# Azure DevOps Server 2022 Installation Guide



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## **Chapter 1: Introduction**

Hi. I hope you find this guide helpful. If you get stuck, please drop me a line at <u>info@benday.com</u> and I'll try to help you through your problem.

And now, a little background on this guide.

Azure DevOps Server was originally named Team Foundation Server (TFS). I've been working with Team Foundation Server since before it was released in 2005. For the first 5 to 10 years of its existence, TFS was quite hard to install. To say that the install process was unforgiving is a huge understatement. There were lots and lots of pieces and if even the slightest thing was configured incorrectly, you'd probably want to just format the whole server and start over.

Over time, the Team Foundation Server team at Microsoft worked on the installer and made the process much easier and reliable. Installing TFS or Azure DevOps still isn't 100% fool-proof – there are a lot of pieces and a lot of steps – but it's not that hard to do if you're doing a basic installation.

This guide will walk you through the steps of doing a single-server Azure DevOps Server 2022 installation.

If you get stuck, please drop me a line at info@benday.com.

-Ben

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Topics include Azure DevOps, Scrum, Test-Driven Development & Unit Testing, ASP.NET Core, Software Architecture and more! We also do consulting and custom software development on these topics. We also help companies with tricky Azure DevOps Server / Team Foundation Server installations, upgrades, and migrations – including helping you to migrate your onpremise installations to Azure DevOps in the cloud.

> Drop us a line at <u>info@benday.com</u> or visit <u>https://www.benday.com</u> for more information.

# **About Benjamin Day**

Benjamin Day is a consultant and trainer specializing in software best practices using Scrum with Microsoft's DevOps tools. Ben's main areas of emphasis include Azure DevOps, Scrum, software testing, and software architecture. He is a Microsoft MVP, a certified Scrum trainer via Scrum.org, and a speaker at conferences such as Pluralsight Live and VSLive. When not developing software, Ben's been known to go running and sea kayaking in order to balance out his love of cheese, cured meats, and champagne. His online courses are available at <a href="https://courses.benday.com">http://www.pluralsight.com</a>. He can be contacted via <a href="https://www.benday.com">http://www.benday.com</a>.



## **Chapter 2: Install Windows Server 2022**

#### Introduction

The first step for installing Azure DevOps Server 2022 (AzDO) is to install Windows Server. In this guide, I'm going to be using Windows Server 2022. I'm also assuming that you'll be installing Azure DevOps Server 2022 in a single server configuration – aka. the AZDO Application Tier and SQL Server will be installed on a single machine.

#### **Install Windows Server 2022**

I'm assuming that you've got an Active Directory Domain already set up and configured and that we'll eventually be joining this new server to that domain.

- Either insert your **Windows Server 2022 DVD** into the DVD drive or mount the **Windows Server 2022 ISO image** into the DVD drive for your virtual machine.
- Start the machine

You will see the **Press any key to boot from CD or DVD....** message appear.



• Press any key to boot from the DVD drive

You should see the Windows Setup welcome screen.

| Microsoft Server Operating System Setup<br>Microsoft<br>Language to install: English (United States)<br>Time and currency format: English (United States) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Languag <u>e</u> to install: <mark>English (United States)    Time and currency format:   English (United States)</mark>                                  |
| Time and currency format: English (United States)                                                                                                         |
|                                                                                                                                                           |
| Keyboard or input method: US                                                                                                                              |
| Microsoft Corporation. All rights reserved.                                                                                                               |

• Click Next

| Microsoft                                                               |          |
|-------------------------------------------------------------------------|----------|
| Languag <u>e</u> to install: <mark>English (United States)</mark>       | <b>•</b> |
|                                                                         | •        |
| Keyboard or input method: US                                            | •        |
| Enter your language and other preferences and click "Next" to continue. |          |
| oft Corporation. All rights reserved.                                   | Next     |

• Click the **Install now** button

You should see a screen saying that setup is starting.

| Setup is starting |  |
|-------------------|--|

You'll be prompted for a license key.

|                                            | 🕞 💰 Microsoft Server Operating Sy                                                                                                                                                                                                                      | /stem Setup                                                                                                                                                                                                                                                                                                                                                                                                              | k 💌                                   |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
|                                            | If this is the first time you're insta<br>installing a different edition), you<br>key. Your product key should be<br>of Microsoft Server Operating Sy:<br>System came in.<br>The product key looks like this: X<br>If you're reinstalling Microsoft Se | r Operating System Setup<br>alling Microsoft Server Operating System on this PC (or y<br>u need to enter a valid Microsoft Server Operating Syster<br>in the confirmation email you received after buying a di<br>stem or on a label inside the box that Microsoft Server O<br>COXXX-XXXXX-XXXXX-XXXXX<br>erver Operating System, select I don't have a product key<br>ing System will be automatically activated later. | n product<br>igital copy<br>)perating |
|                                            | Privacy statement                                                                                                                                                                                                                                      | I don't have a product key                                                                                                                                                                                                                                                                                                                                                                                               | Next                                  |
|                                            |                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |
| <ul> <li>Collecting information</li> </ul> | Installing Microsoft Server Operatin                                                                                                                                                                                                                   | na Svetem                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |
|                                            | 2 Installing Wilcrosoft Server Operation                                                                                                                                                                                                               | ig system                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |

- Enter your license key
- Click the **Next** button

You'll be prompted to choose what version of Windows Server 2022 that you'd like to install. This guide assumes that you'll be installing Windows Server 2022 Standard and that you'll be installing the graphical user interface (GUI).

BTW, make sure you choose an option that says "Desktop Experience"!

|                          |                                                                                     |                                                                                                                                                                                                                   | k X                        |  |
|--------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--|
| G                        | Microsoft Server Operating System 🖌 🏑                                               | Setup                                                                                                                                                                                                             |                            |  |
|                          | Activate Microsoft Server Op                                                        | erating System Setup                                                                                                                                                                                              |                            |  |
|                          | installing a different edition), you need<br>key. Your product key should be in the | Microsoft Server Operating System on this PC (or<br>d to enter a valid Microsoft Server Operating Syste<br>e confirmation email you received after buying a<br>or on a label inside the box that Microsoft Server | em product<br>digital copy |  |
|                          | The product key looks like this: XXXXX                                              | (-XXXXX-XXXXX-XXXXX-XXXXX                                                                                                                                                                                         |                            |  |
|                          |                                                                                     | Operating System, select I don't have a product ke<br>stem will be automatically activated later.                                                                                                                 | ey. Your                   |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
|                          | Privacy statement                                                                   | I don't have a product key                                                                                                                                                                                        | Next                       |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
|                          |                                                                                     |                                                                                                                                                                                                                   |                            |  |
| Collecting information 2 | Installing Microsoft Server Operating Sys                                           | stem                                                                                                                                                                                                              |                            |  |

- Choose Windows Server 2022 Standard (Desktop Experience)
- Click the **Next** button

You'll be shown the license terms.

| ſ                        | 🕞 💰 Microsoft Server Operating Syste                                                                                                                                                                                   | em Setup                                                                                                                                                                                                                            | 8                                     |  |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|
|                          | installing a different edition), you n<br>key. Your product key should be in<br>of Microsoft Server Operating Syste<br>System came in.<br>The product key looks like this: XX<br>If you're reinstalling Microsoft Serv | ng Microsoft Server Operating System on this PC (or y<br>eed to enter a valid Microsoft Server Operating Systen<br>the confirmation email you received after buying a di<br>em or on a label inside the box that Microsoft Server O | n product<br>igital copy<br>)perating |  |
|                          | Privacy statement                                                                                                                                                                                                      | Idon't have a product key                                                                                                                                                                                                           | Next                                  |  |
| 1 Collecting information | 2 Installing Microsoft Server Operating                                                                                                                                                                                | System                                                                                                                                                                                                                              |                                       |  |

- Read the license terms in painstaking detail
- Check the I accept the Microsoft Software License Terms box
- Click the **Next** button

We'll be doing a new installation rather than an upgrade.

| ſ                        | 🚱 🔬 Microsoft Server Operating System Setup                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                          | Which type of installation do you want?<br>Upgrade: Install Microsoft Server Operating System and keep files, settings, and<br>applications<br>The files, settings, and applications are moved to the new operating system with this option. This<br>on the computer.<br>Custom: Install Microsoft Server Operating System only (advanced)<br>The files, settings, and applications aren't moved to the new operating system with this option. If<br>you want to make changes to partitions and drives, start the computer using the installation disc.<br>We recommend backing up your files before you continue. |  |
| 1 Collecting information | O Installing Microsoft Server Operating System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |

• Click Custom: Install Microsoft Server Operating System only (advanced)

You should now see a dialog that lets you choose where you'd like to install windows. I'm assuming that we'll be installing on a new computer without any existing partitions on the disk.

|                          | Ge Microsoft Server Operating System Setup<br>Where do you want to install the |            |                             |      |
|--------------------------|--------------------------------------------------------------------------------|------------|-----------------------------|------|
|                          | Name                                                                           | Total size | Free space Type             |      |
|                          | Drive 0 Unallocated Space                                                      | 127.0 GB   | 127.0 GB                    |      |
|                          | € Befresh Delete<br>Load driver S Estend                                       | Format     | <mark>₩</mark> N <u>e</u> w | Next |
|                          |                                                                                |            |                             |      |
| 1 Collecting information | 2 Installing Microsoft Server Operating System                                 |            |                             |      |

- Choose **Drive 0 Unallocated Space** or another appropriate partition or unallocated disk space
- Click Next

The installation should now be running.

|                          | Microsoft Server Operating System Setup Installing Microsoft Server Operating System Status                                                               |  |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                          | Copying Microsoft Server Operating System files<br>Getting files ready for installation (0%)<br>Installing features<br>Installing updates<br>Finishing up |  |
|                          |                                                                                                                                                           |  |
| 1 Collecting information | 2 Installing Microsoft Server Operating System                                                                                                            |  |

Your server will automatically reboot when the installation is complete and you'll be prompted to create an administrator password.

|       |       | r.    |       |
|-------|-------|-------|-------|
|       |       |       |       |
| ••••• |       |       |       |
| ••••• |       |       |       |
|       |       |       |       |
|       |       |       |       |
|       |       |       |       |
|       |       |       |       |
|       | ••••• | ••••• | ••••• |

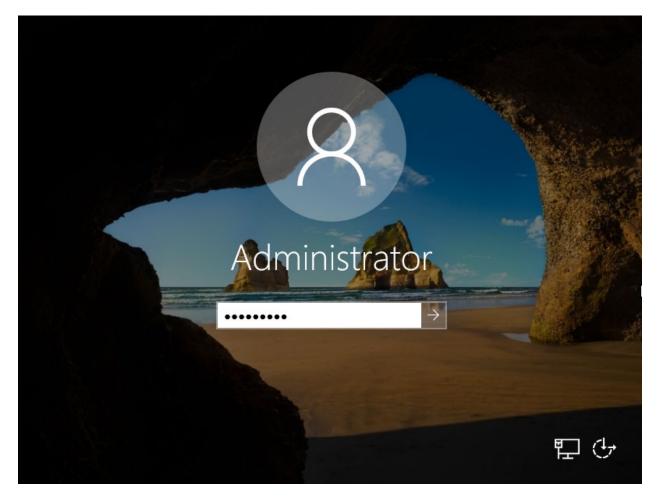
- Enter your password in the **Password** box
- Enter your password in the **Reenter password** box
- Click the **Finish** button

You should now see the lock screen for your new server.



• Type **CTRL-ALT-DEL** to open a login prompt

You should see the login prompt.



• Enter your **password** followed by **<ENTER>** 

You should now be logged in and you should see the server manager dashboard. The next step is to run Windows Update to patch this server.

| 🚖 Serve | er Manager                                                 |                      |                                |               |         |       |                   |             |        |         | - 0                 | $\times$ |
|---------|------------------------------------------------------------|----------------------|--------------------------------|---------------|---------|-------|-------------------|-------------|--------|---------|---------------------|----------|
| (       | Server Manager                                             |                      |                                |               |         | ×     |                   | • ② I       | Manage | e Tools | View                | Help     |
|         | Try managing servers with V<br>Windows Admin Center brings |                      |                                | k             |         |       |                   |             |        |         |                     | ^        |
| 12      | app. It runs on a server or a PC<br>licenses.              | C, and there's no ad | ditional cost bey              | ond your Wind | ows     |       |                   |             |        |         |                     |          |
| i       |                                                            |                      |                                |               |         | 1     |                   |             |        |         |                     |          |
|         | Get more info at aka.ms/Windo                              | wsAdminCenter        |                                |               |         |       | this local ser    | ver         |        |         |                     |          |
|         | Don't show this message ag                                 | gain                 |                                |               |         |       |                   |             |        |         |                     |          |
|         |                                                            |                      |                                | 2             | ницт    | UIES  | and features      |             |        |         |                     |          |
|         |                                                            |                      |                                | 3             | Add o   | other | servers to man    | age         |        |         |                     |          |
|         |                                                            | WHAT'S NE            | W.                             | 4             | Creat   | eas   | erver group       |             |        |         |                     |          |
|         |                                                            |                      |                                |               |         |       | his server to clo |             |        |         |                     |          |
|         |                                                            |                      |                                | 5             | Conn    | ecti  | his server to cio | ud selvices |        |         | Hide                |          |
|         |                                                            | LEARN MO             | RE                             |               |         |       |                   |             |        |         |                     |          |
|         |                                                            |                      |                                |               |         |       |                   |             |        |         |                     |          |
|         |                                                            |                      | D SERVER G<br>Server groups: 1 |               | otal: 1 |       |                   |             |        |         |                     |          |
|         |                                                            |                      | e and Storag                   | ge .          | 1       | E     | Local Server      | 1           |        |         |                     |          |
|         |                                                            |                      | inageability                   |               |         | €     | Manageability     |             |        |         |                     |          |
|         |                                                            | Eve                  | ents                           |               |         |       | Events            |             |        |         |                     |          |
|         |                                                            | Per                  | formance                       |               |         | 2     | Services          |             |        |         |                     |          |
|         |                                                            | BP                   | A results                      |               |         |       | Performance       |             |        |         |                     |          |
|         |                                                            |                      |                                |               |         |       | BPA results       |             |        |         |                     |          |
|         |                                                            |                      |                                |               |         |       | 1/2/21            | 022 0.10 AM |        |         |                     | ~        |
|         |                                                            | 1                    | Ę                              | i 💽           |         |       |                   |             |        | 🐏 🏪 🔩   | 8:18 AM<br>1/3/2023 | $\Box$   |

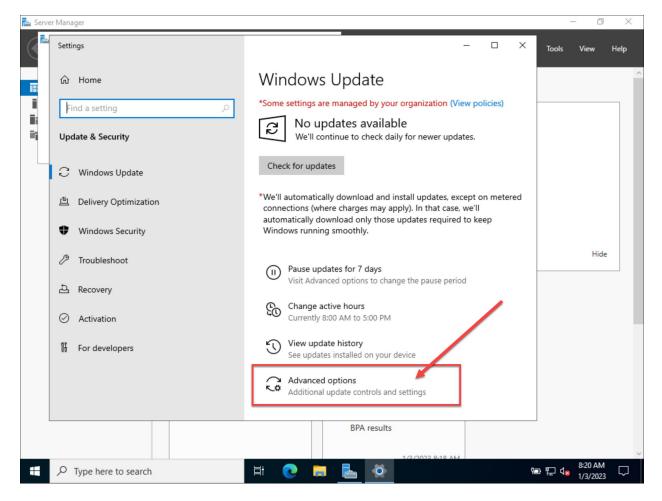
• Click the **Windows button** in the bottom left of the screen to navigate to the Start screen

You should now be at the Start menu.

| 📥 Serv     | er Manager                                     |            | - 0                 | $\times$ |
|------------|------------------------------------------------|------------|---------------------|----------|
|            | Server Manager × • 🛞   🚩 M                     | anage Tool | s View I            | Help     |
|            |                                                |            |                     | ^        |
|            | Best match                                     |            |                     |          |
| ii:<br>ii; | Check for updates<br>System settings           |            |                     |          |
|            | Settings                                       |            |                     |          |
|            | ${\mathcal C}$ Windows Update settings         |            |                     |          |
|            | ${\mathcal C}$ Change active hours             |            |                     |          |
|            | ${\mathcal C}$ View your Update history        |            |                     |          |
|            | ${\mathcal C}$ View configured update policies |            | Hide                |          |
|            | ${\mathcal C}$ Advanced Windows Update options |            |                     |          |
|            |                                                |            |                     |          |
|            |                                                |            |                     | - 5      |
|            |                                                |            |                     |          |
|            |                                                |            |                     |          |
|            |                                                |            |                     |          |
|            |                                                |            |                     |          |
|            |                                                |            |                     |          |
|            |                                                |            | 0.10 414            | ~        |
|            | 🔎 check for updates 🦰 🗮 🔁                      | °⊡ ⊑'      | 8:19 AM<br>1/3/2023 | $\Box$   |

- In the search box, type **Check for updates**
- Click **Check for updates** in the search results

You should now see the Settings window. By default, Windows Update only gets patches for Windows itself but we want to enable patches for other products as well.



