

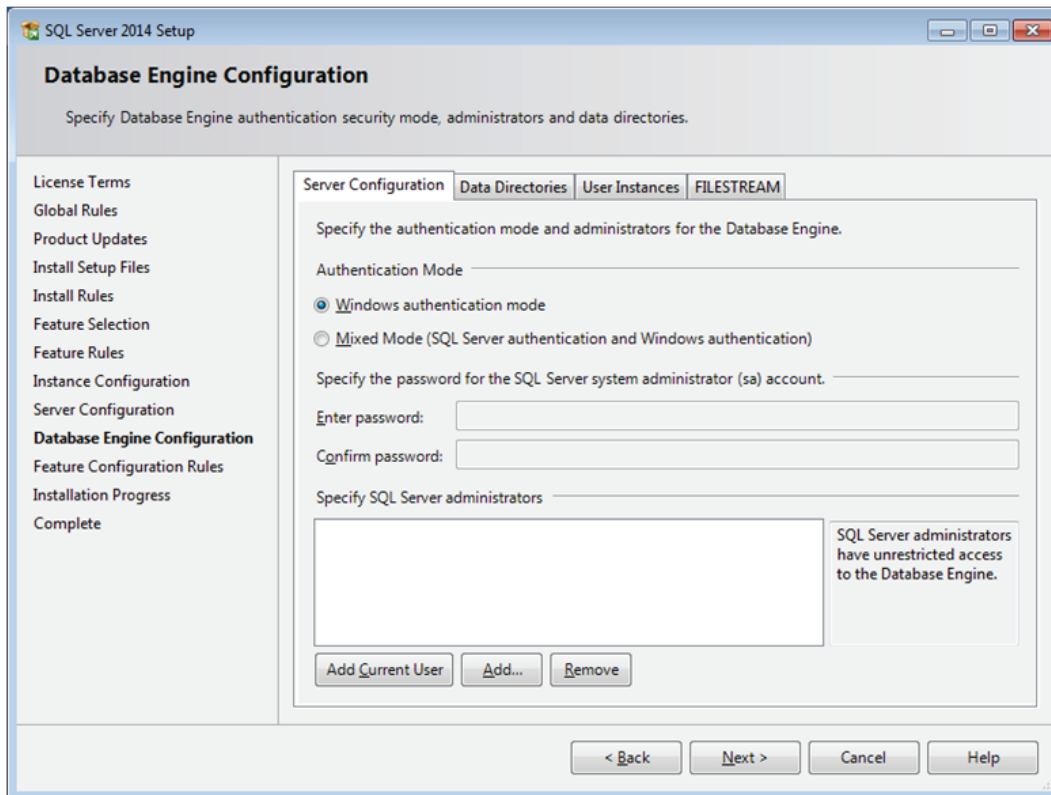
Microsoft recommends that you use a separate account for each SQL Server service.

Service	Account Name	Password	Startup Type
SQL Server Database Engine	NT Service\MSSQLSSQL...		Automatic
SQL Server Browser	NT AUTHORITY\LOCAL ...		Disabled

< Back Next > Cancel Help

SERVER INSTALLATION INSTRUCTIONS

The Database Engine Configuration page allows you to specify the user accounts that can be used to access this installation of SQL Server. This installation guide assumes that this installation of SQL Server is only used for the SPiDER viewer software. To keep things simple, the application runs with SQL administrative privileges. Savvy users can make use of additional user accounts to lock things down.



RECOMMENDED: If you are running the Home Edition of Windows 7 or Windows 10, or your computer is not part of a domain, you should select the Mixed Mode for the SQL Server authentication mode, and choose a strong password for the system administrator (sa) account.

If your computer is part of a domain, you should choose Windows authentication mode for more security. If you are using Windows Authentication mode, you must also specify one or more users to be SQL Server administrators. Either add the current user or specify a different user account to be used as the administrator account. Make a note of this account, as it will be needed to configure Internet Information Services.

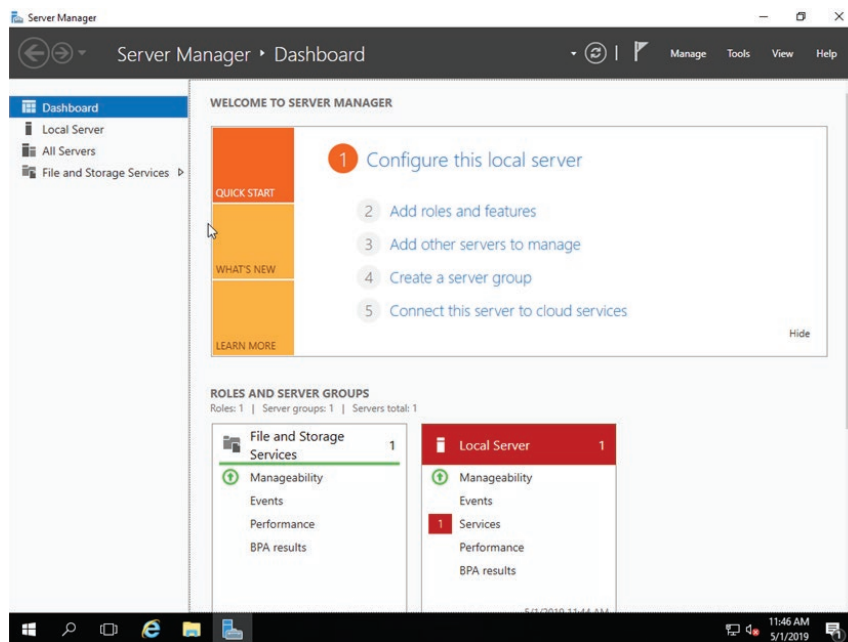
Accept all of the default values on the Data Directories, User Instances, and FILESTREAM tabs, then click "Next" to continue, then wait patiently while SQL Server installs.



