

Team Foundation Server 2018 Installation Guide



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Chapter 1: Install Windows Server 2016

Introduction

The first step for installing Team Foundation Server 2018 (TFS2018) is to install Windows Server. In this guide, I'm going to be using Windows Server 2016. I'm also assuming that you'll be installing TFS2018 in a single server configuration – aka. the TFS Application Tier and SQL Server will be installed on a single machine.

Install Windows Server 2016

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 2016 DVD** into the DVD drive or mount the **Windows Server 2016 ISO image** into the DVD drive for your virtual machine.
- Start the machine

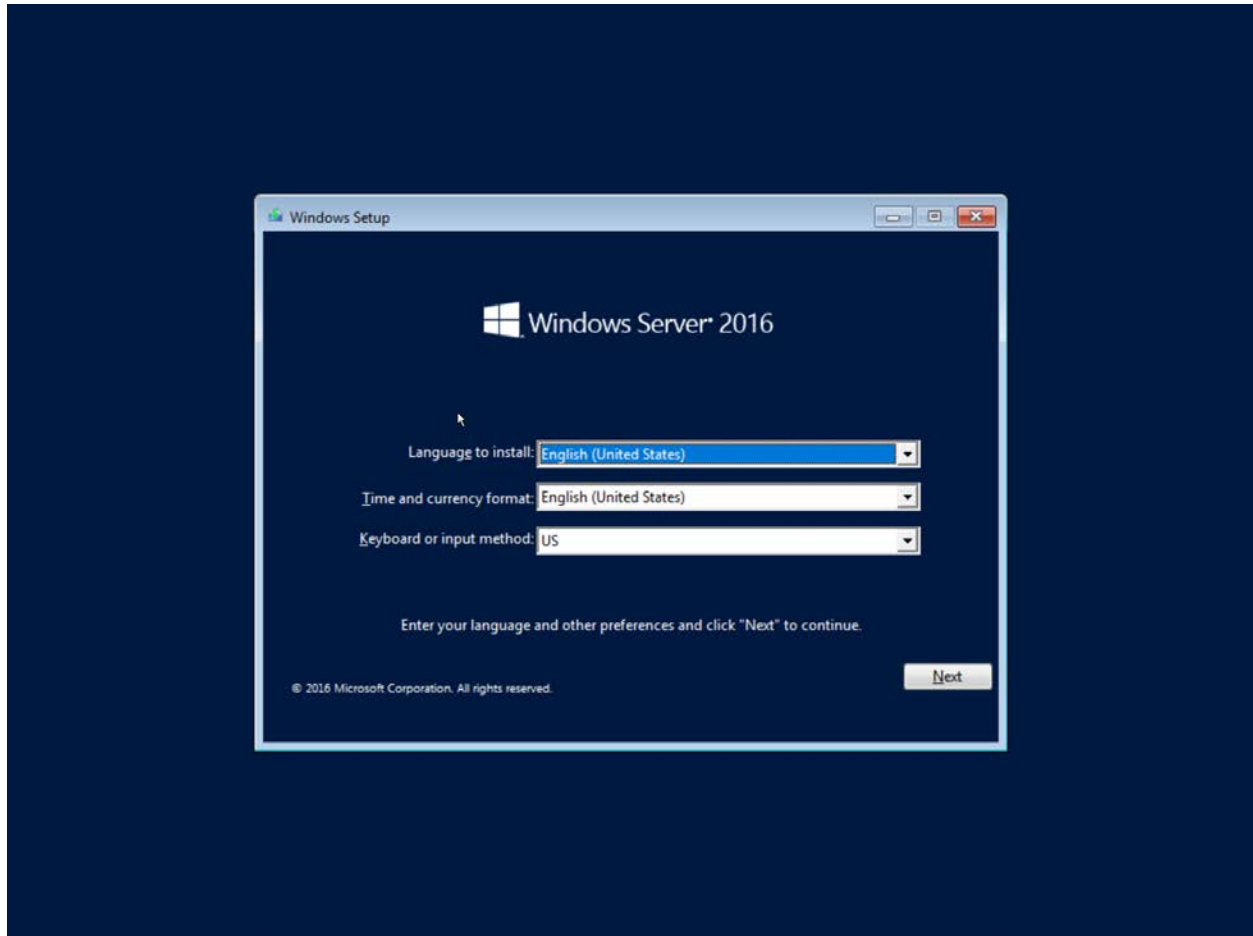
You will see the **Press any key to boot from CD or DVD....** message appear.