• Click the **Advanced options** link

You should be on a screen with the title **Advanced options**.

| ← Settings –                                                                                                                                                                             | Ø              | ×      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|
|                                                                                                                                                                                          |                | Close  |
| *Some settings are managed by your organization (View policies)                                                                                                                          |                |        |
| Update options                                                                                                                                                                           |                |        |
| Receive updates for other Microsoft products when you update Windows. On                                                                                                                 |                |        |
| Download updates over metered connections (extra charges may apply). Off                                                                                                                 |                |        |
| Restart this device as soon as possible when a restart is required to install an update. Windows will display a notice before the restart, and the devic<br>on and plugged in.           | e must         | be     |
| • Off                                                                                                                                                                                    |                |        |
| Update notifications                                                                                                                                                                     |                |        |
| Show a notification when your device requires a restart to finish updating.                                                                                                              |                |        |
| • Off                                                                                                                                                                                    |                |        |
| Pause updates                                                                                                                                                                            |                |        |
| Temporarily pause updates from being installed on this device for up to 35 days. When you reach the pause limit, your device will<br>need to get new updates before you can pause again. |                |        |
| Pause until                                                                                                                                                                              |                |        |
| Select date $\checkmark$                                                                                                                                                                 |                |        |
|                                                                                                                                                                                          | 1 AM<br>3/2023 | $\Box$ |

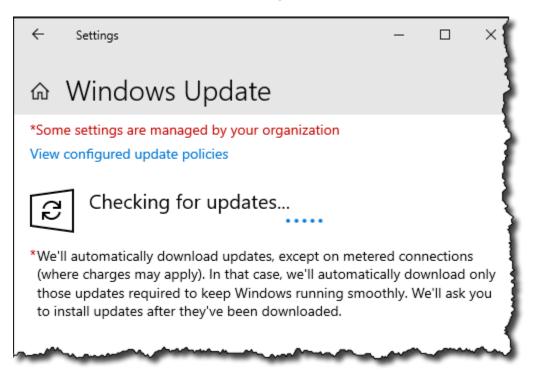
- Check Receive updates for other Microsoft products when you update Windows
- In the upper left corner of the screen, click the back arrow button

You should be back on the **Update status** screen.

| ← Settings                                                             | _    |   | ×   |
|------------------------------------------------------------------------|------|---|-----|
|                                                                        |      |   |     |
| No updates available<br>We'll continue to check daily for newer update | s.   |   |     |
| Check for updates                                                      |      |   |     |
| Change active hours                                                    | ~~~~ | ~ | أمس |

#### • Click the **Check for updates** button

Windows Update should now be checking for updates.



Windows Update will probably find a ton of available updates. Let them all run and reboot your server as needed.

When the patches are all finished applying, make sure you're logged in as Administrator and continue on to the next page where I'll walk you through the optional step of disabling a useless and annoying anti-feature in Windows called IE Enhanced Security.

## (Optional) Turn off IE Enhanced Security Configuration

Ok. So if you're paranoid about the internet and making sure that your server doesn't accidentally get infected by a virus that comes in because of someone's hapless browsing habits, you'll probably want to skip this section.

If you don't wear a tinfoil hat every day to keep the illuminati's evil space rays from controlling your mind, then you're probably like me and find IE Enhanced Security to be a royal pain in the behind. At some point, you're going to want to use the Internet Explorer web browser on this server and it'll be painful if IE Enhanced Security is turned on.

Let's turn it off.

You'll start this process by using Server Manager.

| <b>b</b>                     |              | Server Manager 🦷                                 |
|------------------------------|--------------|--------------------------------------------------|
| Server Ma                    | anager 🕨 Da  | shboard                                          |
| Dashboard                    | WELCOME TO S | ERVER MANAGER                                    |
| Local Server                 |              | 1 Configure this loca                            |
| ■File and Storage Services ▷ | QUICK START  |                                                  |
|                              |              | 2 Add roles and featur<br>3 Add other servers to |

• In the left column of Server Manager, click Local Server

Towards the right side of the Server Manager window, you'll see an item that says **IE Enhanced Security Configuration**. It'll be set to **On**.

| <u>à</u>                                                     |                                       | Server Manager                                          |                                                                      | _ 0                           |
|--------------------------------------------------------------|---------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------|-------------------------------|
| Server Mar                                                   | nager • Local Se                      | rver                                                    | 🕶 🕄   🚩 Manage Tools                                                 | View He                       |
| III Dashboard                                                | PROPERTIES<br>For WIN-TNJIEBD4P41     |                                                         |                                                                      | TASKS 🔻                       |
| Local Server     All Servers     File and Storage Services ▷ | Computer name<br>Workgroup            | WIN-TNJIEBD4P41<br>WORKGROUP                            | Last installed updates<br>Windows Update<br>Last checked for updates | Never<br>Install upo<br>Never |
|                                                              | Windows Firewall<br>Remote management | Private: On<br>Enabled                                  | Windows Error Reporting                                              | Off                           |
|                                                              | Remote Desktop                        | Disabled                                                | IE Enhanced Security Configuration                                   | On                            |
|                                                              | NIC Teaming<br>Ethernet               | Disabled<br>IPv4 address assigned by DHCP, IPv6 enabled | Product ID                                                           | (01C-08.0<br>00252-00         |

• Click the link that says **On** 

You should now see the Internet Explorer Enhanced Security Configuration dialog.

| 🗞 Internet Explorer Enhanced Security Configuration                                                                                                                                                                                                         | × |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|--|--|--|
| Internet Explorer Enhanced Security Configuration (IE ESC) reduces the exposure of your server to potential attacks from Web-based content.<br>Internet Explorer Enhanced Security Configuration is enabled by default for Administrators and Users groups. |   |  |  |  |  |
| Administrators:                                                                                                                                                                                                                                             |   |  |  |  |  |
| On (Recommended)                                                                                                                                                                                                                                            |   |  |  |  |  |
| Off                                                                                                                                                                                                                                                         |   |  |  |  |  |
| Users:                                                                                                                                                                                                                                                      |   |  |  |  |  |
| On (Recommended)                                                                                                                                                                                                                                            |   |  |  |  |  |
| loff ○ Off                                                                                                                                                                                                                                                  |   |  |  |  |  |
| More about Internet Explorer Enhanced Security Configuration                                                                                                                                                                                                |   |  |  |  |  |
| OK Cance                                                                                                                                                                                                                                                    | 1 |  |  |  |  |

- Under Administrators, select the **Off** radio button
- (Optional) Under Users, select the **Off** radio button
- Click the **OK** button

You should now be back at the main page of the Server Manager.



• Click the **Refresh** button

IE Enhanced Security Configuration should now be set to Off.



### (Optional) Enable Remote Desktop

Are you lazy or maybe lazy-ish? Do you like convenience? Yah. Me, too. So that means that you'll probably want to enabled Remote Desktop. If you're a member of the Tinfoil Hat Patrol, you'll probably want to skip this section.

• Find **Remote Desktop** in Server Manager



• Click the **Disabled** link to the right of Remote Desktop

You should now see the **System Properties** dialog.

| System Properties                                       | × |
|---------------------------------------------------------|---|
| Computer Name Hardware Advanced Remote                  |   |
| Remote Assistance                                       |   |
| Allow Remote Assistance connections to this computer    |   |
|                                                         |   |
| Advanced                                                |   |
|                                                         |   |
| Remote Desktop                                          |   |
| Choose an option, and then specify who can connect.     |   |
| O Don't allow remote connections to this computer       |   |
| Allow remote connections to this computer               |   |
| Allow connections only from computers running Remote    |   |
| Desktop with Network Level Authentication (recommended) |   |
| Help me choose Select Users                             |   |
|                                                         |   |
| OK Cancel Apply                                         |   |

• In the Remote Desktop group, choose Allow remote connections to this computer

You might get a firewall rule warning when you change the "allow" setting. If you get the warning click OK.

| Remote Desktop Connection                                                                                                                           |                                                                                                |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--|--|--|
| Remote Desktop Firewall exception will be enabled<br>You chose to enable Remote Desktop Connection for<br>all network connections on this computer. |                                                                                                |  |  |  |
|                                                                                                                                                     | To enable it for selected network connections, open<br>Windows Firewall with Advanced Security |  |  |  |
|                                                                                                                                                     | ОК                                                                                             |  |  |  |

• Click the **OK** button

If you got the firewall warning, you should be back on the System Properties dialog.

| System Propertie | es            |                 |                |          |         | × |
|------------------|---------------|-----------------|----------------|----------|---------|---|
| Computer Name    | Hardware      | Advanced        | Remote         |          |         |   |
| Remote Assist    | ance          |                 |                |          |         |   |
| Allow Rem        | ote Assistan  | ce connectio    | ns to this cor | nputer   |         |   |
|                  |               |                 |                |          |         |   |
|                  |               |                 |                | Adva     | anced   |   |
|                  |               |                 |                |          |         |   |
| Remote Deskt     | ор            |                 |                |          |         |   |
| Choose an op     | tion, and the | n specify who   | o can conne    | ct.      |         |   |
| O Don't allow    | remote con    | nections to th  | nis computer   |          |         |   |
| Allow remo       | te connectio  | ins to this cor | nputer         |          |         |   |
|                  | onnections o  | nly from com    | puters runnin  | a Remote |         |   |
|                  |               | ork Level Aut   |                |          |         |   |
| Help me choo     | ee.           |                 |                | Selec    | t Users |   |
|                  | <u></u>       |                 |                |          |         |   |
|                  |               | OK              |                | ancel    | Angle   |   |
|                  |               | OK              | La             | ancei    | Apply   |   |

• Click the **OK** button

Remote Desktop is enabled.

#### Join this Server to the Active Directory Domain

At the moment, you've got a stand-alone server with a wacky name that's not attached to anything. Workgroups? That's like the networking equivalent of having a stand-alone MP3 player that only syncs over USB. Who does that? What year is this?! 2005?! Not very useful. You'll now rename this computer and join it to your Active Directory domain so that it plays nicely with others.

In Server Manager, you'll see Computer name and Workgroup.



• Click on the computer name link

You should now see the **System Properties** dialog.

| System Properties                                                                   |                                                                 | × |  |  |  |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|---|--|--|--|
| Computer Name Hardwa                                                                | are Advanced Remote                                             |   |  |  |  |
| Windows uses the following information to identify your computer<br>on the network. |                                                                 |   |  |  |  |
| Computer description:                                                               |                                                                 |   |  |  |  |
|                                                                                     | For example: "IIS Production Server" or<br>"Accounting Server". |   |  |  |  |
| Full computer name:                                                                 | WIN-QEODMEDOFID                                                 |   |  |  |  |
| Workgroup:                                                                          | WORKGROUP                                                       |   |  |  |  |
| To rename this compute<br>workgroup, click Change                                   | er or change its domain or<br>e.                                |   |  |  |  |
|                                                                                     | OK Cancel Apply                                                 |   |  |  |  |

• Click the **Change...** button

You should now be on the **Computer Name/Domain Changes** dialog. The dialog should be showing you the current name of the computer and the workgroup membership.

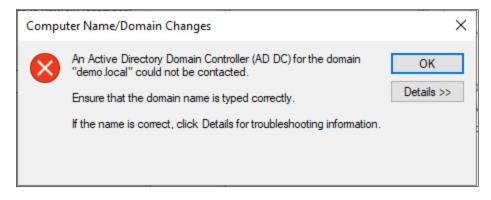
| Computer Name/Domain Changes                                                                                      | < |
|-------------------------------------------------------------------------------------------------------------------|---|
| You can change the name and the membership of this<br>computer. Changes might affect access to network resources. |   |
| Computer name:                                                                                                    |   |
| WIN-QEODMEDOFID                                                                                                   | 1 |
| Full computer name:<br>WIN-QEODMEDOFID<br>More                                                                    |   |
| O Domain:                                                                                                         |   |
| Workgroup:                                                                                                        |   |
| WORKGROUP                                                                                                         |   |
|                                                                                                                   |   |
| OK Cancel                                                                                                         |   |

You should now change the values to be what you want the server to be named and the Active Directory domain that it should be attached to.

| Computer Name/Domain Changes                                                                                    | ×   |
|-----------------------------------------------------------------------------------------------------------------|-----|
| You can change the name and the membership of this<br>computer. Changes might affect access to network resource | IS. |
| Computer name:                                                                                                  |     |
| azdo2022                                                                                                        |     |
| Full computer name:<br>azdo2022<br>More                                                                         |     |
| Member of                                                                                                       |     |
| Domain:                                                                                                         |     |
| demo.local                                                                                                      |     |
| O Workgroup:                                                                                                    |     |
| WORKGROUP                                                                                                       |     |
| OK Cancel                                                                                                       |     |

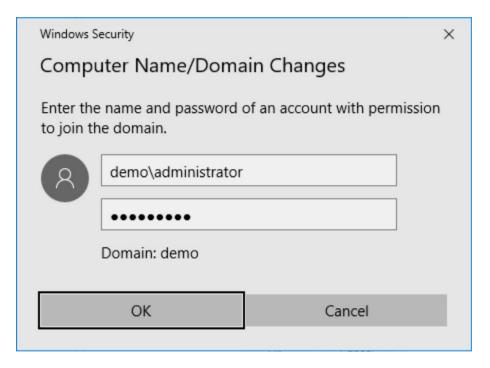
- In the Computer name textbox, enter the desired name for this server
- Under **Member of** choose the **Domain** radio button
- In the **Domain** textbox, enter the name of the Active Directory domain
- Click the **OK** button

At this point, you should see a login dialog prompting you for the domain admin password. If you weren't that lucky, you're probably staring at a dialog that looks like the one below saying that the domain could not be contacted. If you got this dialog, the DNS settings for your network card probably has an error. My suggestion is that you'll probably want to change that DNS entry to be the DNS server for the domain.



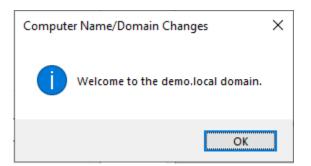
If you didn't get this error, go to the next page.