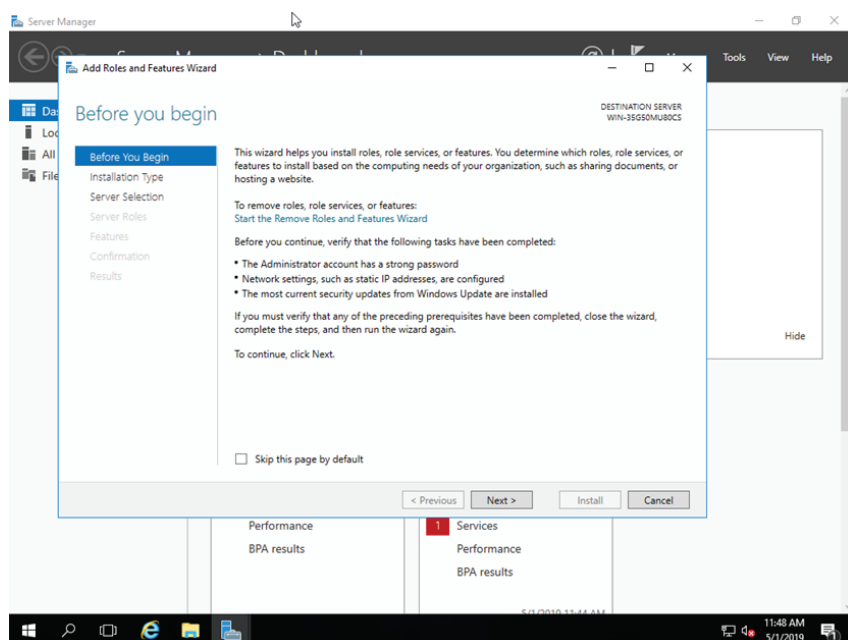
SERVER INSTALLATION INSTRUCTIONS

RUN SERVER MANAGER

Click "Manage", then click "Add Roles and Features" from the drop down menu.

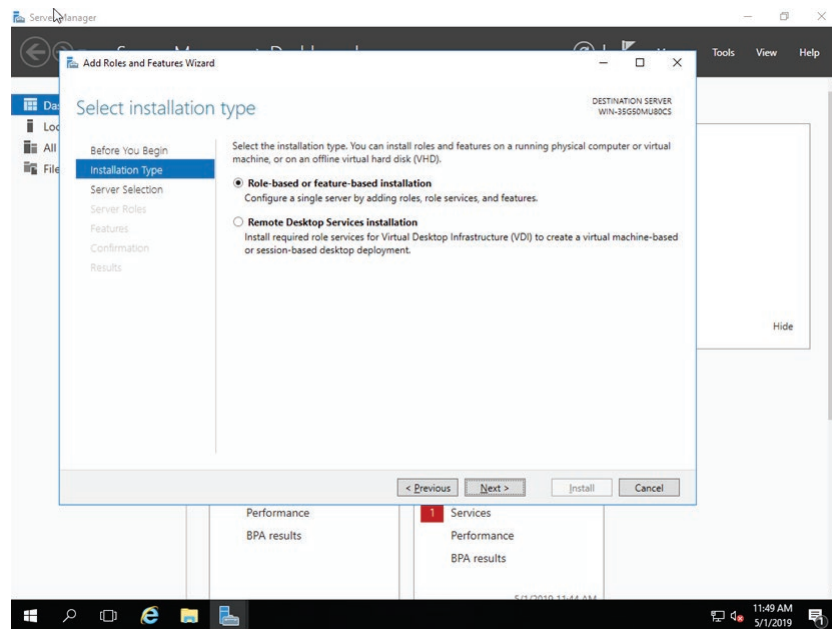


Click "Next" to advance past the "Before you begin" page.

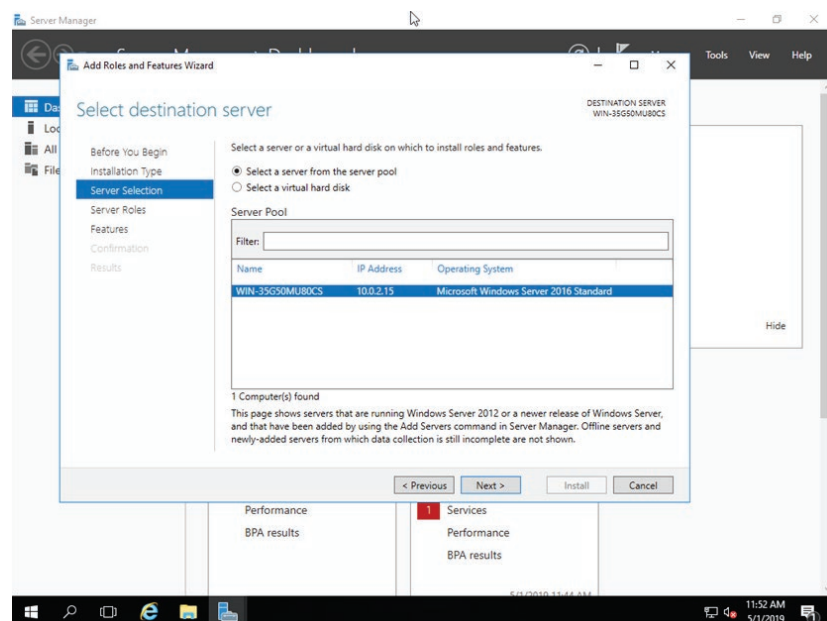


SERVER INSTALLATION INSTRUCTIONS

Choose “Role-based or feature-based installation”, then click “Next”.