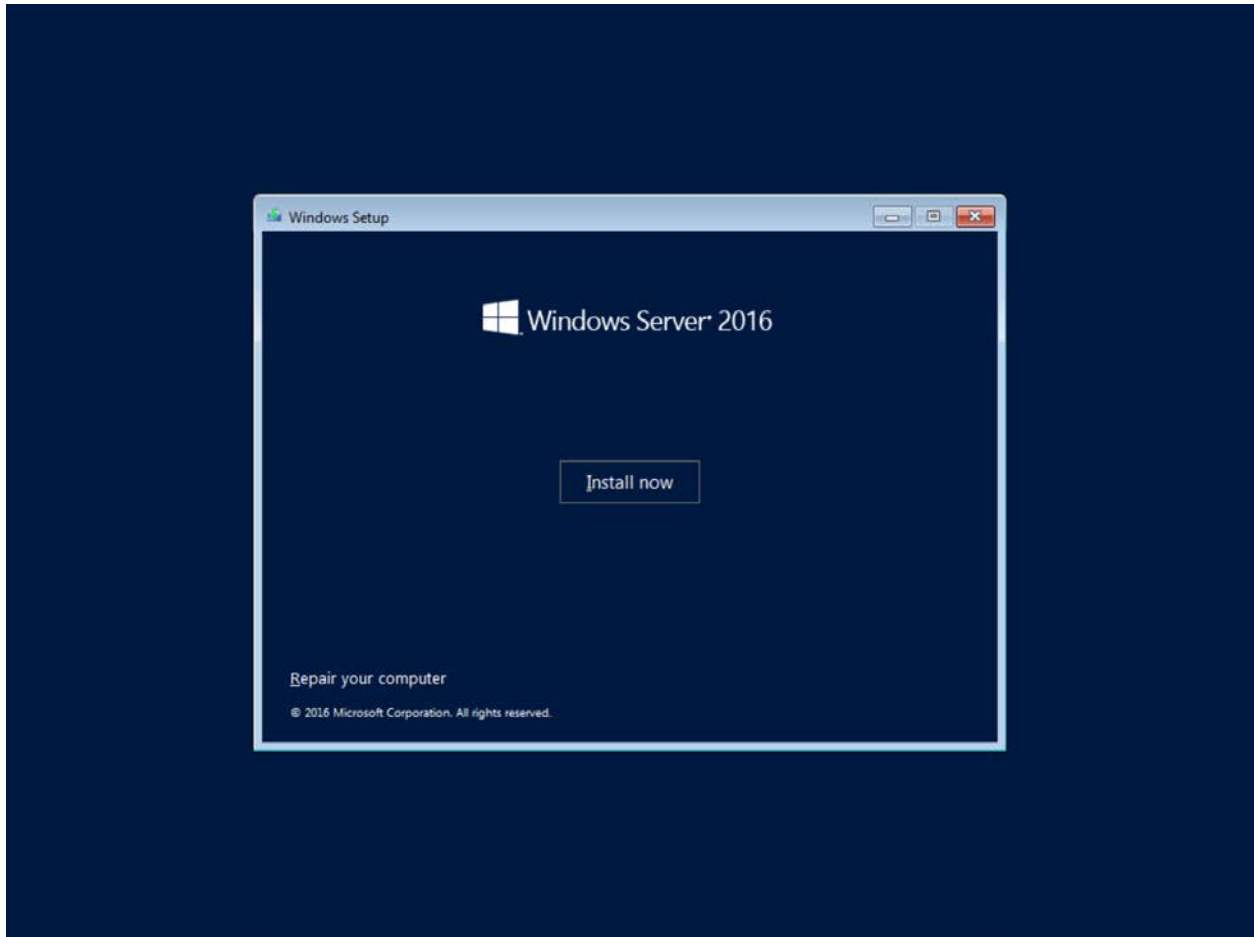
```
Press any key to boot from CD or DVD....
```

- Press any key to boot from the DVD drive

You should see the Windows Setup welcome screen.