You'll be prompted for the username and password for a domain administrator for the target domain.



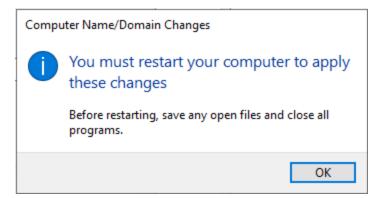
- Enter the username and password
- Click **OK**

You should see a dialog welcoming you to the new domain.

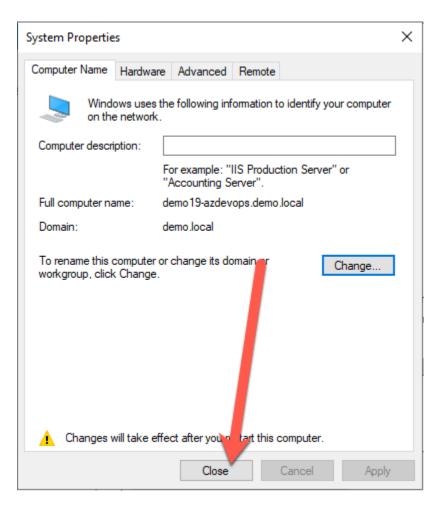


• Click OK

You'll be notified that you'll need to reboot this server.



• Click the **OK** button



• Click the **Close** button



• Click the **Restart Now** button

The server will restart and return you to the lock screen. The server has been installed and joined to the domain.

NOTE: It is *optional* but you might find it helpful to configure this server to have a static IP address and a static A record entry in your DNS server.

# **Chapter 3: Install Windows Server 2019**

#### Introduction

The first step for installing Azure DevOps Server 2019 (AzDO) is to install Windows Server. In this guide, I'm going to be using Windows Server 2019. I'm also assuming that you'll be installing Azure DevOps Server 2019 in a single server configuration – aka. the AZDO Application Tier and SQL Server will be installed on a single machine.

### **Install Windows Server 2019**

I'm assuming that you've got an Active Directory Domain already set up and configured and that we'll eventually be joining this new server to that domain.

- Either insert your **Windows Server 2019 DVD** into the DVD drive or mount the **Windows Server 2019 ISO image** into the DVD drive for your virtual machine.
- Start the machine

You will see the **Press any key to boot from CD or DVD....** message appear.

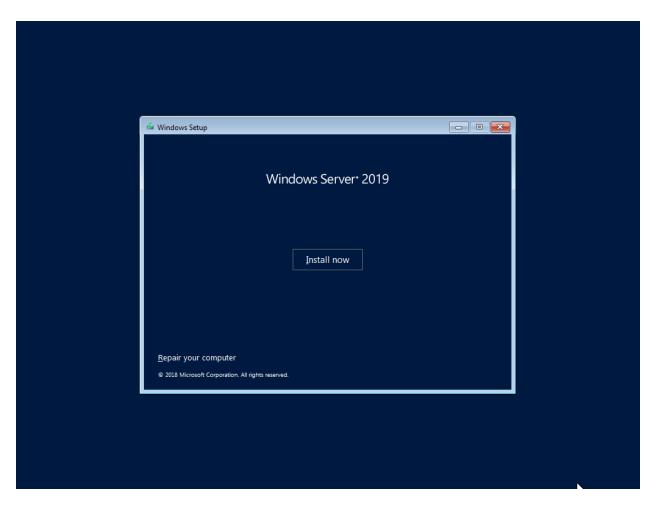


• Press any key to boot from the DVD drive

You should see the Windows Setup welcome screen.

| l i | Windows Setup                                                                                                                        |   |
|-----|--------------------------------------------------------------------------------------------------------------------------------------|---|
|     | Windows Server* 2019                                                                                                                 |   |
|     | Language to install: English (United States)                                                                                         |   |
|     | Time and currency format: English (United States)                                                                                    |   |
|     | Keyboard or input method: US                                                                                                         |   |
|     | Enter your language and other preferences and click "Next" to continue.           © 2018 Microsoft Corporation. All rights reserved. |   |
|     |                                                                                                                                      |   |
|     |                                                                                                                                      |   |
|     |                                                                                                                                      | k |

• Click Next



• Click the **Install now** button

You should see a screen saying that setup is starting.

| Setup is starting |
|-------------------|
|                   |

You'll be prompted for a license key.

|                        | 🕞 🔏 Windows Setup                                                                                          |  |
|------------------------|------------------------------------------------------------------------------------------------------------|--|
|                        | Enter the product key to activate Windows                                                                  |  |
|                        | It should be on the back of the box that Windows came in or in a message that shows you bought<br>Windows. |  |
|                        | The product key looks like this: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX                                             |  |
|                        | Dashes will be added automatically.                                                                        |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        | Privacy statement Next                                                                                     |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
|                        |                                                                                                            |  |
| Collecting information | 2 Installing Windows                                                                                       |  |

- Enter your license key
- Click the **Next** button

You'll be prompted to choose what version of Windows Server 2019 that you'd like to install. This guide assumes that you'll be installing Windows Server 2019 Standard and that you'll be installing the graphical user interface (GUI).

X 🔵 💰 Windows Setup Select the operating system you want to install Operating system Architecture Date modified Windows Server 2019 Standard x64 9/3/2020 Windows Server 2019 Standard (Desktop Experience) x64 9/3/2020 Windows Server 2019 Datacenter 9/3/2020 x64 Windows Server 2019 Datacenter (Desktop Experience) х64 9/3/2020 Description: This option installs the full Windows graphical environment, consuming extra drive space. It can be useful if you want to use the Windows desktop or have an app that requires it. Next Installing Windows Collecting information 2 1

BTW, make sure you choose an option that says "Desktop Experience"!

- Choose Windows Server 2019 Standard (Desktop Experience)
- Click the **Next** button

You'll be shown the license terms.

|                          | G Mindows Setup                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                          | IMPORTANT NOTICE (followed by LICENSE TERMS)       ▲         Diagnostic and Usage Information. Microsoft automatically collects this information, which may be associated with your organization, over the internet, and uses it to help improve your installation, upgrade, and user experience, and the quality and security of Microsoft products and services. Windows Server has four (4) information collection settings (Security, Basic, Enhanced, and Full), and uses the "Enhanced" setting by default. The Enhanced level includes information required to: (i) run our anti-malware and diagnostic and usage information technologies; (ii) understand device quality, and application usage and compatibility; and (iii) identify quality issues in the use and performance of the operating system and applications.         Choice and Control: Administrators can change the level of information       ✓ |  |
| 1 Collecting information | Next<br>2 Installing Windows                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |

- Read the license terms in painstaking detail
- Check the I accept the license terms box
- Click the **Next** button

We'll be doing a new installation rather than an upgrade.

|                              | ×                                                                                                                                                                                                                                                                                                     |  |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                              | 🚱 🔬 Windows Setup                                                                                                                                                                                                                                                                                     |  |
|                              | Which type of installation do you want?                                                                                                                                                                                                                                                               |  |
|                              | Upgrade: Install Windows and keep files, settings, and applications<br>The files, settings, and applications are moved to Windows with this option. This option is only<br>available when a supported version of Windows is already running on the computer.                                          |  |
|                              | <u>Custom: Install Windows only (advanced)</u><br>The files, settings, and applications aren't moved to Windows with this option. If you want to<br>make changes to partitions and drives, start the computer using the installation disc. We<br>recommend backing up your files before you continue. |  |
|                              |                                                                                                                                                                                                                                                                                                       |  |
|                              |                                                                                                                                                                                                                                                                                                       |  |
|                              |                                                                                                                                                                                                                                                                                                       |  |
|                              |                                                                                                                                                                                                                                                                                                       |  |
| $1^{Collecting information}$ | 2 Installing Windows                                                                                                                                                                                                                                                                                  |  |

• Click Custom: Install Windows only (advanced)

You should now see a dialog that lets you choose where you'd like to install windows. I'm assuming that we'll be installing on a new computer without any existing partitions on the disk.

| •                        | Windows Setup<br>Where do you want to install Wir | ndows?                               |      |
|--------------------------|---------------------------------------------------|--------------------------------------|------|
|                          | Name                                              | Total size Free space Type           |      |
|                          | Drive 0 Unallocated Space                         | 127.0 GB 127.0 GB                    |      |
|                          | Refresh Delete                                    | <b>₹</b> ormat <b>*</b> N <u>e</u> w | Next |
|                          |                                                   |                                      |      |
| 1 Collecting information | Installing Windows                                |                                      |      |

- Choose **Drive 0 Unallocated Space** or another appropriate partition or unallocated disk space
- Click Next

The installation should now be running.

|                          | Windows Setup                                                                                                                   |  |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------|--|
|                          | Installing Windows                                                                                                              |  |
|                          | Status                                                                                                                          |  |
|                          | Copying Windows files<br>Getting files ready for installation (0%)<br>Installing features<br>Installing updates<br>Finishing up |  |
|                          |                                                                                                                                 |  |
|                          |                                                                                                                                 |  |
| 1 Collecting information | 2 Installing Windows                                                                                                            |  |

Your server will automatically reboot when the installation is complete and you'll be prompted to create an administrator password.

| Customize        |       | at you can use to sign in to this comput | er. |
|------------------|-------|------------------------------------------|-----|
| User name        |       |                                          |     |
| Password         | ••••• |                                          |     |
| Reenter password | ••••• |                                          |     |
|                  |       |                                          |     |
|                  |       |                                          |     |
|                  |       |                                          |     |
|                  |       |                                          |     |

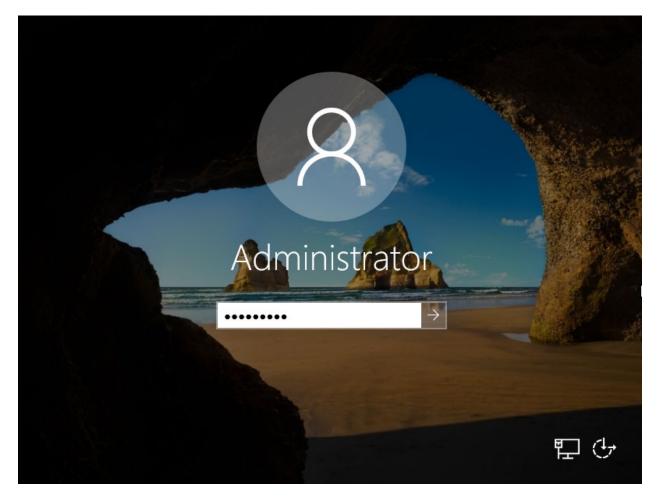
- Enter your password in the **Password** box
- Enter your password in the **Reenter password** box
- Click the **Finish** button

You should now see the lock screen for your new server.



• Type **CTRL-ALT-DEL** to open a login prompt

You should see the login prompt.



• Enter your **password** followed by **<ENTER>** 

You should now be logged in and you should see the server manager dashboard. The next step is to run Windows Update to patch this server.

| 🚖 Server Manager                                            |                                                                                                                                                                                                                                    |                             | - 0                  | $\times$ |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------|----------|
| €∋∙                                                         | 🕶 Dashboard 🛛 🗸 🔊 I 🚩 Manag                                                                                                                                                                                                        | ge Tools                    | View                 | Help     |
| Dashboard     Local Server     All Servers     File and Sto | Try managing servers with Windows Admin Center<br>Windows Admin Center brings together new and familiar features in one browser-based                                                                                              | al serve<br>res<br>p manage |                      | ~        |
|                                                             | Image: Solution and message again         5         Connect this server         LEARN MORE         Roles AND SERVER GROUPS<br>Roles: 1   Server groups: 1   Servers total: 1         Image: File and Storage<br>Services         1 | r to cloud                  | services<br>Hide     |          |
| ‡ کر 🖪                                                      |                                                                                                                                                                                                                                    | Ლ 4⊻                        | 8:00 AM<br>3/15/2019 |          |

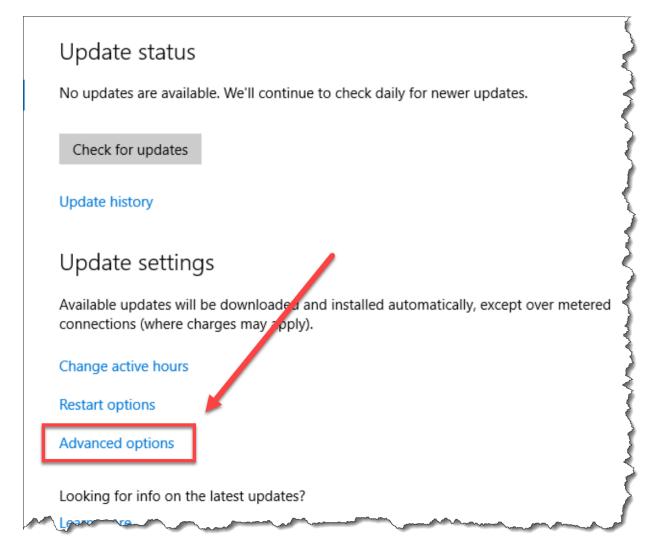
• Click the **Windows button** in the bottom left of the screen to navigate to the Start screen

You should now be at the Start menu.

| 👝 Serve | er Manager |        |                                |                |                              |                                    |         |          |               | - 0                  | $\times$ |
|---------|------------|--------|--------------------------------|----------------|------------------------------|------------------------------------|---------|----------|---------------|----------------------|----------|
| ¢       |            | 44     | Dashboa                        | rd             |                              | • 🗊 I                              | ۲       | Manag    | je Tools      | View                 | Help     |
| Ш       |            | Ľ      | 0                              | Filters $\lor$ |                              |                                    |         | ×        |               |                      | ^        |
| ல்      | Best mat   | tch    |                                |                | Center                       |                                    |         |          |               |                      |          |
|         |            |        | <b>for updates</b><br>settings |                | ur t f 2 ea                  | atures in one br<br>ost beyond you |         | sed<br>s | al serve      | er                   |          |
|         | Settings   |        |                                |                |                              |                                    |         |          | res           |                      |          |
|         | € Wir      | ndows  | Update settir                  | igs            | <u>ər</u>                    |                                    |         |          | p manag       | je                   |          |
|         |            |        |                                |                |                              |                                    | aberv   | rer gro  | up            |                      |          |
|         |            |        |                                |                | 5                            | Conne                              | ct this | server   | to cloud      | l service            | s        |
|         |            |        |                                |                |                              |                                    |         |          |               | Hide                 | 2        |
| ŝ       |            |        |                                |                | <b>ROUPS</b><br>ps: 1   Serv | ers total: 1                       |         |          |               |                      |          |
| 724     |            |        |                                |                | orage                        |                                    |         |          |               |                      |          |
|         | ,∕⊂ che    | ck for | updates                        |                |                              | 1                                  | Lo      | cal Sen  | ver           | 1                    | ~        |
| -       | ρ          |        | <i>e</i> .                     |                |                              |                                    |         |          | ·<br>[] · 다 · | 8:01 AM<br>3/15/2019 | ,        |

- In the search box, type **Check for updates**
- Click **Check for updates** in the search results

You should now see the Settings window. By default, Windows Update only gets patches for Windows itself but we want to enable patches for other products as well.