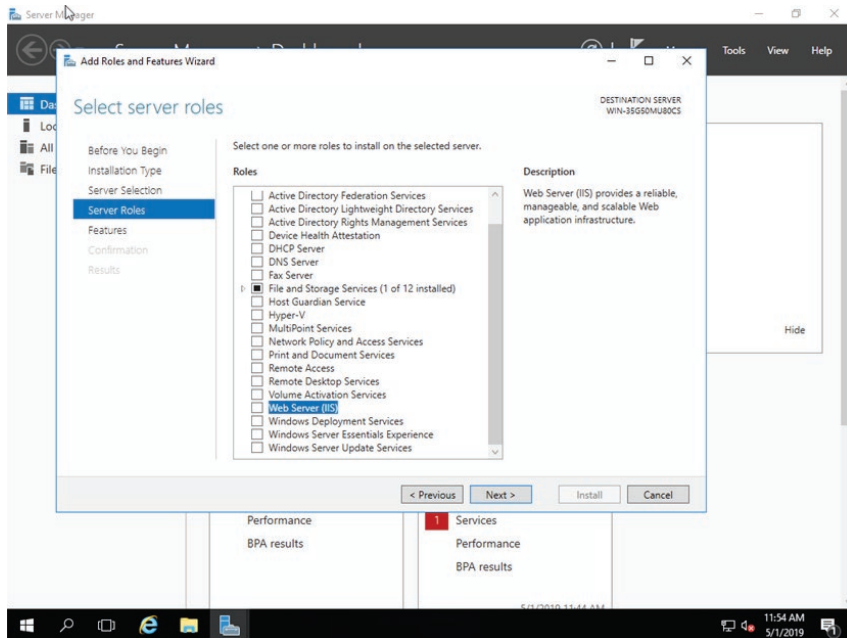
Select your server from the list, then click “Next”.



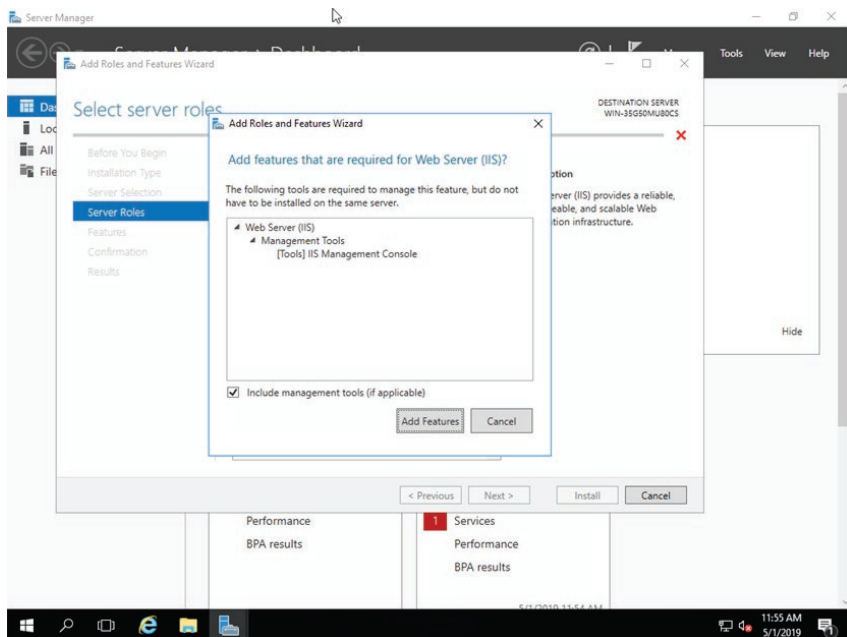
SERVER INSTALLATION INSTRUCTIONS

RUN SERVER MANAGER - continued

Check the box to enable the “Web Server (IIS)” server role.

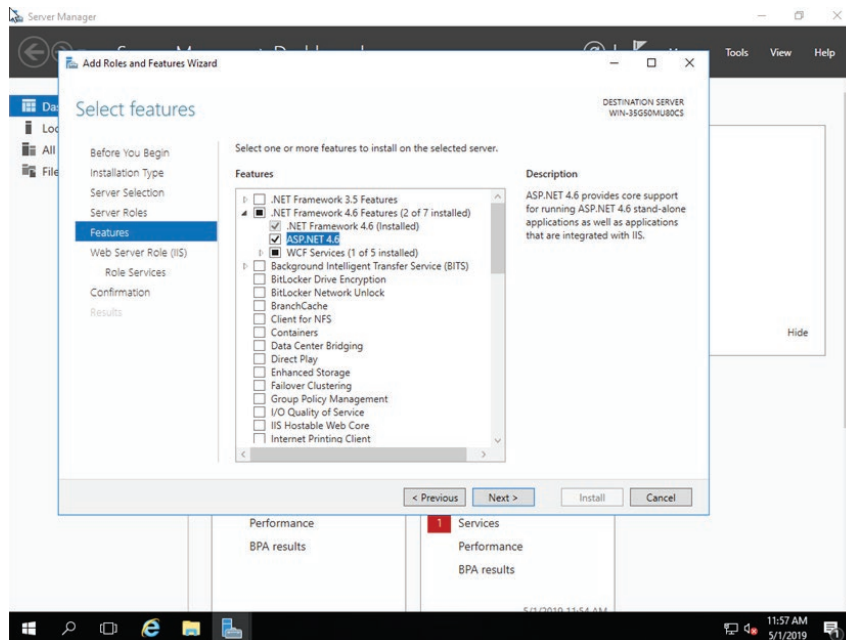


Accept the default settings, then click “Add Features”. Click “Next” to advance to the server feature selection screen.