- Click **Next**

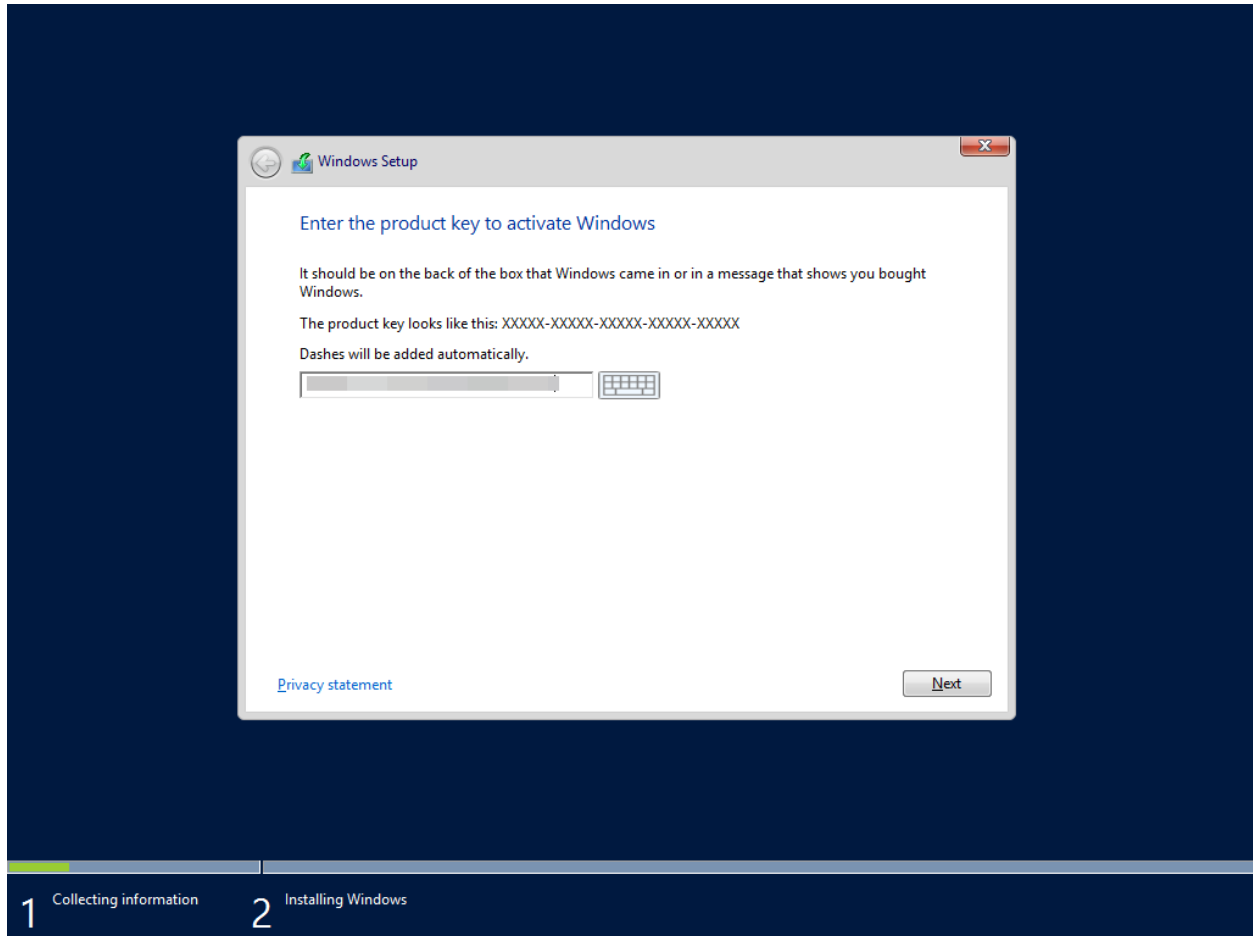


- Click the **Install now** button

You should see a screen saying that setup is starting.