• Click the **Advanced options** link

You should be on a screen with the title **Advanced options**.

| <ul> <li>← Settings</li> <li>☆ Advanced options</li> </ul>                   | _        |          | ×  |
|------------------------------------------------------------------------------|----------|----------|----|
| Update options                                                               |          |          |    |
| Give me updates for other Microsoft products when I up<br>On                 | date W   | indows.  |    |
| Automatically download updates, even over metered dat<br>(charges may apply) | a conn   | ections  |    |
| • Off                                                                        |          |          |    |
| Update notifications                                                         |          |          |    |
| Show a notification when your PC requires a restart to fir                   | nish up  | dating   |    |
| Off Off                                                                      |          |          |    |
| Pause updates                                                                |          |          |    |
| Temporarily pause updates from being installed on this o                     | levice f | or up to | 35 |

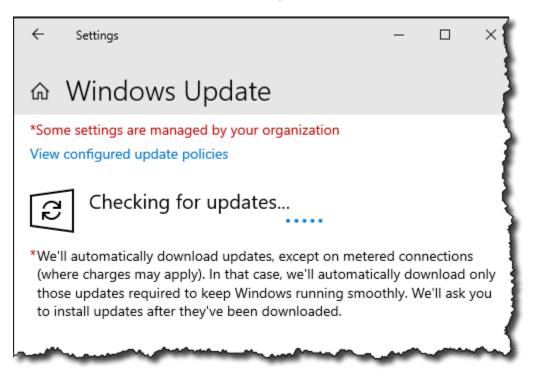
- Check Give me updates for other Microsoft products when I update Windows
- In the upper left corner of the screen, click the back arrow button

You should be back on the **Update status** screen.

| ← Settings                                                             | _    |   | ×   |
|------------------------------------------------------------------------|------|---|-----|
|                                                                        |      |   |     |
| No updates available<br>We'll continue to check daily for newer update | s.   |   |     |
| Check for updates                                                      |      |   |     |
| Change active hours                                                    | ~~~~ | ~ | أمس |

• Click the **Check for updates** button

Windows Update should now be checking for updates.



Windows Update will probably find a ton of available updates. Let them all run and reboot your server as needed.

When the patches are all finished applying, make sure you're logged in as Administrator and continue on to the next page where I'll walk you through the optional step of disabling a useless and annoying anti-feature in Windows called IE Enhanced Security.

## (Optional) Turn off IE Enhanced Security Configuration

Ok. So if you're paranoid about the internet and making sure that your server doesn't accidentally get infected by a virus that comes in because of someone's hapless browsing habits, you'll probably want to skip this section.

If you don't wear a tinfoil hat every day to keep the illuminati's evil space rays from controlling your mind, then you're probably like me and find IE Enhanced Security to be a royal pain in the behind. At some point, you're going to want to use the Internet Explorer web browser on this server and it'll be painful if IE Enhanced Security is turned on.

Let's turn it off.

You'll start this process by using Server Manager.

| <b>b</b>                     |              | Server Manager 🦷                                 |
|------------------------------|--------------|--------------------------------------------------|
| Server Ma                    | anager • Da  | shboard                                          |
| Dashboard                    | WELCOME TO S | ERVER MANAGER                                    |
| Local Server                 |              | 1 Configure this loca                            |
| ■File and Storage Services ▷ | QUICK START  |                                                  |
|                              |              | 2 Add roles and featur<br>3 Add other servers to |

• In the left column of Server Manager, click Local Server

Towards the right side of the Server Manager window, you'll see an item that says **IE Enhanced Security Configuration**. It'll be set to **On**.

| <b>b</b>                                                   |                                                      | Server Manager                                          |                                                                      | - 0                           |
|------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------|-------------------------------|
| Server Mar                                                 | nager • Local Se                                     | rver                                                    | 🕶 🕝   🚩 Manage Tools                                                 | View He                       |
| Dashboard                                                  | PROPERTIES<br>For WIN-TNJIEBD4P41                    |                                                         |                                                                      | TASKS 🔻                       |
| Local Server     All Servers     File and Storage Services | Computer name WIN-TNJIEBD4P41<br>Workgroup WORKGROUP |                                                         | Last installed updates<br>Windows Update<br>Last checked for updates | Never<br>Install upo<br>Never |
|                                                            | Windows Firewall<br>Remote management                | Private: On<br>Enabled                                  | Windows Error Reporting                                              | Off                           |
|                                                            | Remote Desktop                                       | Disabled                                                | IE Enhanced Security Configuration                                   | On                            |
|                                                            | NIC Teaming<br>Ethernet                              | Disabled<br>IPv4 address assigned by DHCP, IPv6 enabled | Product ID                                                           | (01C-08.0<br>00252-00         |

• Click the link that says **On** 

You should now see the Internet Explorer Enhanced Security Configuration dialog.

| Ъ  | Internet Explorer Enhanced Security Configuration                                                                                              |   |
|----|------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    | Internet Explorer Enhanced Security Configuration (IE ESC) reduces the<br>exposure of your server to potential attacks from Web-based content. | 5 |
|    | Internet Explorer Enhanced Security Configuration is enabled by<br>default for Administrators and Users groups.                                |   |
|    | Administrators:                                                                                                                                |   |
| Ι. | On (Recommended)                                                                                                                               |   |
|    | S Off                                                                                                                                          |   |
|    | Users:                                                                                                                                         |   |
|    | <ul> <li>On (Recommended)</li> </ul>                                                                                                           |   |
|    | 😵 🔿 off                                                                                                                                        | 5 |
|    | More about Internet Explorer Enhanced Security Configuration                                                                                   |   |
| -  | OK Cance                                                                                                                                       |   |

- Under Administrators, select the **Off** radio button
- (Optional) Under Users, select the **Off** radio button
- Click the **OK** button

You should now be back at the main page of the Server Manager.



• Click the **Refresh** button

IE Enhanced Security Configuration should now be set to Off.



### (Optional) Enable Remote Desktop

Are you lazy or maybe lazy-ish? Do you like convenience? Yah. Me, too. So that means that you'll probably want to enabled Remote Desktop. If you're a member of the Tinfoil Hat Patrol, you'll probably want to skip this section.

• Find **Remote Desktop** in Server Manager



• Click the **Disabled** link to the right of Remote Desktop

You should now see the **System Properties** dialog.

|                   | System Pro                                                     | operties                  |
|-------------------|----------------------------------------------------------------|---------------------------|
| Computer Name     | Hardware Advanced                                              | Remote                    |
| Remote Assist     | ance                                                           |                           |
| Allow <u>R</u> em | ote Assistance connectior                                      | ns to this computer       |
|                   |                                                                | -                         |
|                   |                                                                | Advanced                  |
|                   |                                                                |                           |
| Remote Deskt      | ор                                                             | <b></b>                   |
| Choose an opt     | ion, and then specify who                                      | o can connect.            |
| ○ Don't allow     | remote connections to th                                       | nis computer              |
| Allow remoti      | te connections to this con                                     | mouter                    |
|                   |                                                                |                           |
|                   | onnections only from comp<br>o with <u>N</u> etwork Level Auth | hentication (recommended) |
|                   |                                                                | Calact Harry              |
| Help me choo      | <u>3e</u>                                                      | Select Users              |
|                   |                                                                |                           |
| man               | OK                                                             | Cancel May Apply          |

- In the Remote Desktop group, choose **Allow remote connections to this computer**
- Click the **OK** button

Remote Desktop is enabled.

### Join this Server to the Active Directory Domain

At the moment, you've got a stand-alone server with a wacky name that's not attached to anything. Workgroups? That's like the networking equivalent of having a stand-alone MP3 player that only syncs over USB. Who does that? What year is this?! 2005?! Not very useful. You'll now rename this computer and join it to your Active Directory domain so that it plays nicely with others.

In Server Manager, you'll see **Computer name** and **Workgroup**.



• Click on the computer name link

You should now see the **System Properties** dialog.

| System Propertie                     | s                         |                               |             |                 |             | $\times$ |
|--------------------------------------|---------------------------|-------------------------------|-------------|-----------------|-------------|----------|
| Computer Name                        | Hardware                  | Advanced                      | Remote      |                 |             |          |
|                                      | ows uses th<br>e network. | e following inf               | formation f | to identify you | ır computer |          |
| Computer descri                      | ption:                    |                               |             |                 |             | ]        |
|                                      |                           | or example: "<br>Accounting S |             | ction Server"   | or          |          |
| Full computer na                     | ame: V                    | VIN-QEODME                    | EDOFID      |                 |             |          |
| Workgroup:                           | v                         | ORKGROU                       | Р           |                 |             |          |
| To rename this o<br>workgroup, click |                           | change its do                 | omain or    |                 | Change      |          |
|                                      |                           | OK                            |             | Cancel          | Apply       |          |

• Click the **Change...** button

You should now be on the **Computer Name/Domain Changes** dialog. The dialog should be showing you the current name of the computer and the workgroup membership.

| Computer Name/Domain Changes                                                                                      | × |
|-------------------------------------------------------------------------------------------------------------------|---|
| You can change the name and the membership of this<br>computer. Changes might affect access to network resources. |   |
| Computer name:                                                                                                    |   |
| WIN-QEODMEDOFID                                                                                                   | ٦ |
| Full computer name:<br>WIN-QEODMEDOFID<br>More                                                                    |   |
| O Domain:                                                                                                         |   |
| Workgroup: WORKGROUP                                                                                              |   |
|                                                                                                                   |   |
| OK Cancel                                                                                                         |   |

You should now change the values to be what you want the server to be named and the Active Directory domain that it should be attached to.

| Computer Name/Domain Changes                                                                                | ×   |
|-------------------------------------------------------------------------------------------------------------|-----|
| You can change the name and the membership of this computer. Changes might affect access to network resourc | es. |
| Computer name:                                                                                              |     |
| azdo2020                                                                                                    |     |
| Full computer name:<br>azdo2020<br>More                                                                     |     |
| Member of                                                                                                   |     |
| Domain:                                                                                                     |     |
| demo.local                                                                                                  |     |
| Workgroup:                                                                                                  |     |
| WORKGROUP                                                                                                   |     |
| OK Cancel                                                                                                   |     |

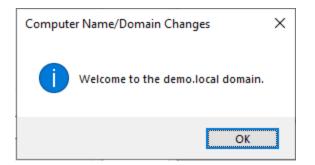
- In the Computer name textbox, enter the desired name for this server
- Under Member of choose the Domain radio button
- In the **Domain** textbox, enter the name of the Active Directory domain
- Click the **OK** button

You'll be prompted for the username and password for a domain administrator for the target domain.

| Windows Security ×                                                            |             |  |  |  |
|-------------------------------------------------------------------------------|-------------|--|--|--|
| Computer Name/Doma                                                            | ain Changes |  |  |  |
| Enter the name and password of an account with permission to join the domain. |             |  |  |  |
| demo\administrator                                                            |             |  |  |  |
| •••••                                                                         |             |  |  |  |
| Domain: demo                                                                  |             |  |  |  |
| ОК                                                                            | Cancel      |  |  |  |
|                                                                               |             |  |  |  |

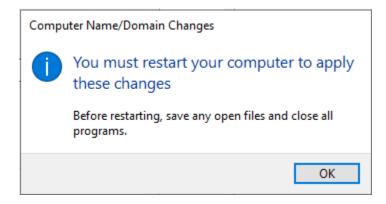
- Enter the username and password
- Click **OK**

You should see a dialog welcoming you to the new domain.



• Click **OK** 

You'll be notified that you'll need to reboot this server.



• Click the **OK** button

| System Properties                                                        |        |                               |           |               |              | × |
|--------------------------------------------------------------------------|--------|-------------------------------|-----------|---------------|--------------|---|
| Computer Name Ha                                                         | rdware | Advanced                      | Remote    |               |              |   |
| Windows<br>on the ne                                                     |        | e following inf               | omation t | o identify yo | our computer |   |
| Computer descriptio                                                      | n:     |                               |           |               |              |   |
|                                                                          |        | or example: "<br>Accounting S |           | tion Server   | " or         |   |
| Full computer name                                                       | : de   | emo19-azdev                   | ops.demo  | .local        |              |   |
| Domain:                                                                  | de     | emo.local                     |           |               |              |   |
| To rename this computer or change its domain or workgroup, click Change. |        |                               |           |               |              |   |
| Changes will take effect after you're tart this computer.                |        |                               |           |               |              |   |
|                                                                          |        | Close                         |           | Cancel        | Apply        |   |

• Click the **Close** button



• Click the **Restart Now** button

The server will restart and return you to the lock screen. The server has been installed and joined to the domain.

NOTE: It is *optional* but you might find it helpful to configure this server to have a static IP address and a static A record entry in your DNS server.

# Chapter 4: Install SQL Server 2019 for Azure DevOps Server 2022

### Introduction

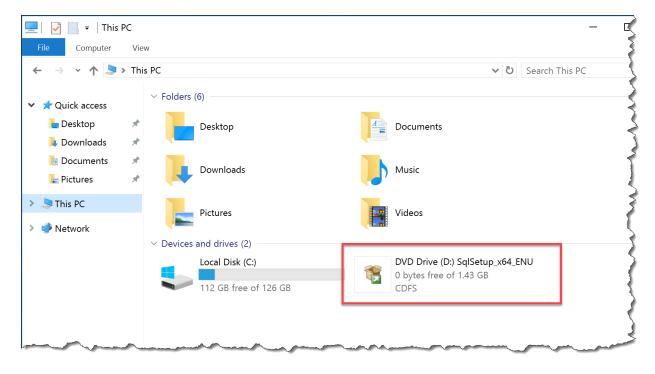
Azure DevOps Server 2022 (AzDO) uses SQL Server for all its back-end storage. This part of the guide will walk you through installing SQL Server 2019 for AzDO.

## Install SQL Server 2019

- Either insert your **SQL Server 2019 DVD** into the DVD drive or mount the **ISO image** into the DVD drive for your virtual machine.
- Start the machine
- Log in as an administrator

- Open Explorer.exe
- Navigate to This PC or another view that will show you all the drives on your machine

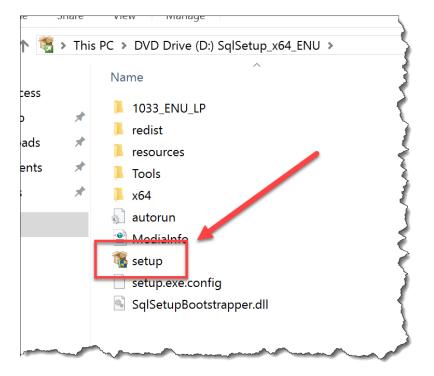
You should see a view that's similar to the screenshot below and you should see a DVD drive with **SqlSetup\_x64\_ENU** or another similar version of SQL Server in the drive.



• Double-click on the DVD drive with the SQL Server installer

You should see the contents of the SQL installer.

• Double-click **setup** to run the installer

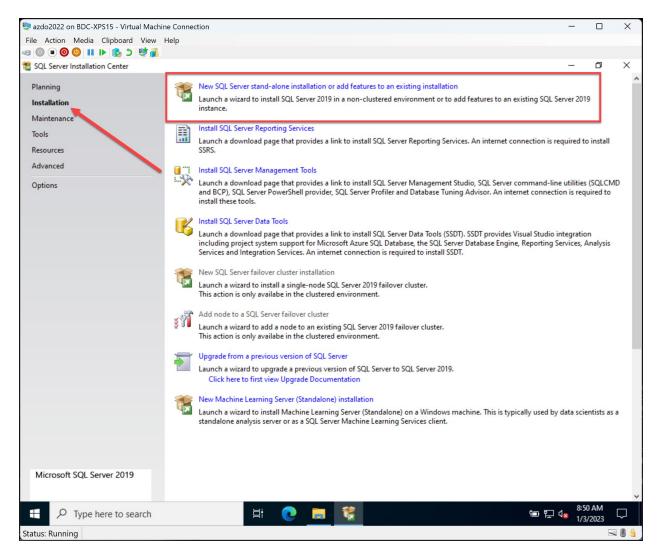


• Click Yes on the User Account Control dialog



Copyright © 2023 – Benjamin Day Consulting, Inc. – <u>www.benday.com</u> Printing or duplication is prohibited without author's expressed written permission. You should now see the **SQL Server Installation Center** window.