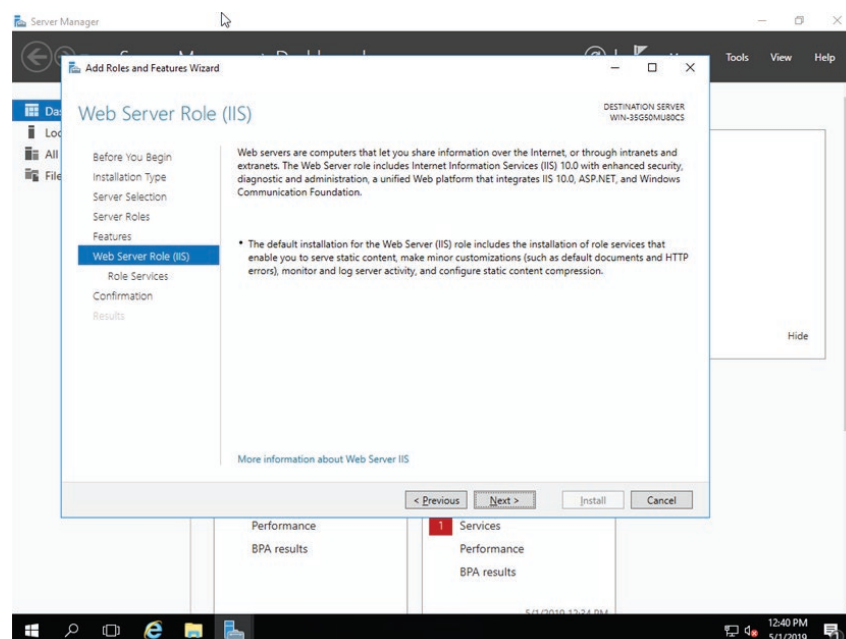


SERVER INSTALLATION INSTRUCTIONS

Expand the options for “.NET Framework 4.6 Features” and check the box to enable “ASP.NET 4.6”
Click “Next” to advance to the “Web Server Role (IIS)” page.



Click “Next” to advance to the “Role Services” page.



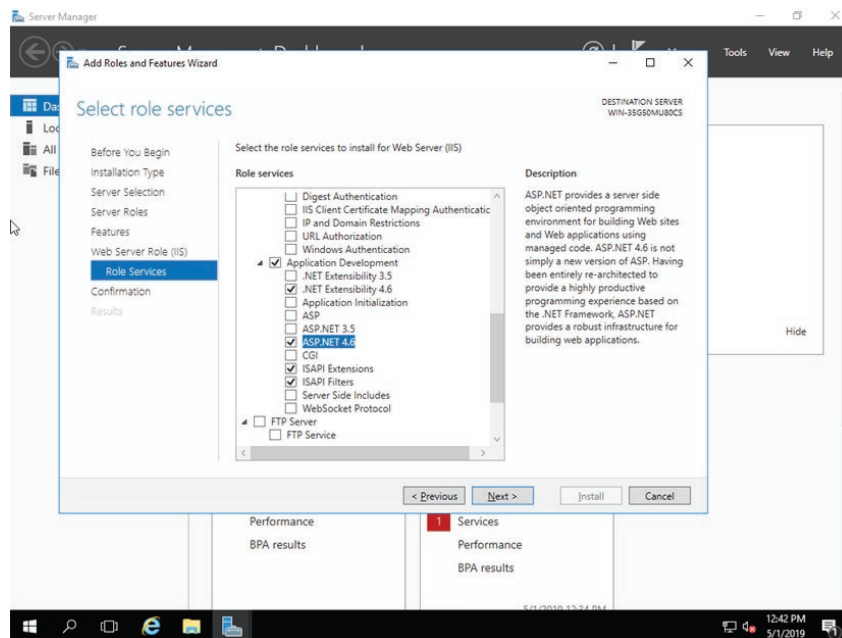
SERVER INSTALLATION INSTRUCTIONS

RUN SERVER MANAGER - continued

Scroll down to “Application Development” and ensure the following services are selected:

- Application Development
- .NET Extensibility 4.6
- ASP.NET 4.6
- ISAPI Extension
- ISAPI Filters

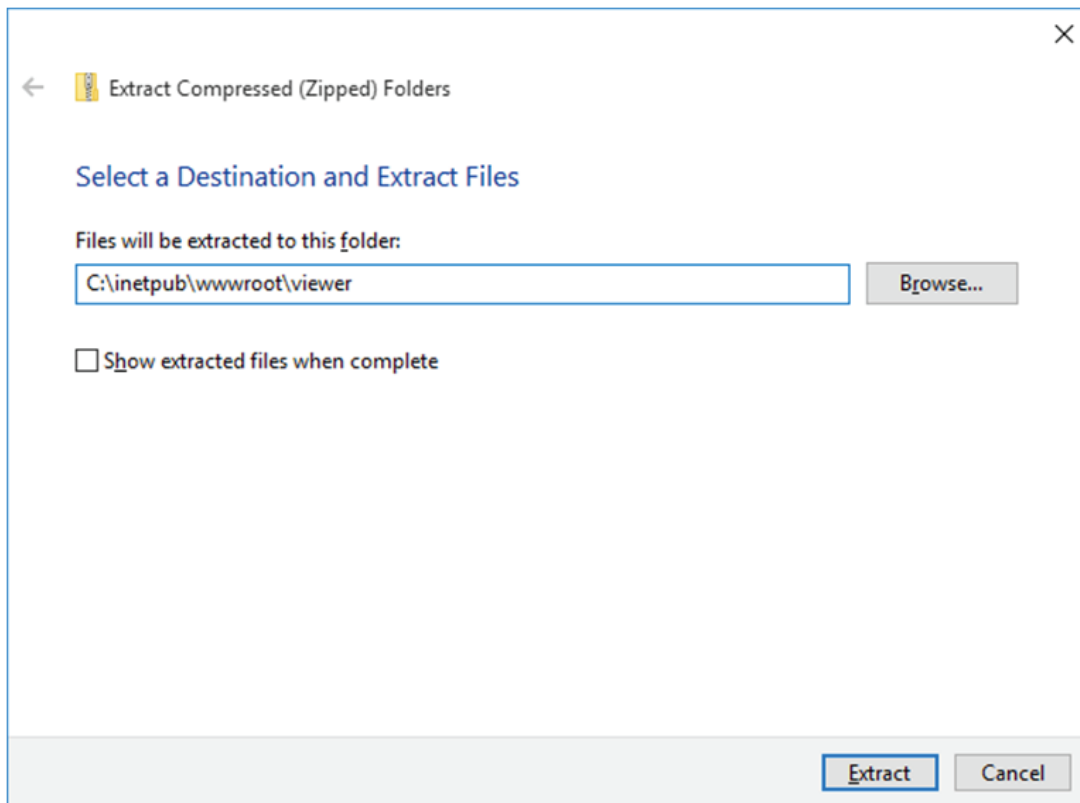
Click “Next” to advance to the “Confirm installation selections” page, then click “Install” to complete the installation of IIS



SERVER INSTALLATION INSTRUCTIONS

EXTRACT THE INSTALLATION FILES

Right click SPiDER.zip deployment package and choose "Extract All...". You will be presented with a screen similar to the following:



Extract the files to the following folder:

- C:\inetpub\wwwroot\viewer

NOTE: You may choose to use a different folder to hold the SPiDER viewer application files. This manual assumes that the above folder is used.