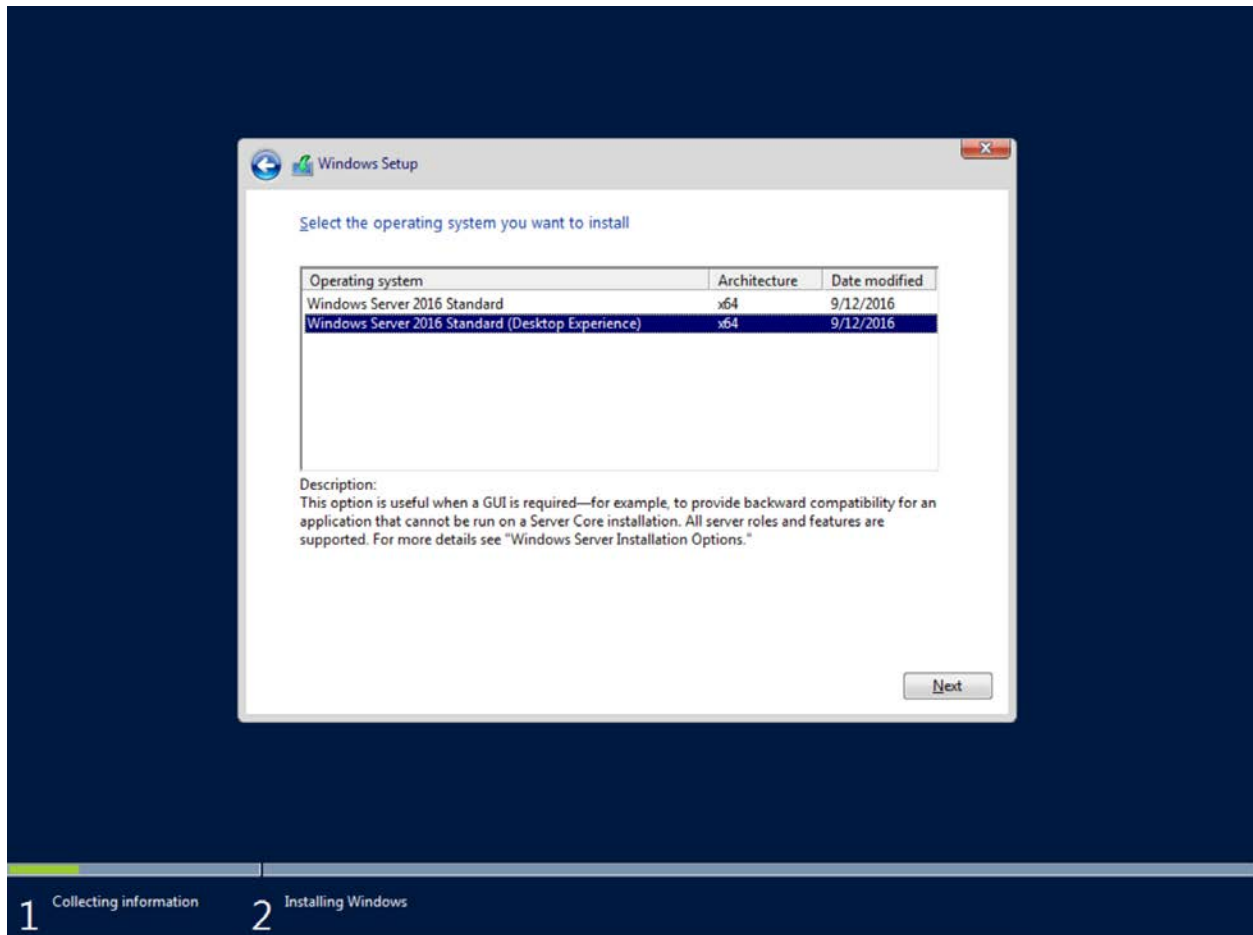


You'll be prompted for a license key.