- In the left column, click the Installation link
- Click New SQL Server stand-alone installation or add features to an existing installation



The first page of the SQL Server 2019 Setup wizard will prompt you for a product key. It should already be filled in with a product key.

| 🃸 SQL Server 2019 Setup                                                                                                                                                                                                               | _                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              | ×         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------|
| Product Key<br>Specify the edition of SQL Serve                                                                                                                                                                                       | er 2019 to install.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |           |
| Product Key<br>License Terms<br>Global Rules<br>Product Updates<br>Install Setup Files<br>Install Rules<br>Feature Selection<br>Feature Rules<br>Feature Configuration Rules<br>Ready to Install<br>Installation Progress<br>Complete | Validate this instance of SQL Server 2019 by entering the 25-character key from the Microsoft<br>of authenticity or product packaging. You can also specify a free edition of SQL Server. Develoe<br>Evaluation, or Express. Evaluation has the largest set of SQL Server features, as documented in<br>Books Online, and is activated with a 180-day expiration. Developer edition does not have an<br>has the same set of features found in Evaluation, but is licensed for non-production database<br>development only. To upgrade from one installed edition to another, run the Edition Upgrade<br>O Specify a free edition:<br>Evaluation<br>Evaluation<br>Evaluation<br>Enter the product key:<br>PMBDC-FXVM3-T777P-N4FY8-PKFF4 | oper,<br>n SQL Ser<br>expiratio<br>applicati | ver<br>n, |
|                                                                                                                                                                                                                                       | < Back Next >                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Cance                                        |           |

#### • Click Next

#### You should now be on the License Terms page.

- Read the license terms carefully and completely.
- Ponder the implications of the license terms for you and for your business
- Really deeply digest the true meaning and intent of the license terms
- Consider consulting an attorney to review the license terms to better understand the terms
- Contact Microsoft to negotiate any amendments to the software license terms that your attorney recommended
- When you, your attorney(s), and Microsoft have come to an agreement about your license terms, check the **I accept the license terms** checkbox
- Click Next

| 髋 SQL Server 2019 Setup                                                                                                                                                                                                               | _                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                       | ×                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------|
| License Terms<br>To install SQL Server 2019, you                                                                                                                                                                                      | must accept the Microsoft Software License Terms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                       |                                 |
| Product Key<br>License Terms<br>Global Rules<br>Product Updates<br>Install Setup Files<br>Install Rules<br>Feature Selection<br>Feature Rules<br>Feature Configuration Rules<br>Ready to Install<br>Installation Progress<br>Complete | MICROSOFT SOFTWARE LICENSE TERMS<br>MICROSOFT SQL SERVER 2019 STANDARD<br>These license terms are an agreement between you and Microsoft Corporation<br>its affiliates). They apply to the software named above, which includes the media<br>you received it, if any. The terms also apply to any Microsoft services or software<br>(except to the extent such services or updates are accompanied by new or addit<br>terms, in which case those different terms apply prospectively and do not alter y<br>Microsoft's rights relating to pre-updated software or services). IF YOU COMP<br>THESE LICENSE TERMS VOLLHAVE THE RIGHTS RELOW FOR FACH SERVER<br>Notice: A paid SQL Server edition product key has been provided for the current action - St<br>ensure you are entitled to this SQL Server edition with proper licensing in place for the proce<br>(edition) supplied.<br>SQL Server transmits information about your installation experience, as well as other usage<br>performance data, to Microsoft to help improve the product. To learn more about data pro-<br>privacy controls, and to turn off the collection of this information after installation, see the<br>documentation. | i on whice<br>e update<br>ional<br>rour or<br>LY WITH<br>VOIL<br>Copy<br>andard. P<br>luct key<br>and | ch<br>is<br>I<br>Print<br>lease |
|                                                                                                                                                                                                                                       | < Back Next >                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Cano                                                                                                  | el .:i                          |

The install wizard will work on a few things and run some pre-install checks. If you see a screen that looks similar to the one below, make sure that you don't have any failures.

NOTE: by default, this screen is skipped if all the pre-install checks have passed.

- Verify that there are zero failed rules
- Click Next

| 🃸 SQL Server 2019 Setup                                                                                |                       |                                                                                                                                                                            | _                                   | . 🗆 | ×      |
|--------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----|--------|
| Install Rules<br>Setup rules identify potential<br>can continue.                                       | l problems that       | might occur while running Setup. Failures must be corrected be                                                                                                             | efore Setup                         |     |        |
| Install Rules<br>Feature Selection<br>Feature Rules<br>Feature Configuration Rules<br>Ready to Install | Hide det              | completed. Passed: 3. Failed 0. Warning 1. Skipped 0.<br>ails <<<br>led report                                                                                             |                                     |     | Re-run |
| Ready to Install<br>Installation Progress<br>Complete                                                  | Result<br>©<br>L<br>© | Rule<br>Consistency validation for SQL Server registry keys<br>Computer domain controller<br>Windows Firewall<br>SQL 2019 minimum CTP for Upgrade and Side by Side Support | Status Passed Passed Warning Passed |     |        |
|                                                                                                        |                       | < Back                                                                                                                                                                     | Next >                              | Ca  | ncel   |

You should now be on the **Feature Selection** page.

- Check the checkbox for **Database Engine Services**
- Check the checkbox for Full-Text and Semantic Extractions for Search
- (Optional) If you are planning to run TFS and SQL Server on separate machines, check the checkbox for **Client Tools Connectivity**
- Click **Next**

| 髋 SQL Server 2019 Setup                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                                                                                                                                                                                                    | _                                                                                        |                            | ×                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feature Selection<br>Select the Standard features to                                                                                                                                                                           | install.                                                                                                                                                                                                                                                                                                                                            |                                                                       |                                                                                                                                                                                                                                                                                                                                    |                                                                                          |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Install Rules<br>Feature Selection<br>Feature Rules<br>Instance Configuration<br>Server Configuration<br>Database Engine Configuration<br>Feature Configuration Rules<br>Ready to Install<br>Installation Progress<br>Complete | <ul> <li>Looking for Reporting Servi</li> <li>Features:</li> <li>Database Engine Services</li> <li>SQL Server Replication</li> <li>Machine Learning Ser</li> <li>R</li> <li>Python</li> <li>Java</li> <li>Full-Text and Semanti</li> <li>Data Quality Services</li> <li>PolyBase Query Service</li> <li>Select All</li> <li>Unselect All</li> </ul> | vices and Language                                                    | the web         Feature description:         The configuration and instance feature of a Sisolated from other SC         Prerequisites for selected         Already installed:         Image: Windows PowerShire         To be installed from in         Disk Space Requirement         Drive C: 1618 MB require         available | QL Server insta<br>QL Server instar<br>ed features:<br>nell 3.0 or high<br>nedia:<br>nts | ance is<br>nces. SQL<br>er | <ul> <li></li> <li><!--</td--></li></ul> |
|                                                                                                                                                                                                                                | Instance root directory:<br>Shared feature directory:<br>Shared feature directory (x86):                                                                                                                                                                                                                                                            | C:\Program Files\Mid<br>C:\Program Files\Mid<br>C:\Program Files (x86 |                                                                                                                                                                                                                                                                                                                                    |                                                                                          |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                                                                                                                                                                                                    | Next >                                                                                   | Cancel                     | :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

You should now see the **Instance Configuration** page of the install wizard. Do yourself a favor and just keep the default values.

• Click Next

| 🏗 SQL Server 2019 Setup                               |                          |                          |                     |                      | _   |       | ×  |
|-------------------------------------------------------|--------------------------|--------------------------|---------------------|----------------------|-----|-------|----|
| Instance Configuration                                | 1                        |                          |                     |                      |     |       |    |
| Specify the name and instance                         | ID for the instance of S | QL Server. Instance ID k | becomes part of th  | e installation path. |     |       |    |
| Install Rules                                         | Default instance         |                          |                     |                      |     |       |    |
| Feature Selection<br>Feature Rules                    | O Named instance:        | MSSQLSERVER              |                     |                      |     |       |    |
| Instance Configuration                                |                          |                          |                     |                      |     |       |    |
| Server Configuration<br>Database Engine Configuration | Instance ID:             | MSSQLSERVER              |                     |                      |     |       |    |
| Feature Configuration Rules<br>Ready to Install       | SQL Server directory:    | C:\Program Files\Mici    | rosoft SQL Server\1 | MSSQL15.MSSQLSER     | VER |       |    |
| Installation Progress<br>Complete                     | Installed instances:     |                          |                     |                      |     |       |    |
|                                                       | Instance Name            | Instance ID              | Features            | Edition              | Ve  | rsion | _  |
|                                                       |                          |                          |                     |                      |     |       |    |
|                                                       |                          |                          |                     |                      |     |       |    |
|                                                       |                          |                          |                     |                      |     |       |    |
|                                                       |                          |                          |                     |                      |     |       |    |
|                                                       |                          |                          |                     |                      |     |       |    |
|                                                       |                          |                          |                     |                      |     |       |    |
|                                                       |                          |                          |                     | < Back Nex           | t>  | Cance | :I |

On the **Server Configuration** page, you'll specify the startup value for each service.

- Set **Startup Type** to **Automatic** for each service (NOTE: full-text search doesn't let you change the startup value so you can ignore it)
- Check the Grant Perform Volume Maintenance Task privilege checkbox
- Click Next

| 髋 SQL Server 2019 Setup                                  |                                                                                                                                                | <b></b>                        |                   | — C        | ı x    |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------|------------|--------|
| Server Configuration<br>Specify the service accounts and | l collation configuration.                                                                                                                     |                                |                   |            |        |
| Install Rules                                            | Service Accounts Collation                                                                                                                     |                                |                   |            |        |
| Feature Selection<br>Feature Rules                       | Microsoft recommends that you use                                                                                                              | a separate account for each    | SQL Server servic | ce.        |        |
| Instance Configuration                                   | Service                                                                                                                                        | Account Name                   | Password          | Startup Ty | pe     |
| Server Configuration                                     | SQL Server Agent                                                                                                                               | NT Service\SQLSERVERA          |                   | Automatic  | ~      |
| Database Engine Configuration                            | SQL Server Database Engine                                                                                                                     | NT Service\MSSQLSERVER         |                   | Automatic  | $\sim$ |
| Feature Configuration Rules                              | SQL Full-text Filter Daemon Launc                                                                                                              | NT Service\MSSQLFDLa           |                   | Manual     |        |
| Ready to Install                                         | SQL Server Browser                                                                                                                             | NT AUTHORITY\LOCAL             |                   | Automatic  | $\sim$ |
| Installation Progress<br>Complete                        | Grant Perform Volume Maintenan<br>This privilege enables instant file i<br>to information disclosure by allow<br><u>Click here for details</u> | nitialization by avoiding zero | oing of data page |            | ad     |
|                                                          |                                                                                                                                                | < Back                         | < Next            | > Ci       | ancel  |

You should now be on the **Database Engine Configuration** page. On this page, you'll pretty much just be specifying who should be an administrator on your new SQL Server instance. By default, the installer does not automatically make Windows administrators members of the sysadmin group in SQL Server. (I think that's silly.)

- Click the Add Current User button
- Click the **Add...** button
  - On the search dialog, search for **Domain Admins**
  - o Click OK
- Verify that the list of administrators is accurate
- Click **Next**

| 📸 SQL Server 2019 Setup                                                                                                                                                                                                        |                                                                                                          | _      |       | ×    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------|-------|------|
| Database Engine Config                                                                                                                                                                                                         | guration                                                                                                 |        |       |      |
| Specify Database Engine auther parallelism, Memory limits, and I                                                                                                                                                               | ntication security mode, administrators, data directories, TempDB, Max degree of<br>Filestream settings. |        |       |      |
| Install Rules<br>Feature Selection<br>Feature Rules<br>Instance Configuration<br>Server Configuration<br>Database Engine Configuration<br>Feature Configuration Rules<br>Ready to Install<br>Installation Progress<br>Complete | DEMO\Domain Admins (Domain Admins) unrestricte                                                           |        |       | e    |
|                                                                                                                                                                                                                                | Add Current User Add Remove                                                                              |        |       |      |
|                                                                                                                                                                                                                                | < Back                                                                                                   | Next > | Cance | el . |

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| 髋 SQL Server 2019 Setup                                                                                                                                                                                                               | –                                 |               | × |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------|---|
| Ready to Install<br>Verify the SQL Server 2019 feat                                                                                                                                                                                   | ures to be installed.             |               |   |
| Install Rules<br>Feature Selection<br>Feature Rules<br>Instance Configuration<br>Server Configuration<br>Database Engine Configuration<br>Feature Configuration Rules<br><b>Ready to Install</b><br>Installation Progress<br>Complete | Ready to install SQL Server 2019: | ><br>File.ini | * |
|                                                                                                                                                                                                                                       | < Back Install C                  | Cancel        |   |

#### • Click Install

The installer should now be running.

| 髋 SQL Server 2019 Setup                               |                                                                                   | _ |       | $\times$ |
|-------------------------------------------------------|-----------------------------------------------------------------------------------|---|-------|----------|
| Installation Progress                                 |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
| Install Rules                                         |                                                                                   |   |       |          |
| Feature Selection                                     |                                                                                   |   |       |          |
| Feature Rules                                         | Install_smo_loc_Cpu64_1033_Action : RemoveExistingProducts. Removing applications | ; |       |          |
| Instance Configuration                                |                                                                                   |   |       |          |
| Server Configuration<br>Database Engine Configuration |                                                                                   |   |       |          |
| Feature Configuration Rules                           |                                                                                   |   |       |          |
| Ready to Install                                      |                                                                                   |   |       |          |
| Installation Progress                                 |                                                                                   |   |       |          |
| Complete                                              |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       |                                                                                   |   |       |          |
|                                                       | Next >                                                                            |   | Cance | el l     |

When the installer is done, you'll see a message saying **Complete**.

• Click **Close** to exit

| 髋 SQL Server 2019 Setup                     |                                                                                                   |             | _ |       | × |
|---------------------------------------------|---------------------------------------------------------------------------------------------------|-------------|---|-------|---|
| Complete<br>Your SQL Server 2019 installati | ion completed successfully with product updates.                                                  |             |   |       |   |
| Install Rules<br>Feature Selection          | Information about the Setup operation or possible                                                 | next steps: |   |       | • |
| Feature Rules                               | Sector Contractions for Search                                                                    | Succeeded   |   |       |   |
| Instance Configuration                      | Database Engine Services                                                                          | Succeeded   |   |       |   |
| Server Configuration                        | SQL Browser                                                                                       | Succeeded   |   |       |   |
| Database Engine Configuration               | SQL Writer                                                                                        | Succeeded   |   |       |   |
| Feature Configuration Rules                 | Client Tools Connectivity                                                                         | Succeeded   |   |       |   |
| Ready to Install                            | SOL Client Connectivity SDK                                                                       | Succeeded   |   |       | * |
| Installation Progress                       |                                                                                                   |             |   |       |   |
| Complete                                    | Details:                                                                                          |             |   |       |   |
| complete                                    |                                                                                                   |             |   |       |   |
|                                             | Install successful.                                                                               |             |   |       |   |
|                                             | Summary log file has been saved to the following lo                                               | ocation:    |   |       |   |
|                                             | <u>C:\Program Files\Microsoft SQL Server\150\Setup E</u><br>\Summary azdo2020 20201018 065325.txt |             |   |       |   |
|                                             |                                                                                                   |             |   | Close |   |

SQL Server 2019 is now installed.