After extracting the files, please double click on the file "DBConnectionSetup.exe" which generates the ConnectionStrings.config file.

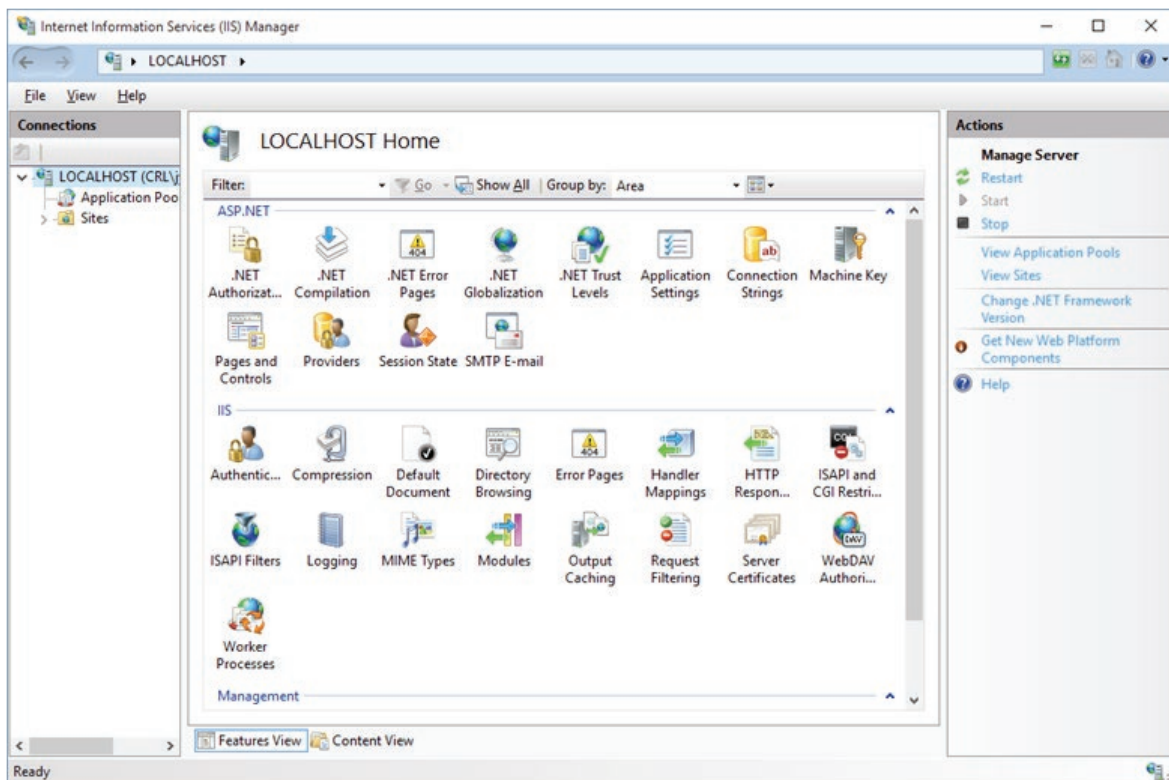


SERVER INSTALLATION INSTRUCTIONS

CONFIGURE INTERNET INFORMATION SERVICES

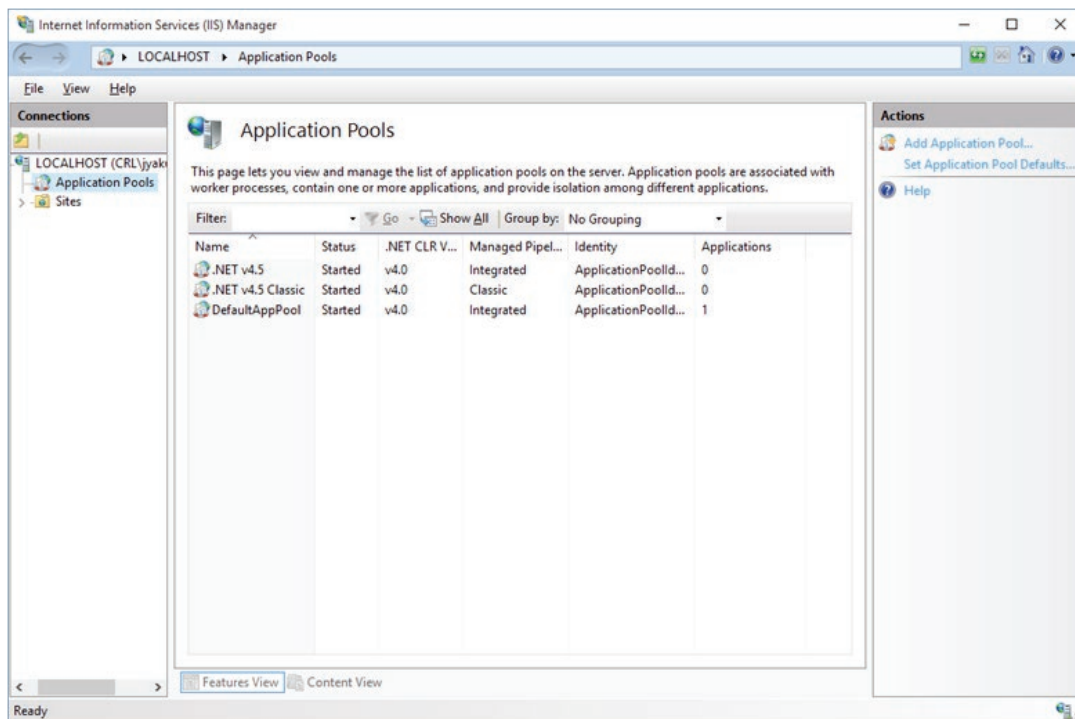
Run Internet Information Services (IIS) Manager. You may need to run this tool as an administrator.