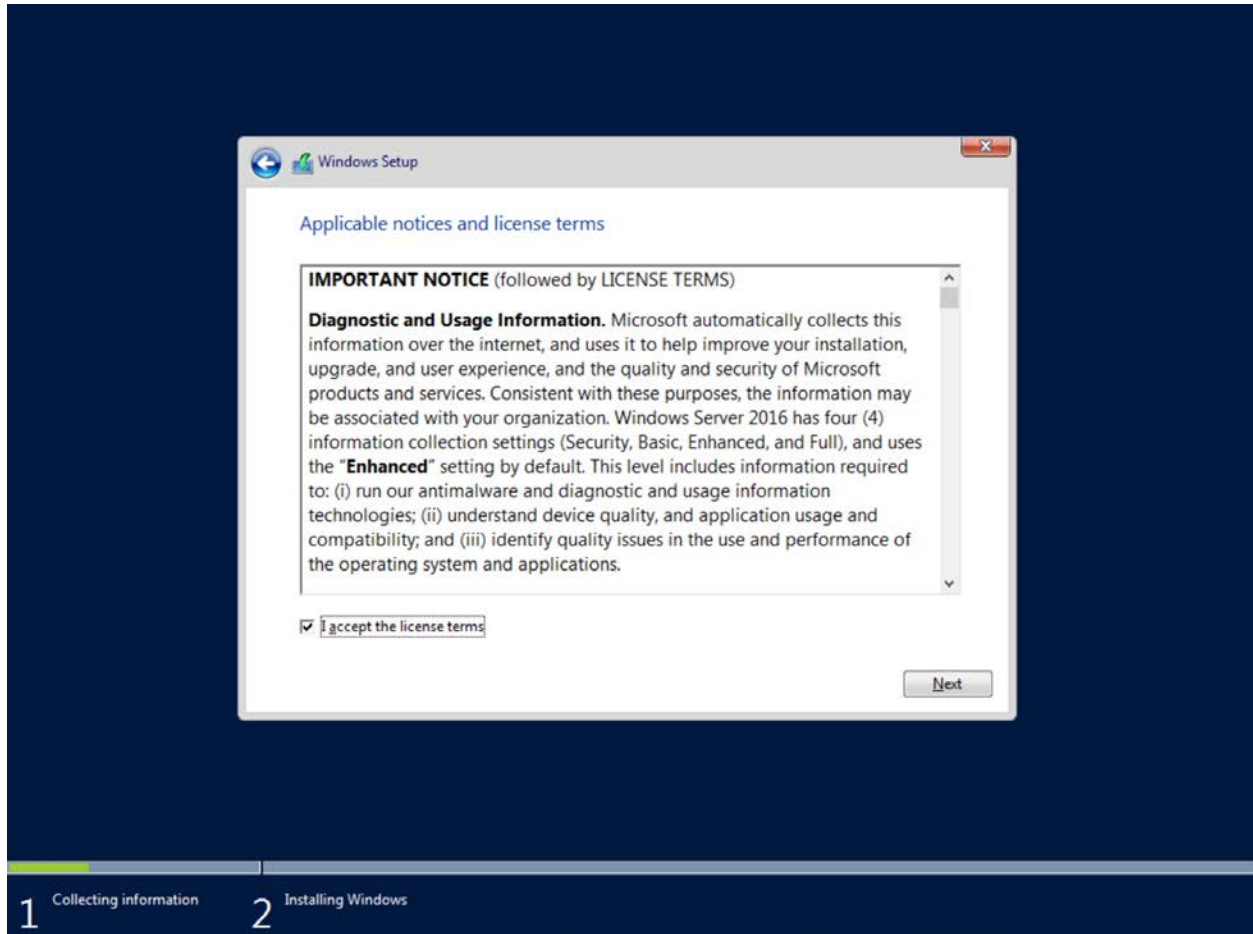
- Enter your license key
- Click the **Next** button

You'll be prompted to choose what version of Windows Server 2016 that you'd like to install. This guide assumes that you'll be installing Windows Server 2016 Standard and that you'll be installing the graphical user interface (GUI).