## Chapter 5: Install Azure DevOps Server 2022

### Introduction

Now that Windows and SQL Server are installed, you're ready to install Azure DevOps Server 2022 (AzDO). You'll probably want to create three domain accounts for use by the various pieces of AzDO: Azure DevOps Service (*domain*\azdoservice) and Azure DevOps Build (*domain*\azdobuild).

- If you're installing this on a Hyper-V virtual machine with dynamic memory enabled, change the **minimum amount of RAM to 2GB** (at least temporarily) to allow Azure DevOps Server 2022 to install along with SQL Server.
- Gather the username and passwords for the 2 AzDO service accounts (see above)
- Log on to the server using a user account with Administrator privileges

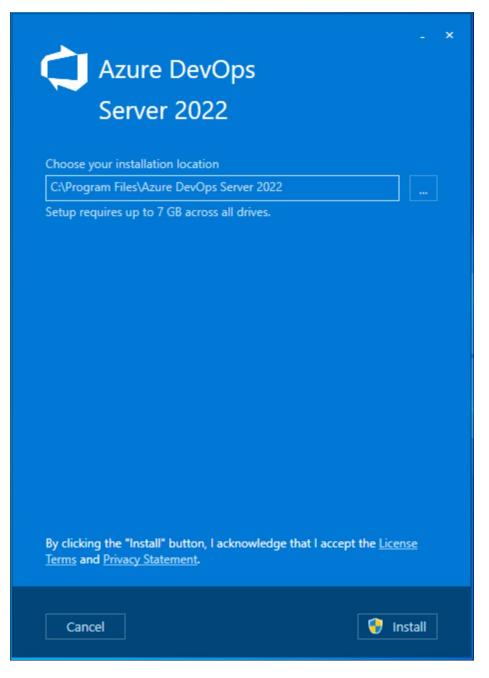
### **Run the Installer**

- Mount the ISO image or insert the installer DVD
- Using Windows Explorer (explorer.exe), navigate to the installer directory

| 🔐   🛃 📄 =                                                               |                  | Manage       | DVD Drive (D:) AZUREDEVOPS2022_SERVER |            |           |                    |
|-------------------------------------------------------------------------|------------------|--------------|---------------------------------------|------------|-----------|--------------------|
| File Home St                                                            | nare View        | Drive Tools  |                                       |            |           |                    |
| $\leftarrow$ $\rightarrow$ $\land$ $\uparrow$ $\blacksquare$ $\diamond$ | DVD Drive (D:) A | ZUREDEVOPS20 | 22_SERVER                             | ~          | ē         | , Search DVD Drive |
|                                                                         | Name             | ^            | Date modified                         | Туре       |           | Size               |
| Quick access                                                            | packa            | ges          | 11/22/2022 12:32 PM                   | File folde | er        |                    |
| Desktop                                                                 | autoru 🖉         | In           | 11/22/2022 12:08 PM                   | Setup Int  | formation | 1 KB               |
| 👆 Downloads                                                             | * 📥 Azure        | DevOps2022   | 11/22/2022 12:32 PM                   | Applicat   | ion       | 3,271 KB           |
| Documents                                                               | *                |              |                                       |            |           |                    |
| Pictures                                                                | *                |              |                                       |            |           |                    |
| 💻 This PC                                                               |                  |              |                                       |            |           |                    |
| 🔐 DVD Drive (D:) AZ                                                     | URE              |              | -                                     |            |           |                    |
| packages                                                                |                  |              |                                       |            |           |                    |

• Run AzureDevOps2022.exe

You should see the Azure DevOps Server Setup dialog.



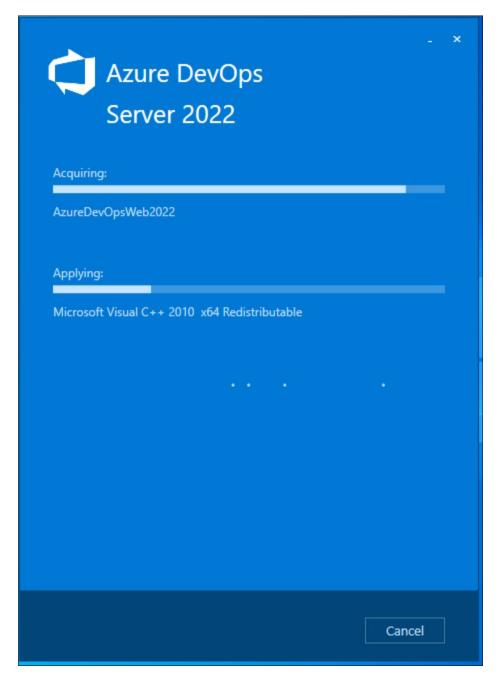
• Click Install

You'll see a User Account Control dialog.

| User Account Control                                                                  |  |  |  |  |  |
|---------------------------------------------------------------------------------------|--|--|--|--|--|
| Do you want to allow this app to make<br>changes to your device?                      |  |  |  |  |  |
| Q Azure DevOps Server 2022                                                            |  |  |  |  |  |
| Verified publisher: Microsoft Corporation<br>File origin: Hard drive on this computer |  |  |  |  |  |
| Show more details                                                                     |  |  |  |  |  |
| Yes No                                                                                |  |  |  |  |  |
|                                                                                       |  |  |  |  |  |

• Click Yes

The installer will run and start to copy files to your disk.



After running a long while, you'll get a screen similar to the one below with the message **Setup Completed** and prompting you to restart.

NOTE: There's also a chance that you might not see this screen if your server does not need a reboot. If this happens, you'll be shown the **Azure DevOps Server Configuration Center** dialog. If you see that dialog, skip ahead in this guide a few pages.

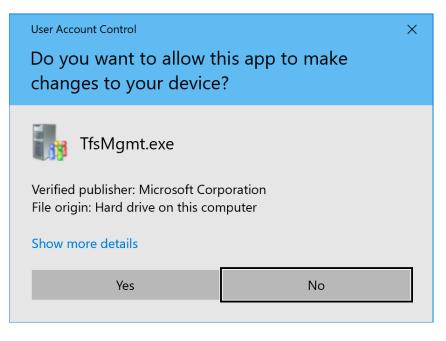
- Click the **Restart Now** button
- If your server doesn't restart on its own, reboot your server



Copyright © 2023 – Benjamin Day Consulting, Inc. – <u>www.benday.com</u> Printing or duplication is prohibited without author's expressed written permission. After the server has rebooted...

• Log in to the server. NOTE: be sure to use the same user account that you were using before the reboot

You'll be welcomed by a User Account Control dialog.



• Click the **Yes** button

After running for a while (probably a long while), you should see the **Azure DevOps Server Configuration Center**.

| Azure DevOps Server Configuration Cen                                                    | ter – 🗆 🗙                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| h Configuration Cer                                                                      | iter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Configure Azure DevOps Server<br>Configure Azure DevOps Server Proxy<br>Configure Search | About this Wizard<br>Use the Azure DevOps Server wizard to configure any Azure DevOps Server deployment, whether you are creating<br>a new deployment from scratch, upgrading an existing deployment, or setting up a new application tier.<br>In previous releases, several wizards were provided for different scenarios - Basic and Full wizards for new<br>deployments; an Upgrade wizard for upgrade scenarios; and an Application Tier Only wizard for various other<br>scenarios. This single wizard replaces all of those, and guides you through the process of choosing, validating,<br>and then running an individual scenario.<br>If you need to configure something else - the Search feature, for example - use one of the other wizards available<br>below. |
| Azure DevOps Server                                                                      | 2022 Start Wizard Close                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

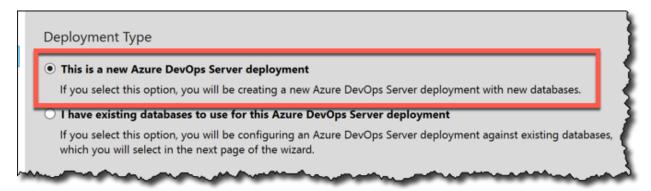
- Choose Configure Azure DevOps Server
- Click Start Wizard

You should now be on the welcome page.

| Azure DevOps Server Configuration                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | × |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Server Configur                                                                                                                                                                                                                                 | ation Wizard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
| Welcome         New Deployment         Advanced         Language         Database         Account         Application Tier         Search         Project Collection         Review         Readiness Checks         Configure         Complete | Welcome         Starts wixard to configure any Azure DevOps Server deployment, whether you are creating a new deployment from scratch, upgrading an existing deployment, or setting up a new application tier. It guides you through the process of choosing a scenario, providing inputs, validating those inputs, and then configuring your deployment. <b>Deployment Care DevOps Server</b> As part of the Visual Studio Experience Improvement Program (VSEIP), we always collect information about your installation and configuration of Azure DevOps Server and other components it installs. Additionally, if you agree to opt-in and share this information, VSEIP will collect performance, settings, reliability, connectivity, and usage data related to you use of Visual Studio. This data will not be used to personally identify you.         • Yes, I want to participate in the Visual Studio Experience Improvement Program.         • No, I do not want to participate.         • Tor more information, click <u>Privacy Statement</u> . |   |
| Azure DevOps Serv                                                                                                                                                                                                                               | er 2022 Previous Next Review Cancel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ] |

- Choose Yes, I want to participate in the Visual Studio Experience Improvement Program
- Click **Next**

You should now be on the Deployment Type page.



- Select This is a new Azure DevOps Server deployment
- Click Next

On the **Select your deployment scenario** page, you'll be prompted to choose between a 'New Deployment – Basic' or 'New Deployment – Advanced' deployment. Unless you are installing AzDO on an Azure Virtual Machine, the 'New Deployment – Azure' option will be disabled.

| 2 | ct your new deployment scenario from the options below:                                                                                                                                                                                                                                                                                            |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | New Deployment - Basic                                                                                                                                                                                                                                                                                                                             |
| ļ | Create a new Azure DevOps Server deployment using default options for most inputs. This option allows you to get up and running quickly. If you want more control over input options like service accounts or ports, or if you know you want to configure SQL Server Reporting Services integration, you should use the Advanced scenario instead. |
|   | New Deployment - Advanced                                                                                                                                                                                                                                                                                                                          |
| ( | Create a new Azure DevOps Server deployment with full control over all inputs. This option allows you to specify<br>your own values for each input, and enables you to configure SQL Server Reporting Services integration.                                                                                                                        |
| l | New Deployment - Azure                                                                                                                                                                                                                                                                                                                             |
| ( | Create a new Azure DevOps Server deployment with integration with an Azure SQL database. This option is<br>wailable on Azure virtual machines with Managed Service Identities enabled.                                                                                                                                                             |

- Choose New Deployment Advanced
- Click **Next**

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- Choose the language you want to use from the drop-down list
- Click **Next**

| Azure DevOps Server Configuration                                                                      |                                                                                                                                                                                                                                                      |  |  |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Server Configuration Wizard                                                                            |                                                                                                                                                                                                                                                      |  |  |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database<br>Account<br>Application Tier<br>Search | Select the language<br>Many strings are installed in all supported langua<br>Other strings, including strings for process eleme<br>The language for an Azure DevOps Server deployr<br>a different language in the future you will need th<br>English |  |  |

The **Specify Azure DevOps Server Databases** page prompts you to choose your SQL Server database. This guide assumes that you installed SQL Server Standard on the same machine as AzDO.

| Specify Azure DevOps Server Databases                      |            |
|------------------------------------------------------------|------------|
| Specify the SQL Server instance to use for your databases. |            |
| SQL Server Instance:                                       |            |
| azdo2022                                                   | (i) 🗸 Test |

- To the right of the **SQL Server Instance** textbox, click the **Test** link to verify the connection to SQL Server
- Confirm that the test passes
- Click Next

You should now see the Service Account page. You can choose to run AzDO as a system account but I find that this makes permissions management – more specifically, permissions *debugging* – much harder later on when you start doing automated builds, automated deployments, and automated testing. My recommendation is to run AzDO as a separate service account.

| Provide the Service Acco | ount                                                                                                                                                                          |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service Account          |                                                                                                                                                                               |
|                          | as the primary account for Azure DevOps Server. If you want to use the same account for<br>vices including Reporting integration, you will need to enter a user account here. |
| ○ Use a system account : | NT AUTHORITY\NETWORK SERVICE                                                                                                                                                  |
| • Use a user account :   | N 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997                                                               |
| Account Name:            | demo\azdoservice 🗸 Test                                                                                                                                                       |
| Password:                | •••••                                                                                                                                                                         |
|                          |                                                                                                                                                                               |
|                          |                                                                                                                                                                               |

- Choose **Use a user account**
- In the Account Name textbox, type the fully-qualified name of the service account.
   Example: demo\azdoservice
- In the **Password** textbox, enter the password for the service account
- Click the **Test** link to verify the credentials are correct
- Click **Next**

You should now see a page prompting you for the configuration of AzDO in IIS. You have some options about configuring SSL with AzDO but there's some complexity here that we're going to skip over for now.

For the sake of simplicity, we're going to configure AzDO to run without SSL. In "real life" you'll want to acquire an SSL certificate for your server and install it in Internet Information Services (IIS) in order to make your AzDO traffic more secure. But that's wildly out of scope for this guide. If you'd like help with this, I like money and I help people with their Azure DevOps problems for money. I'd be overjoyed if you contacted me at info@benday.com and told me that you wanted to give me money to help you with your technical problems. ©

Anyway. Continuing on with the settings for your application tier web services.

The default option should be set to **Custom**.

|    | Provide the Se    | ettings for Your Application Tier Web Services                                                                 |
|----|-------------------|----------------------------------------------------------------------------------------------------------------|
|    | Web Site Settings |                                                                                                                |
|    | Setting Group:    | Custom ×                                                                                                       |
|    | Site Bindings:    | http://*:80                                                                                                    |
|    | Public URL:       | http://demo19-azdevops                                                                                         |
|    | Edit Site Setting | js                                                                                                             |
|    | SSH Settings      |                                                                                                                |
| ~~ | the second        | and a second |

- Make sure Setting Group is set to Custom
- If Setting Group is NOT set to Custom, just give up now. (Have you considered raising goats as a career?)

(Optional) At the bottom of this page, there's a section for **File Cache Location**. AzDO caches files for efficiency. The contents of this directory can become impressively large. For performance reasons and for disk space management reasons, you probably should put this on a separate disk – ideally on a different "spindle" – than your system/operating system drive.

| File Cache Location                                                                                                                                                                                                                                                                                                                                                              |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| The Azure DevOps Server file cache folder is used to cache frequently accessed Azure DevOps resources for more efficient communication with your server. You should place this directory on a disk with at least 50GB of free space. For large or performance-intensive Azure DevOps installations, it is not recommended that you store your cache on the Windows system drive. | AL ALL |
| Folder:                                                                                                                                                                                                                                                                                                                                                                          | €      |
| E:\AzureDevOpsData\ApplicationTier\_fileCache ()                                                                                                                                                                                                                                                                                                                                 |        |
|                                                                                                                                                                                                                                                                                                                                                                                  | 1      |

- (Optional) Change the **Folder** path to reference the desired location and disk.
- Click Next

You should now be on the **Provide Search configuration settings** page of the wizard. This is an optional feature.