Expand your computer node on the left side of the window.

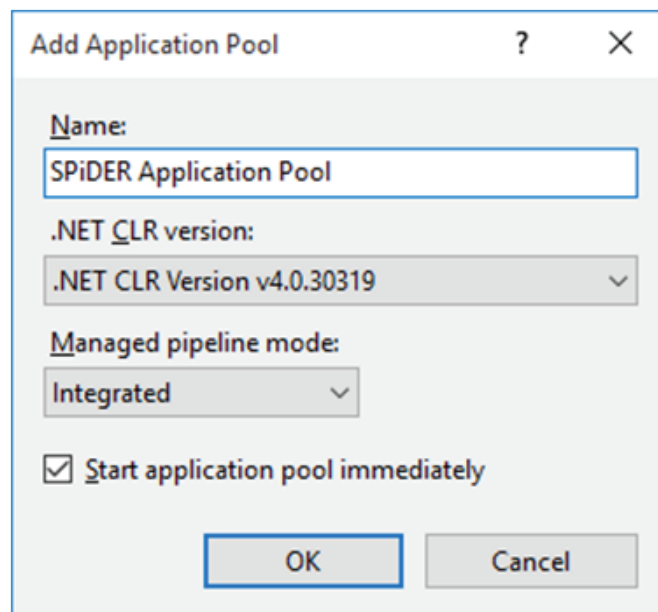


SERVER INSTALLATION INSTRUCTIONS

Click on the Application Pools node on the left side, then click the Add Application Pool in the Action pane on the right.



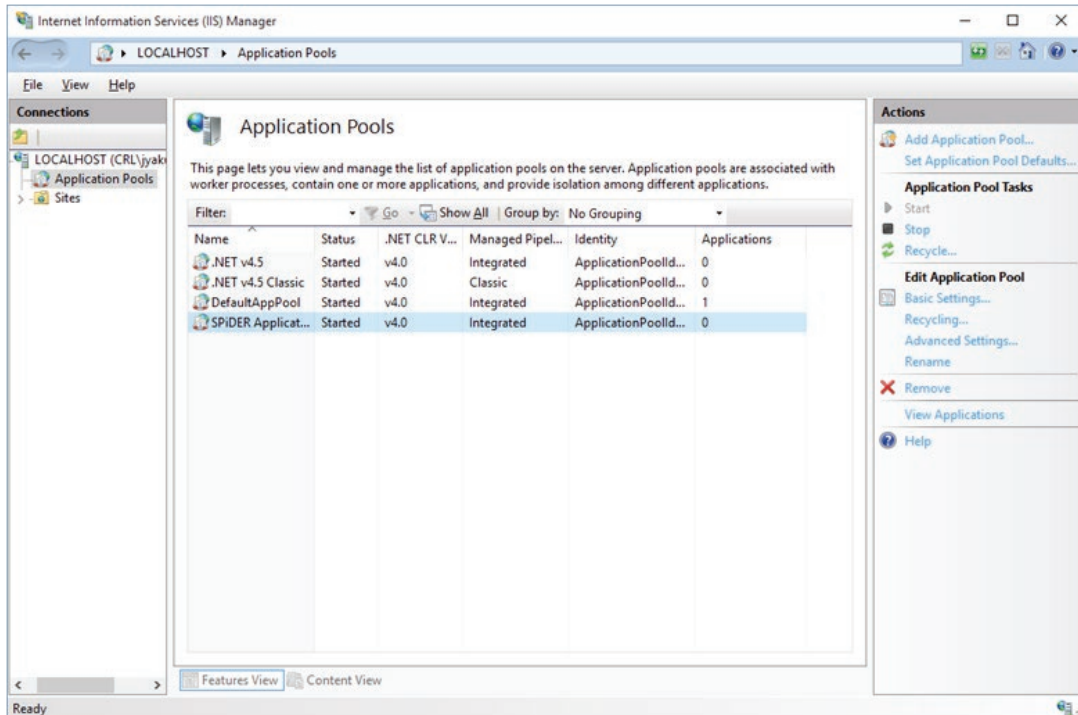
Enter "SPiDER Application Pool" as the name of the new application pool, then click OK. Leave the .NET CLR version and Managed pipeline mode at their default values.



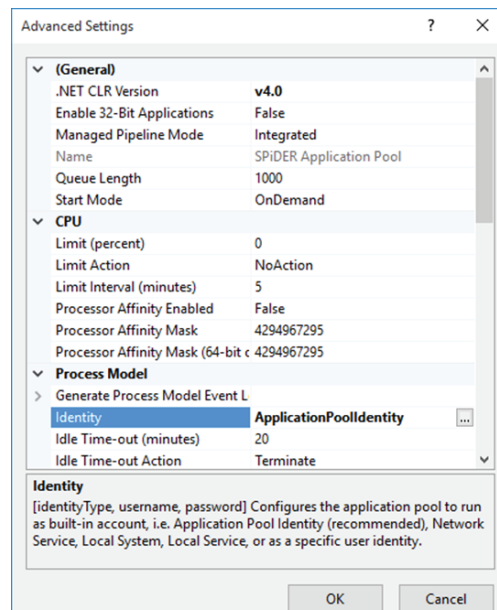
SERVER INSTALLATION INSTRUCTIONS

This step is optional if you have chosen Mixed Mode authentication as part of the SQL Express installation, or if you are using a SQL Server instance that is configured to use Mixed Mode authentication.

Select the newly created SPiDER Application Pool from the list, then click "Advanced Settings" in the Action pane at the right.