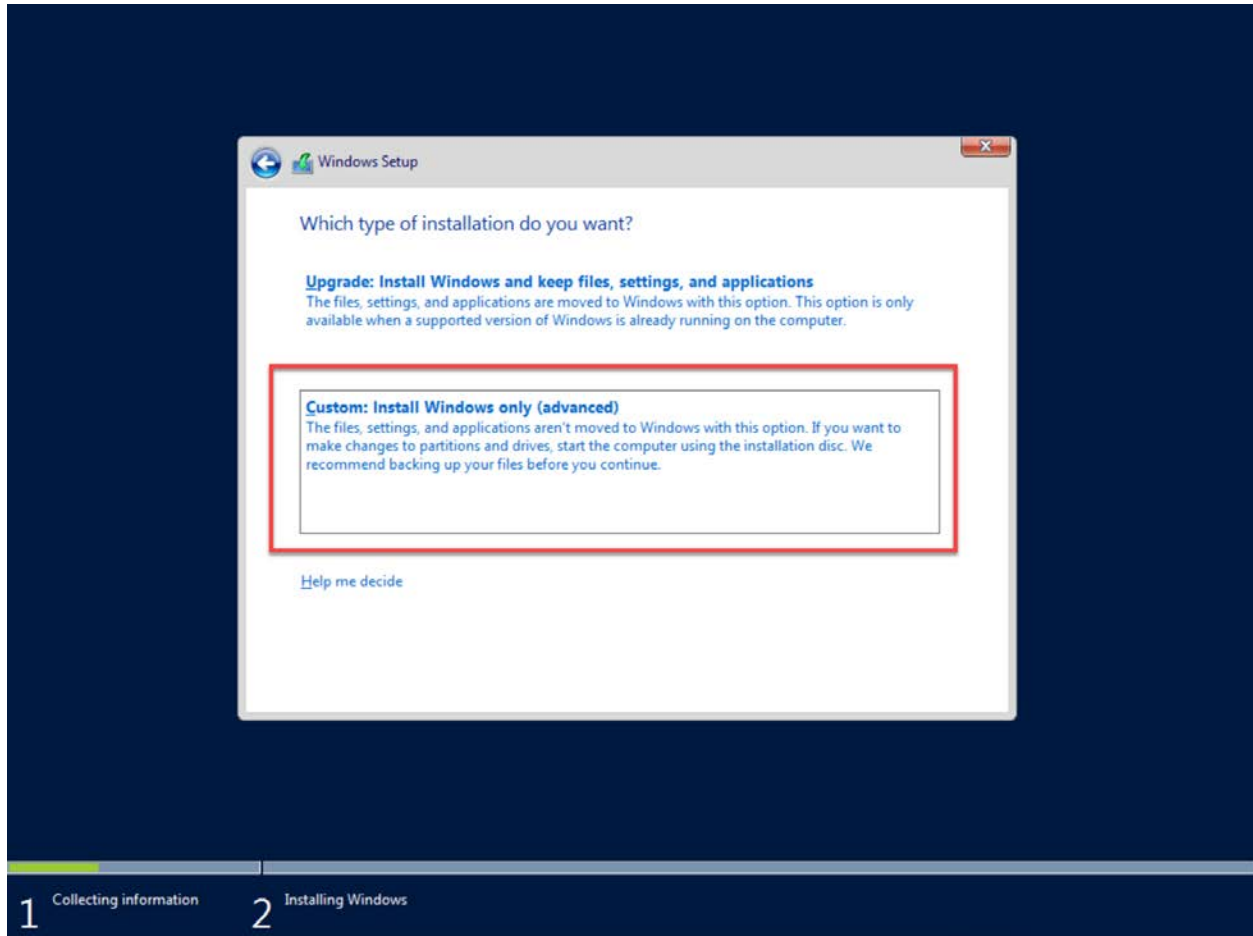
- Choose **Windows Server 2016 Standard (Desktop Experience)**
- Click the **Next** button

You'll be shown the license terms.