Option 1: If you *do not* want to install Search:

- Uncheck Install and configure Search
- Click Next

Option #2: Install Search

• Check Install and configure Search

| Azure DevOps Server Configuration                                                                                                                                                   | ×                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Server Configur                                                                                                                                                                     | ration Wizard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database<br>Account<br>Application Tier<br>Search<br>Project Collection<br>Review<br>Readiness Checks<br>Configure<br>Complete | Provide Search configuration settings<br>Configuring the Search service will enable Code, Work Item and Wiki search for all collections. This will also install the<br>required third-party components. Read the hardware requirements and installation notes.<br>✓ Install and configure Search<br>● Install Search Service:<br>Location of the search index:<br>C:\AzureDevOpsData\Search\IndexStore<br>● Use an existing Search Service:<br>① Use an existing Search Service on a remote machine, copy the contents of the <u>Search Service package</u> to the<br>remote machine and follow the instructions in the readme file.<br>Type in a Search Service Url to point to a Search instance of your choice: |
|                                                                                                                                                                                     | <ul> <li>✓ Automatically install Code Search extension for existing and new Team Project Collections</li> <li>Specify user and password to enable basic authentication in Search Service</li> <li>User: searchuser i</li> <li>Password: •••••••</li> <li>i</li> <li>Service Account</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Azure DevOps Serv                                                                                                                                                                   | ver 2022 Previous Next Review Cancel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

- Choose Install Search Service
- Set the **Location of the search index** to the drive and folder you want to use for search. For performance reasons, you'll probably want to keep this on a different drive than the system drive. If your AzDO installation is large and busy, you may want to put this on its own drive by itself.

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- Under Specify user and password to enable basic authentication in Search Service, enter a user name and password. This is NOT a Windows username. I'd recommend using the username **searchuser** and then entering a password of your choice.
- Click **Next**

The installer will now prompt you to create a new Team Project Collection (TPC). The answer to this one (unless you're doing a migration) is yes.

| Azure DevOps Server Configuration X                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Server Configuration Wizard                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database<br>Account<br>Application Tier<br>Search<br>Project Collection<br>Review<br>Readiness Checks<br>Configure<br>Complete | Provide the settings you would like to use for your initial Team Project Collection  Create a new team project collection  A Team Project Collection is where your projects are stored. You must create at least one Team Project Collection in order to use Azure DevOps Server. This wizard will create a default collection for you that will be suitable for most Azure DevOps Server deployments.  If you choose not to create a Team Project Collection at this time, you may do so later from the Administration Console.  Enter a name for the new collection: DefaultCollection  Description: |  |  |  |
| Azure DevOps Serv                                                                                                                                                                   | rer 2022 Previous Next Review Cancel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |

- Check Create a new team project collection
- Click Next

You should now be on the **Confirm the Configuration Settings Before Proceeding** page.

| Azure DevOps Server Configuration                |                                                                                                                                |                                                                               | ×             |  |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------|--|
| Server Configuration Wizard                      |                                                                                                                                |                                                                               |               |  |
| Welcome<br>New Deployment<br>Advanced            | w Deployment Review each of the selected configuration settings before beginning readiness checks.                             |                                                                               |               |  |
| Language<br>Database<br>Account                  | Feedback<br>Send Feedback                                                                                                      | Yes                                                                           |               |  |
| Application Tier<br>Search<br>Project Collection | Application Tier<br>Configuration Scenario<br>Service Account<br>Authentication Method                                         | NewServerAdvanced<br>demo\azdoservice<br>Negotiate                            |               |  |
| Review<br>Readiness Checks<br>Configure          | Database Language<br>Virtual Directory<br>Site Bindings                                                                        | English<br>http:*:80:                                                         |               |  |
| Complete                                         | Public URL<br>File Cache Folder<br>Enable SSH Service<br>SSH Port                                                              | http://azdo2022<br>C:\AzureDevOpsData\ApplicationTier\_fileCache<br>Yes<br>22 |               |  |
|                                                  | <b>Configuration Database</b><br>Upgrade SQL Express<br>SQL Instance<br>Use Existing Database<br>Create Configuration Database | No<br>azdo2022<br>No<br>Yes                                                   | v             |  |
| Azure DevOps Serv                                | ver 2022                                                                                                                       | Previous Next                                                                 | Verify Cancel |  |

• Click Next

The installer will run some readiness checks. They should all come back as passed except for the Search Configuration item. The Search feature requires the Azul Zulu OpenJDK to be installed and this warning is prompting you to accept the licensing agreement for the JDK.

| Azure DevOps Server Configuration                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ×                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Server Configur                                                                                                                                                                                                                                                                             | ation Wizard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database                                                                                                                                                                                                                               | Readiness Checks Validate that Your System is Ready to Configure<br>Readiness checks passed.                                                                                                                                                                                                                                                                                                                                                                                                          | Passed                                    |
| Account                                                                                                                                                                                                                                                                                     | O Data Tier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Passed                                    |
| Application Tier<br>Search<br>Project Collection                                                                                                                                                                                                                                            | <ul> <li>Application Tier</li> <li>Project Collection</li> <li>Search Configuration</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        | Passed<br>Passed<br>Confirmation Required |
| Review                                                                                                                                                                                                                                                                                      | Click here to rerun Readiness Checks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| Readiness Checks Detailed Results:                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Open Log                                  |
| Configure<br>Complete                                                                                                                                                                                                                                                                       | Search requires Java 8 (Update 111 or higher), and a suitable version was not detected or is not correctly<br>on this computer. You can download and install or update to the latest Azul Zulu OpenJDK 8 Server versi<br>accepting the <u>Azul Zulu Terms of Use</u> and selecting 'Configure'. Note that this will set the JAVA_HOME<br>variable to point to the Java installation directory, and that Azul Zulu OpenJDK does not provide autom<br>See <u>Java installation notes</u> for more info. |                                           |
|                                                                                                                                                                                                                                                                                             | 👐 🖌 I accept the Azul Zulu Terms of Use and I want to download and install Azul Zu                                                                                                                                                                                                                                                                                                                                                                                                                    | ılu OpenJDK 8                             |
|                                                                                                                                                                                                                                                                                             | () The following service will be installed for you: World Wide Web Publishing Service                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| (i) TF255465: Your system does not have the recommended amount of system memory available: 4 GB. While A DevOps Server can operate with less than this amount of memory, the performance will be degraded. Upgra system memory to at least the recommended minimum for optimal performance. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ce will be degraded. Upgrade your         |
| Azure DevOps Serv                                                                                                                                                                                                                                                                           | ver 2022 Previous Next                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Configure Cancel                          |

- Check I accept the Azul Zulu Terms of Use...
- Click the **Configure** button

The configuration process should now be running.

| Azure DevOps Server Configuration X                                                                                                                                                        |                                                                                                                                                                                                                            |          |      |                                                                                                                   |       |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|-------------------------------------------------------------------------------------------------------------------|-------|--|
| Server Configur                                                                                                                                                                            | ation Wizard                                                                                                                                                                                                               |          |      |                                                                                                                   |       |  |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database<br>Account<br>Application Tier<br>Search<br>Project Collection<br>Review<br>Readiness Checks<br><b>Configure</b><br>Complete | Configuration Progress<br>Extracting resources<br>Prepare Configuration<br>Search Configuration<br>Configure IIS<br>Configuration Database<br>Create Websites<br>Configure Services<br>Project Collection<br>Start Website |          |      | Complete<br>In Progress<br>Not Started<br>Not Started<br>Not Started<br>Not Started<br>Not Started<br>Not Started |       |  |
| Azure DevOps Serv                                                                                                                                                                          | ver 2022                                                                                                                                                                                                                   | Previous | Next | Finish                                                                                                            | Close |  |

The configuration process should end with a message saying Success.

| Azure DevOps Server Configuration                                                                      |                                                                                                                         |                                                          | ×     |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------|
| Server Configur                                                                                        | ation Wizard                                                                                                            |                                                          |       |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database<br>Account<br>Application Tier<br>Search | Configuration Progress  Prepare Configuration Search Configuration Configure IIS Configuration Database Create Websites | Complete<br>Complete<br>Complete<br>Complete<br>Complete |       |
| Project Collection<br>Review<br>Readiness Checks<br>Configure                                          | <ul> <li>Create Websites</li> <li>Configure Services</li> <li>Project Collection</li> <li>Start Website</li> </ul>      | Complete<br>Complete<br>Complete                         |       |
| Complete                                                                                               | Success<br>Configuration completed successfully. Click Next to view detailed information                                | on.                                                      |       |
| Azure DevOps Serv                                                                                      | er 2022 Previous Next                                                                                                   | Finish                                                   | Close |

• Click Next

You should now be on the **Review the Results** page.

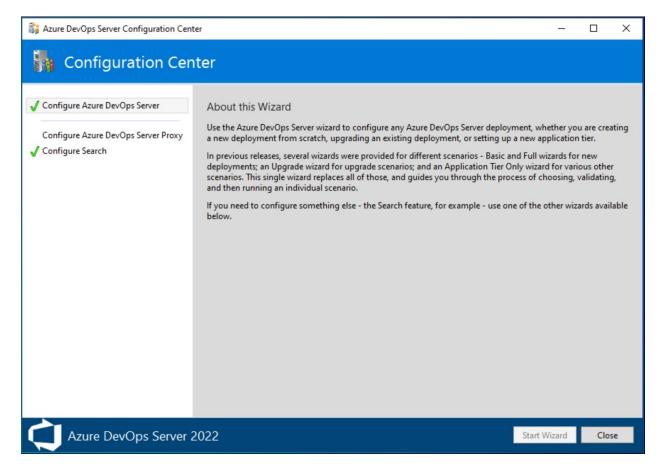
| Azure DevOps Server Configuration                                                                                                                                                   | ×                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Server Configur                                                                                                                                                                     | ation Wizard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Welcome<br>New Deployment<br>Advanced<br>Language<br>Database<br>Account<br>Application Tier<br>Search<br>Project Collection<br>Review<br>Readiness Checks<br>Configure<br>Complete | Review the Results         Image: Subset of the subset of |
| Azure DevOps Serv                                                                                                                                                                   | ver 2022 Previous Next Finish Close                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

• Click Close

Azure DevOps Server 2022 is now configured and running.

You should now be on the main page of the configuration center.

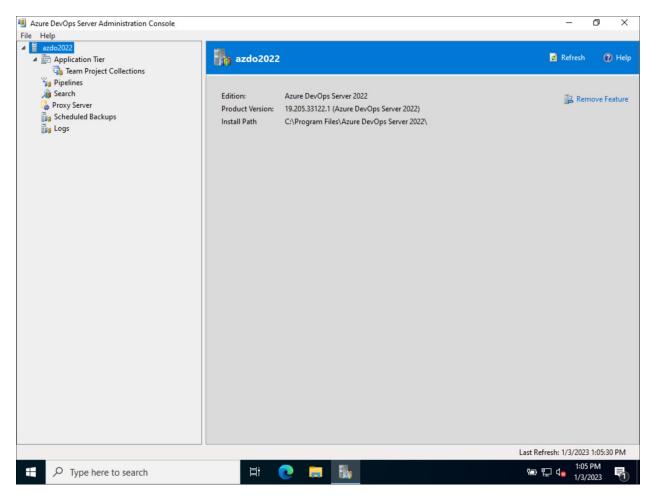
• Click the **Close** button



After you've closed the configuration center, you'll see the **Azure DevOps Server Administration Console**. This is the server-side admin tool for Azure DevOps. Remember that this application is installed on this server because at some point in the future, you'll need it.

For now, you're done.

Close the Azure DevOps Server Administration Console

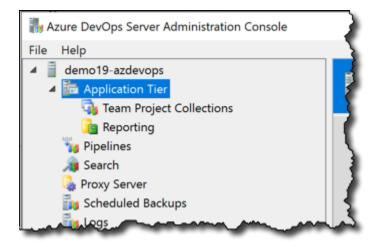


# Chapter 6: Configure an SMTP Server for Azure DevOps Server

You'll definitely want to configure an SMTP server connection for Azure DevOps.

- Log in to your Azure DevOps machine as an administrator
- Go to the Start menu
- Search for Azure DevOps Server Administrator Console

You should see the Azure DevOps Administrator Console.



• In the left column, click on Application Tier

In the right panel, scroll down until you location the Email Alert Settings.

| ٢       | Email Alert Settings |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |
|---------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|         | Enabled:             | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ☑ Alert Settings |
|         | SMTP Server:         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Send Test Email  |
|         | Email From Address:  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |
| $\odot$ | Data Tier Summary    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |
| M       |                      | and the second s | man              |

• Click Alert Settings

You should now see the **Email Alert Settings** dialog.

| Email Alert Settings     |                                  | ×        |
|--------------------------|----------------------------------|----------|
| ✓ Enable Email Alerts    |                                  |          |
| SMTP Server: mail.d      | emo.local                        | Port: 25 |
| This server requ         | uires a secured connection (SSL) |          |
| Send From Address:       | azuredevops@demo.local           |          |
| Authentication           |                                  |          |
| Use Azure Devo           | Ops Server Service Account       |          |
| $\bigcirc$ Use Specified |                                  |          |
| User Name:               |                                  |          |
| Password:                |                                  |          |
| O Not Required           |                                  |          |
| ✓ Advanced               |                                  |          |
|                          |                                  |          |
|                          | OK                               | Cancel   |

- Check Enable Email Alerts
- Set **SMTP Server** to the hostname or IP address for your SMTP server.
- Click **OK**

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| $\odot$ | Email Alert Settings |                        | 2                 |
|---------|----------------------|------------------------|-------------------|
|         | Enabled:             | True                   | 🖾 Alert Settings  |
|         | SMTP Server:         | mail.demo.local        | 🎦 Send Test Email |
|         | Email From Address:  | azuredevops@demo.local | 3                 |
| $\odot$ | Data Tier Summary    | we are an and the      |                   |

Your Azure DevOps is ready to send emails.

# Chapter 7: Install Azure DevOps Build & Release Agent on Windows Server

This chapter will walk you through the process of creating a build & release server on Windows. The build agent and the release agent are the same installer and process in Azure DevOps and a single installation of this agent will allow you to do "build" activities and also "release" activities.

The following steps all happen on the machine that is going to be the build server.

### **Download the Agent Installer**

- Log in to the build server machine
- Open a web browser
- Navigate to your Azure DevOps Server web interface. Depending on what security settings you chose, this is probably one of the following:
  - o <u>https://servername</u>
  - o <u>http://servername:8080/tfs</u>
  - o <u>http://servername</u>

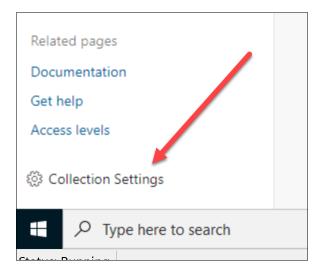
You should see a screen that looks like this...

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... or perhaps a screen like this.

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In the bottom left corner of the screen, you should see a button that says **Admin settings**.



• Click the **Admin settings** button

You should now be on the **Collection Settings** page for your project collection. In the **Pipelines** section of the menu bar, locate **Agent pools**.

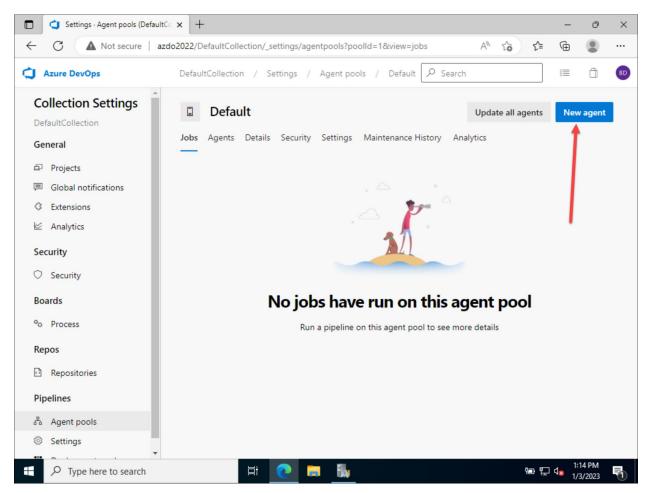
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| Collection Settings                                                                                       | Agent pools                                  | ∑ Security            | Add | pool     |
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| °o Process                                                                                                |                                              |                       |     |          |
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| 品 Agent pools                                                                                             |                                              |                       |     |          |
| Settings                                                                                                  |                                              |                       |     |          |
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• Click the **Agent pools** link

After clicking the Agent Pools link, you should see the current pools for the server. By default, there is a single agent pool created named **Default**.