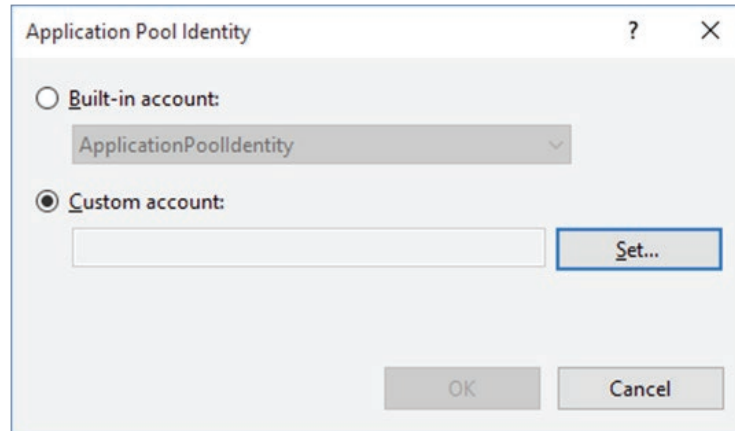


Scroll down to the Identity property and click the "..." button at the right to set the user account.

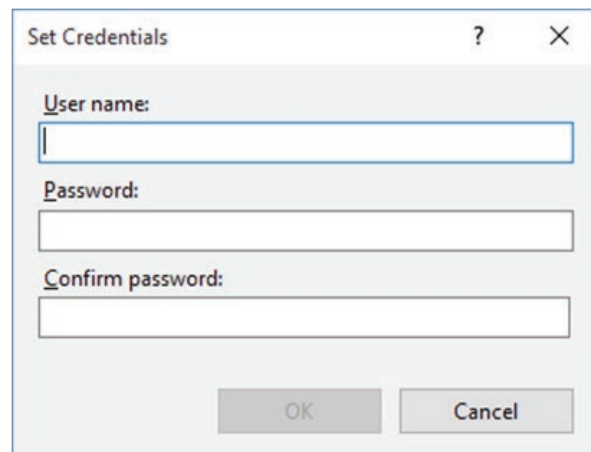


SERVER INSTALLATION INSTRUCTIONS

Click the radio button to use a Custom account, then click the Set button.



Enter the credentials of the user account that you configured as an administrator for SQL Server, then click OK.



Click OK again in the Application Pool Identity window, and once more on the Advanced Settings window to commit your changes and return to the Internet Information Services (IIS) manager window.

After creating the SPiDER application pool, please run the following command from a command prompt (run in Admin mode):

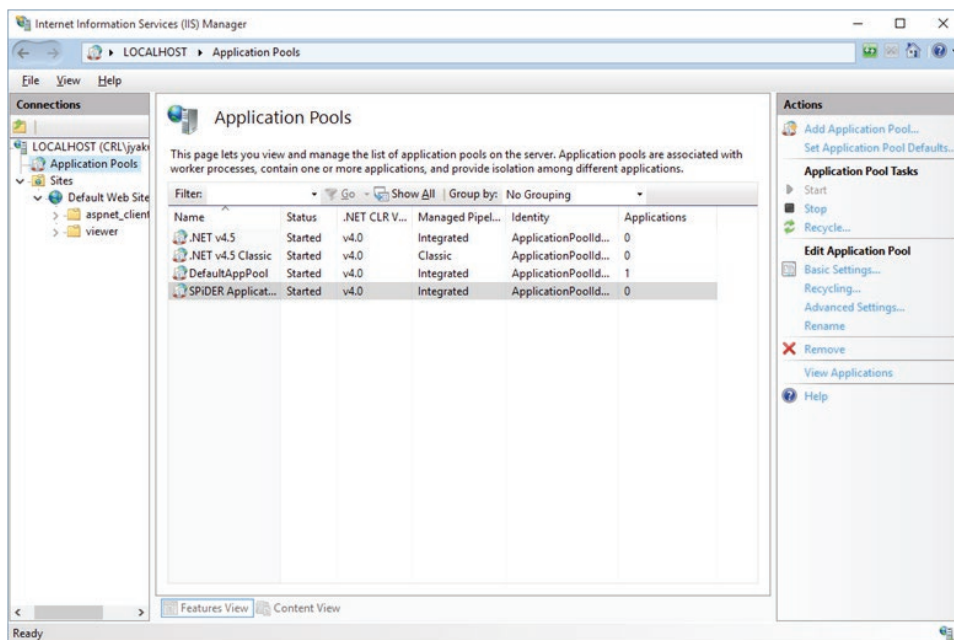
```
cd \Windows\Microsoft.NET\Framework64\v4.0.30319 aspnet_regiis -i
```

If command doesn't work, manually change directories until you are in the v4.0.30319 folder (or most similar subfolder in the Framework64 folder) and run the command "aspnet_regiis -i"



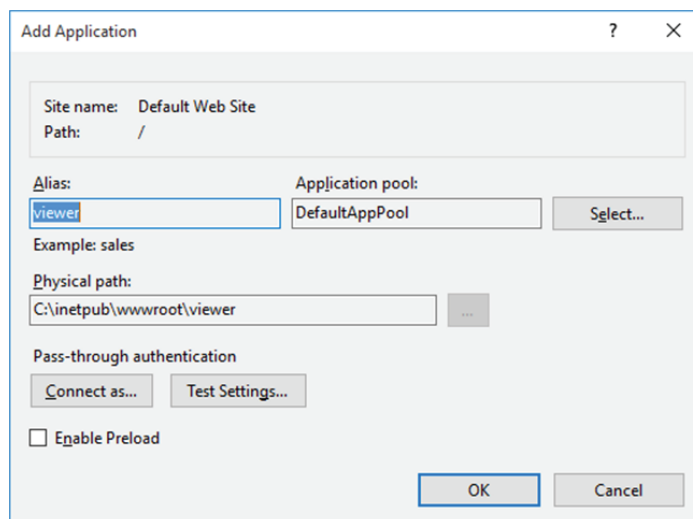
SERVER INSTALLATION INSTRUCTIONS

Expand the Sites node in the Connections pane at the left of the window, then expand the Default Web Site node. If you unzipped the SPiDER Viewer package to the C:\inetpub\wwwroot\viewer folder, you will see it listed as a folder under Default Web Site.



Right click on the "Viewer" folder, and select "Convert to application" from the context menu.

In the Add Application Window that appears, press the Select button to change the application pool to the SPiDER Application Pool, then click OK to finish creating the application pool.