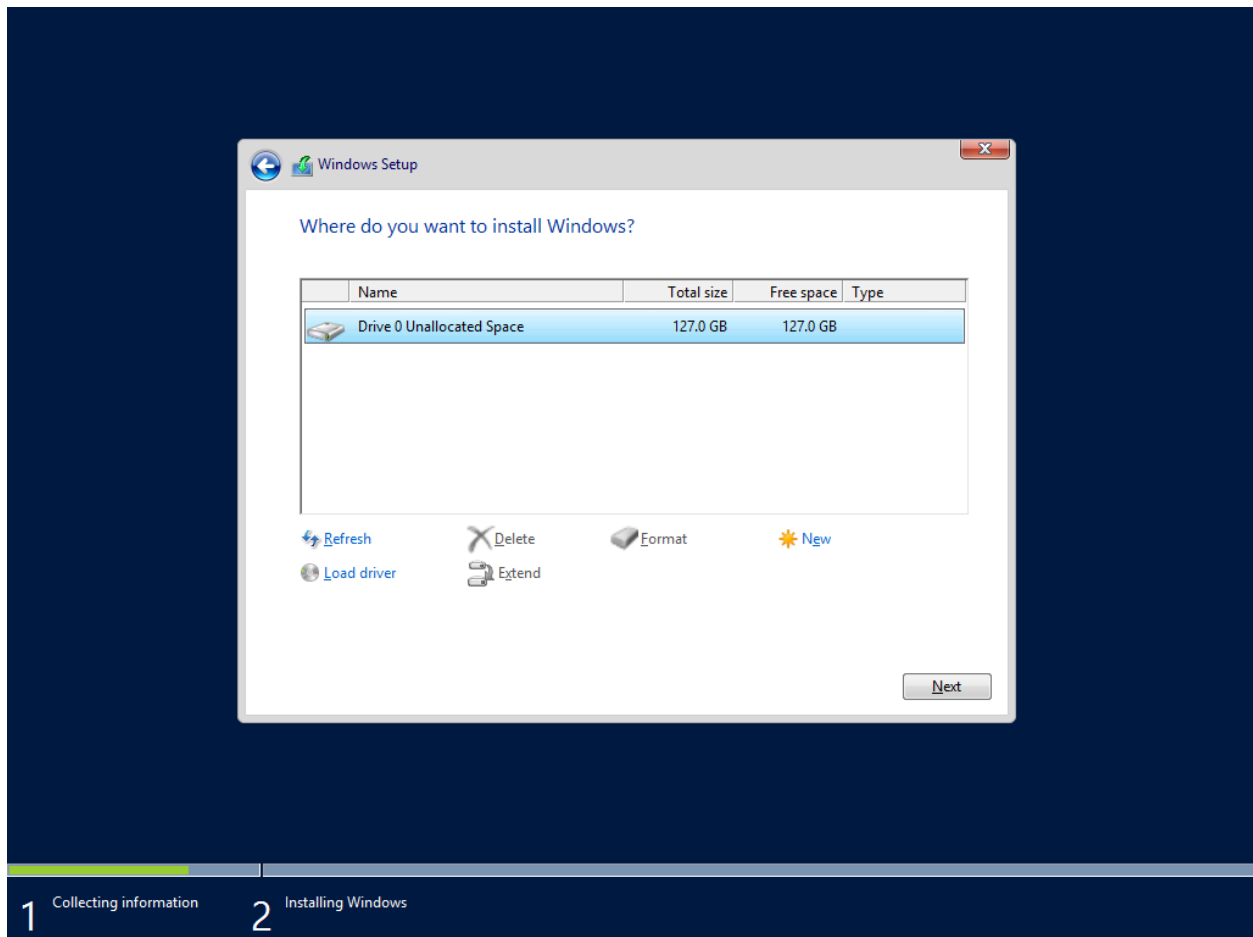
- Read the license terms in painstaking detail
- Check the **I accept the license terms** box
- Click the **Next** button