• Click on the **Default** pool

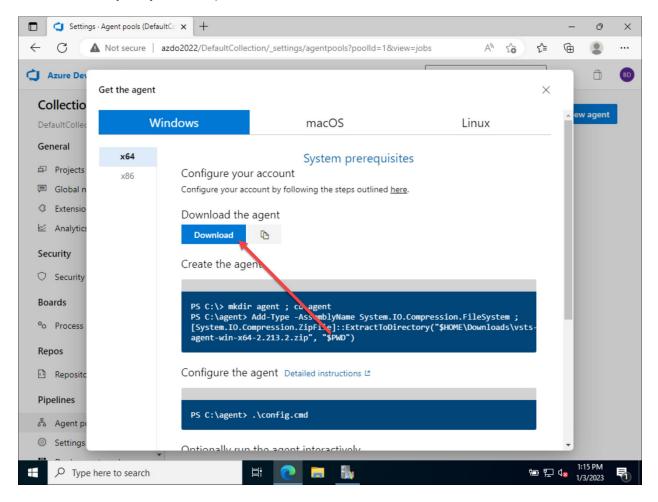
You should see the jobs page for the Default pool screen. At the top of the screen, there is a button labeled **New agent**.



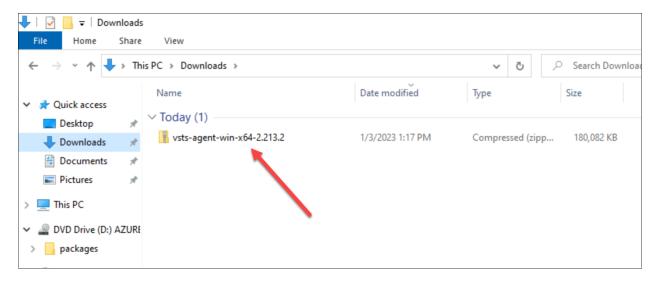
• Click the New agent button

Clicking on the **New agent** button will bring up the **Get the agent** dialog. On that dialog, there's a button to **Download the agent**.

• Click the **Download** button to start the download. (NOTE: this guide assumes you're doing the default browser behavior and downloading the agent zip to the download directory for your user profile.)



To verify that you saved this file to the expected location for this guide, open Windows Explorer (explorer.exe) and navigate to the Downloads directory. You should see a zip file that has a name that starts with "vsts-agent-". The actual filename might not be the same as the image below because the agent version may have been updated.



### **Extract the Agent**

Now that you've downloaded the bits for the agent, you'll do the actual installation using PowerShell. This is actually done in two parts. Part 1: Extract the agent bits from the ZIP. Part 2: Configure the Agent. Let's do the first part.

That dialog that you used to download the agent has two different commands: "Create the agent" and "Configure the agent". In an ideal world, you'd be able to just copy and paste the commands and not have to think about anything – but this isn't an ideal world so buckle up. (Actually, it's not that bad...it's just enough friction to be a little bit annoying.)

| Download the agent                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Create the agent                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PS C:\> mkdir agent ; cd agent<br>PS C:\agent> Add-Type -AssemblyName System.IO.Compression.FileSystem ;<br>[System.IO.Compression.ZipFile]::ExtractToDirectory("\$HOME\Downloads\vsts-agent-<br>win7-x64-2.111.1.zip", "\$PWD") |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Configure the agent detailed instructions 🖻                                                                                                                                                                                      | - And |
| PS C:\agent> .\config.cmd                                                                                                                                                                                                        | Ş                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

First up, it's time to run PowerShell.

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|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--|
| Apps<br>Windows Pow<br>Debuggable P<br>Windows Pow | Run as administrator<br>Run as a different user<br>Open file location<br>Unpin from Start<br>Pin to taskbar |  |
| Windows Pow                                        | Uninstall                                                                                                   |  |
| powershell                                         |                                                                                                             |  |

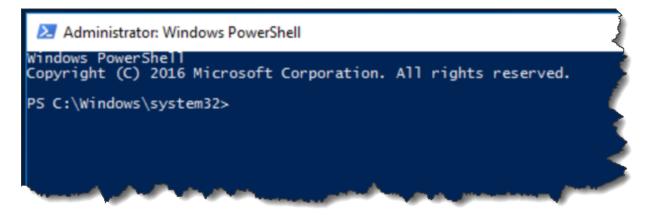
- Press the **Windows key** on your keyboard to bring up the search menu and type **PowerShell**
- From the search results, right-click Windows PowerShell
- From the context menu for PowerShell, choose Run as administrator

You'll see a User Account Control dialog.



• Click **Yes** 

You should now see a Windows PowerShell window with the title "Administrator: Windows PowerShell".



You're now going to run a handful of commands to create the folder structure that you'll be installing the build agent in to.



- Type "cd \" and press Enter
- Type "mkdir agent" and press Enter
- Type "cd agent" and press Enter

When you're done with these commands, your screen should look almost exactly the same as the image above. It's extremely important that the PowerShell screen is showing you

#### PS C:\agent>

on the last line because this indicates that you've correctly created a directory called Agent and entered that directory.

If your PowerShell window doesn't show you "PS C:\agent>", abandon all hope and reconsider all of the life choices that you've made to date. ©

Next, you'll run the PowerShell command that will extract the zip into the agent directory. This is some fiddly typing and the exact text will change as Microsoft updates the build agent install zip filename. It's probably easiest to just copy and paste the value from the **Create the agent** section of the download dialog. You WILL NOT be copying the whole command. You'll only be copying part of the line. In the image below, it's important to notice that I am NOT selecting the portion of the line that starts with "PS C:\agent>".

| DS C·\> mkdir | agent ; cd agent     |                     |                   |          |
|---------------|----------------------|---------------------|-------------------|----------|
|               | Add-Type -AssemblyNa | e System.IO.Compres | sion.FileSystem ; |          |
| [System.IO.Co | mpression.ZipFile]:: |                     |                   | s-agent- |
| win7-x64-2.11 | 1.1.zip", "\$PWD")   |                     |                   |          |

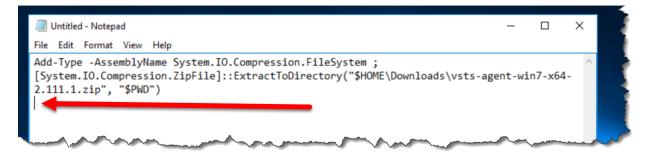
• In the web browser, copy the text of the command that starts with "Add-Type"

Because nothing is ever easy, the command that you just copied probably has some extra characters in it. Let's use Notepad to fix it.

| 💷 Run         | >                                                                                                               | ×  |
|---------------|-----------------------------------------------------------------------------------------------------------------|----|
| e             | Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.           |    |
| <u>O</u> pen: | notepad ~                                                                                                       | ]  |
|               | OK Cancel <u>B</u> rowse                                                                                        |    |
| m             | and a second and a second a se | ٦, |

- Type Windows-R to bring up the Run dialog
- Type notepad
- Click OK
- Paste the copied command into Notepad

Copyright © 2023 – Benjamin Day Consulting, Inc. – <u>www.benday.com</u> Printing or duplication is prohibited without author's expressed written permission. You should now see the command in Notepad. If everything is on one long line, go to the Format menu and choose Word Wrap. You might notice in the image below that my cursor is sitting on an empty line by itself. It's this extra line that's causing us to do this Notepad step.



- Delete the extra empty blank line at the end
- If there are any whitespace characters before "Add-Type", delete those, too.

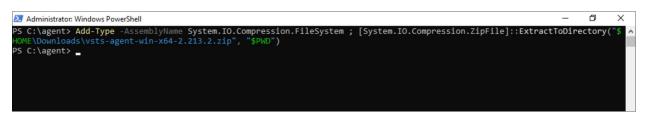
There's a chance that the "ExtractToDirectory" doesn't have the name of the zip file that you downloaded. Make sure that the ExtractToDirectory command has the name of the zip file rather than just "\$HOME\Downloads\" for the first argument. If it's not there, you'll need to add it in to your command in notepad.

You should have a clean command that you can just paste into PowerShell and run.

| Untitled - Notepad                                                                                              | _       |         | ×      |
|-----------------------------------------------------------------------------------------------------------------|---------|---------|--------|
| File Edit Format View Help                                                                                      |         |         |        |
| Add-Type -AssemblyName System.IO.Compression.FileSystem ;                                                       |         |         | $\sim$ |
| [System.IO.Compression.ZipFile]::ExtractToDirectory("\$HOME\Downloads\vsts-a                                    | gent-wi | in7-x64 |        |
| 2.111.1.zip", "\$PWD")                                                                                          |         |         | ]      |
| have been a second and a second a |         | ~~~~    | ~~~    |

- Select the command
- Press CTRL-C to copy the selected command to the clipboard

Now you'll run the command in PowerShell.



- In the PowerShell window, type **CTRL-V** to paste the command
- Press Enter to run the command

When the command is done, you should not see any errors and the prompt should say "PS C:\agent>". (NOTE: this might take a few minutes to run.)

Let's verify that this extracted as expected.

| Administrator: Windows PowerShell |               |       |        |      |            |
|-----------------------------------|---------------|-------|--------|------|------------|
| PS C:\agent> dir                  |               |       |        |      |            |
| Directory: C:\agent               |               |       |        |      |            |
| Mode                              | LastWriteTime |       | Length | Name |            |
|                                   |               |       |        |      |            |
| d                                 | 1/3/2023      | 1:23  | PM     |      | bin        |
| d                                 | 1/3/2023      | 1:23  | PM     |      | externals  |
| -a                                | 11/11/2022    | 10:48 | AM     | 2967 | config.cmd |
| -a                                | 11/11/2022    | 10:48 | AM     | 3190 | run.cmd    |
| PS C:\agent>                      |               |       |        |      |            |

- (Optional) To clear the screen, type "cls" and press Enter
- Type "dir" and press Enter

The screen should look something like the image above.

## **Configure the Agent**

Now that the agent bits are deployed to disk, you're ready to start configuring it. This guide assumes that you're planning to run this agent in a Windows domain and that the AZDO

Copyright © 2023 – Benjamin Day Consulting, Inc. – <u>www.benday.com</u> Printing or duplication is prohibited without author's expressed written permission. machine is in the same domain as the agent. I'm also assuming that you intend to run this agent as a service rather than as an interactive process.

Recommendation: The agent can be configured to run as NT AUTHORITY\NETWORK SERVICE but I think that this makes permissions management confusing when you're creating and running builds. I strongly recommend that you run the agent as a service using a known service account that is based on an Active Directory user rather than one of the build-in service accounts like NETWORK SERVICE. This guide will assume that you're following this recommendation.

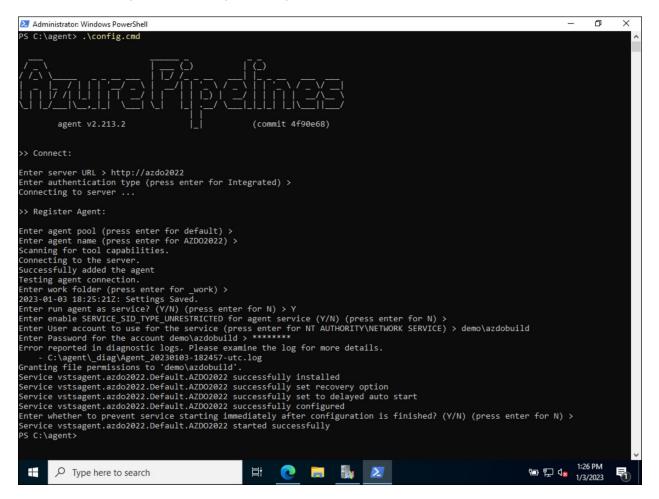
You're going to be prompted for a handful of values during the configuration process:

- Azure DevOps Server URL: This is the same URL that you used to access the Azure DevOps Server web interface. By default this will be something like <u>http://servername</u> or <u>http://servername:8080/tfs</u> or if you're using SSL/HTTPS, it'll be something like <u>https://servername</u>.
- **Authentication Type:** By default, authentication is based on the service account's Windows logon. This mode is called Interactive. In order support more complex scenarios and multiple platforms, there are also several other options. This guide will show you how to do Interactive mode.
- User name & password for the agent service: These are the credentials for the service. In my case, I've created an Active Directory user named "azdobuild". The fully qualified username for this user is "DEMO\azdobuild".

When you've got these values, you're ready to run the config process.

• In the PowerShell window, type ".\config.cmd" and press Enter

When prompted, enter the following values. NOTE: You might be tempted to accept the defaults for each one but you're **NOT** going to do that because you'll mess up the "run as a service" part and you'll be deeply unhappy.



• "Enter server URL":

Type the URL for your AZDO instance and click Enter

- "Enter authentication type (press enter for Integrated)": Press Enter
- "Enter agent pool (press enter for default)":

#### Press Enter

- "Enter agent name (press enter for [local server name])": Press Enter
- "Enter run agent as service? (Y/N)":

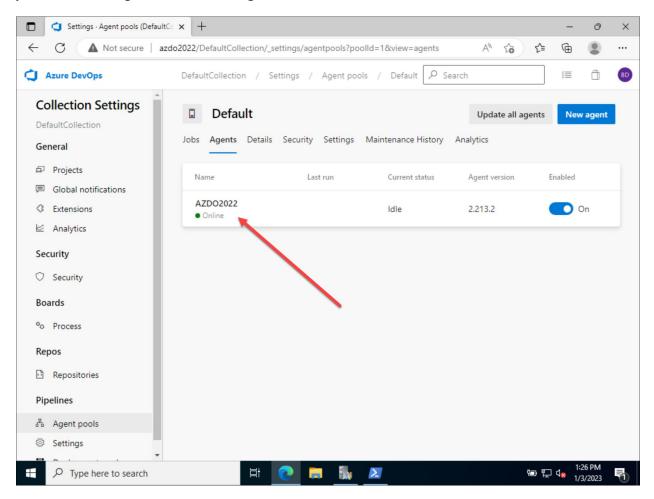
Type 'Y' and press Enter

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- "Enter User account to use for the service":
  - Type the **fully qualified name of the service account** (example: demo\azdobuild) and press **Enter**
- Enter Password for the account [service account]": Enter the **password for the service account** and press **Enter**

When the config process has completed, you should see a message that says something like "Service vstsagent.azdo2022.Default.AZDO2022 started successfully".

If you open the browser and go back to the Agent tab for Azure DevOps, you should now see your new build agent in the list of Agents.



You've successfully configured a build agent.

# **Chapter 8: Training, Consulting, & Software Development**

Need help with your Azure DevOps installation? Trying to figure out how to upgrade your old install of Team Foundation Server? Want to move Team Foundation Server or Azure DevOps Server to the cloud? Looking for help with your software development process or getting going with automated builds and releases?

Drop us a line at info@benday.com!

Looking for Azure DevOps training or Scrum training? Check out training offerings at

https://www.benday.com/training