Open the recommended Firefox browser and enter: <http://localhost/viewer/Home/Index>

Bookmark this page as "Local SPiDER Viewer".

SPiDER VIEWER

The viewer was designed for the end-user to review the SPiDER output, measure, capture defect photos and enter the findings into the manhole condition assessment software of your choice.

Please go to www.cues-spider.com using Mozilla Firefox. It can be downloaded here: www.mozilla.org/firefox

Your demo data will be listed as "RJN Wheaton IL" – Select "View" to open the viewer. Feel free to look at the other data listed too.

VIEWS

Toggle between Point Cloud ("P"), Manhole Mesh ("M") and Unwrap Mesh ("U") views using the menu on the left or use the keyboard shortcuts. Initially the data will require some time to load. After initial loading, you can toggle instantly between the views with no wait time.

POINT CLOUD AND MANHOLE MESH

While looking at any manhole component in point cloud view, the same component can be seen as image by toggling to the manhole mesh and vice versa without losing the view. Press "t" to switch between the top and bottom view to reset your position in the manhole. The mouse scroll wheel will move the view vertically in the manhole when tilted even if you are looking horizontally at the manhole wall. Hold the left mouse button down and move the mouse to pan/tilt around the manhole for these two views.

COLOR MESH

Color Mesh view is the same as manhole mesh but it shows in color where point cloud may be missing. This is more a diagnostic layer for CUES.

UNWRAP MESH

The default view loaded in the unwrap view is zoomed in so scroll out (mouse wheel scroll away) to see the entire manhole. You can zoom in/out using the scroll wheel and move around the unwrap image by hold down the left mouse button and moving it. Use the overall view at the top of the viewer to see where you (yellow rectangle) are in the manhole as you explore while zoomed in. Presently, the overall view at the top of the unwrap view may not appear after initial loading as we program between the various browsers. If so, toggle between views and it will appear.

POINT OF INTEREST (POI)

If you "Add Point of Interest" in the unwrapped view, you will see it in any of the other views. To enter multiple points of interest, you need to select "Add Point of Interest" each time. POI can be added in other views but it works best in Unwrap View.

LINEAR AND CIRCULAR MEASUREMENT

The point cloud is the ideal place to take measurements by selecting "Add linear measurement" or "Add Circular Measurement". Measurements are presently displayed in inches only and will be listed on the left side in grid view. To measure to a point off screen, select the first point and then scroll to the other point to select it.



WHAT'S INCLUDED

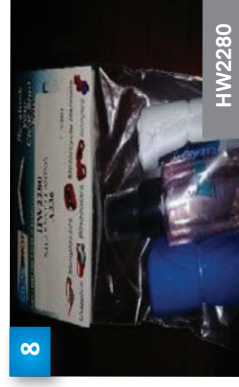
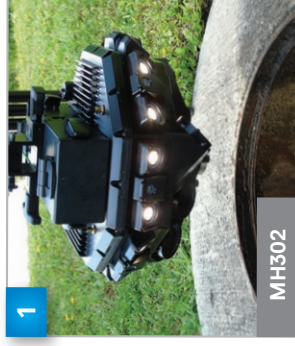
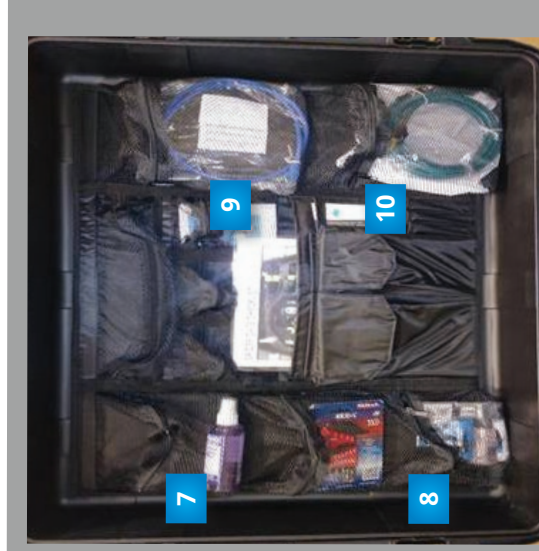


TRIPOD COMPONENTS

1. Tripod Legs
2. Emergency Hand Crank
3. Electric Drill Winch Kit
4. Drill Bits
5. Carbon Fiber Poles
6. Spare Tethered Push Pin



▶ WHAT'S INCLUDED



SPiDER Components

1. SPiDER Scanner
2. Tablet
3. Green Safety Pin
4. Wall Charger
5. Tablet Charger
6. Power Adapter
7. Anti Fog
8. Cleaning Kit
9. Data Transfer Cable
10. Ethernet Cable





MAINTENANCE & REPAIR INSTRUCTIONS

This Record of Revision page is designed to allow the manual user to determine the engineering/ manufacturing level to which the manual is written. As engineering changes to this hardware are made at CUES, necessary information in the manual will be revised to reflect those changes. The latest change level and the rationale for any change(s) will be explained in tabular format on this page to allow the manual user to be better equipped should the need arise to call CUES regarding technical information.

Original Manual	Revision	Change Description
SPiDER	01.03.19	Initial preliminary release
	05.15.19	Added SERVER MODE instructions; various minor changes made.
	05.30.19	Revisions required on several pages.
	07.18.19	Revised the components lists and pics.
	09.07.19	Revised the SPiDER specifications.



Innovation for over

50
Years

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software. For over 50 years, CUES has provided innovative pipeline inspection technology and solutions to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

In addition to inspection equipment, CUES also designs, manufactures, and sells a broad range of pipeline rehabilitation and profiling equipment. These include chemical grouting systems for sewer line pipe joints capable of using a wide variety of grouting products. CUES also makes lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser for Sonar based systems.



CUES has the most locations and dealers available to serve you! To find a local CUES facility, find the operating hours for a particular location, or to contact us at your most convenient stocking location, please log onto our website at www.cuesinc.com or call the CUES Corporate Headquarters in Orlando, Florida for more information.