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



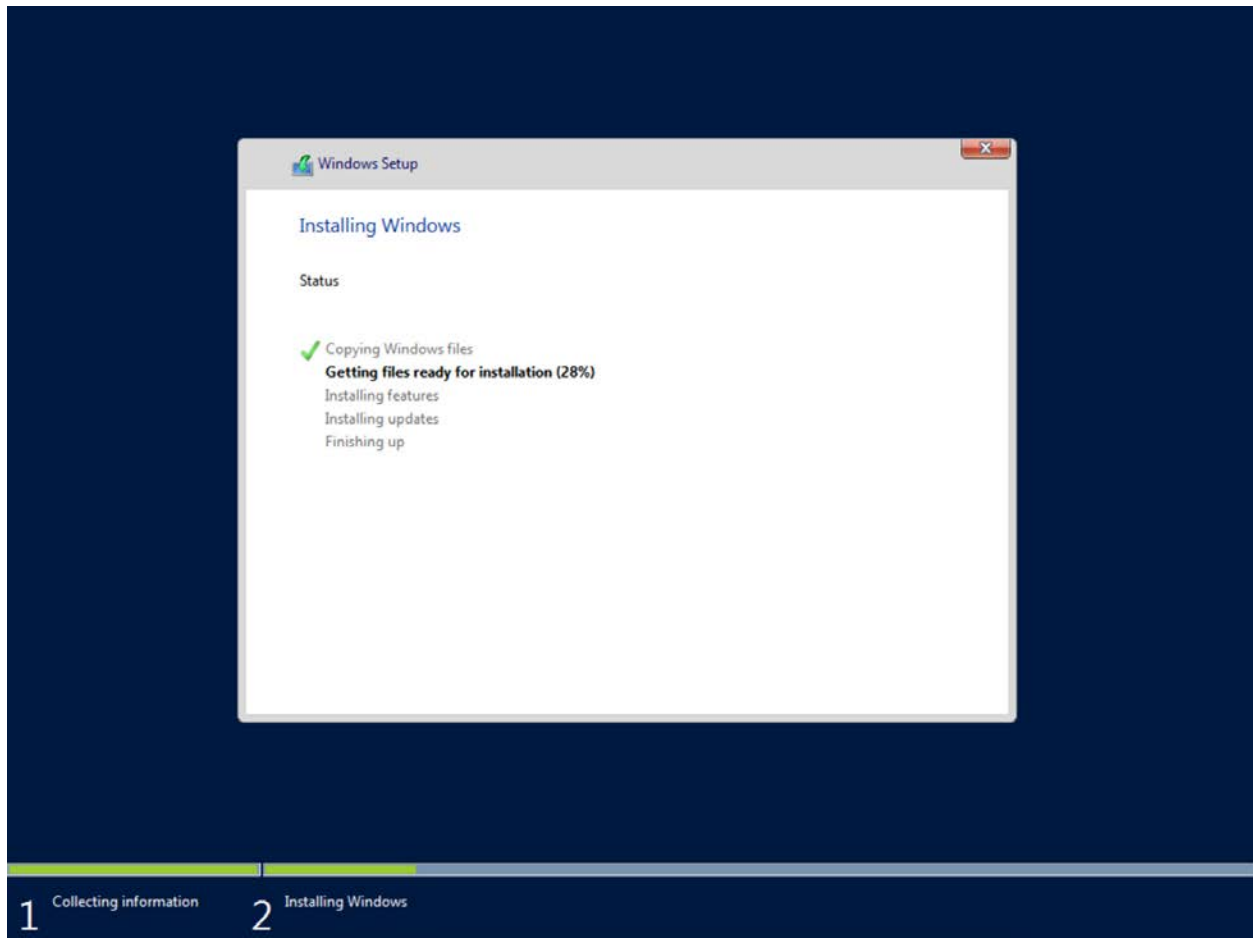
- Click **Custom: Install Windows only (advanced)**

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.

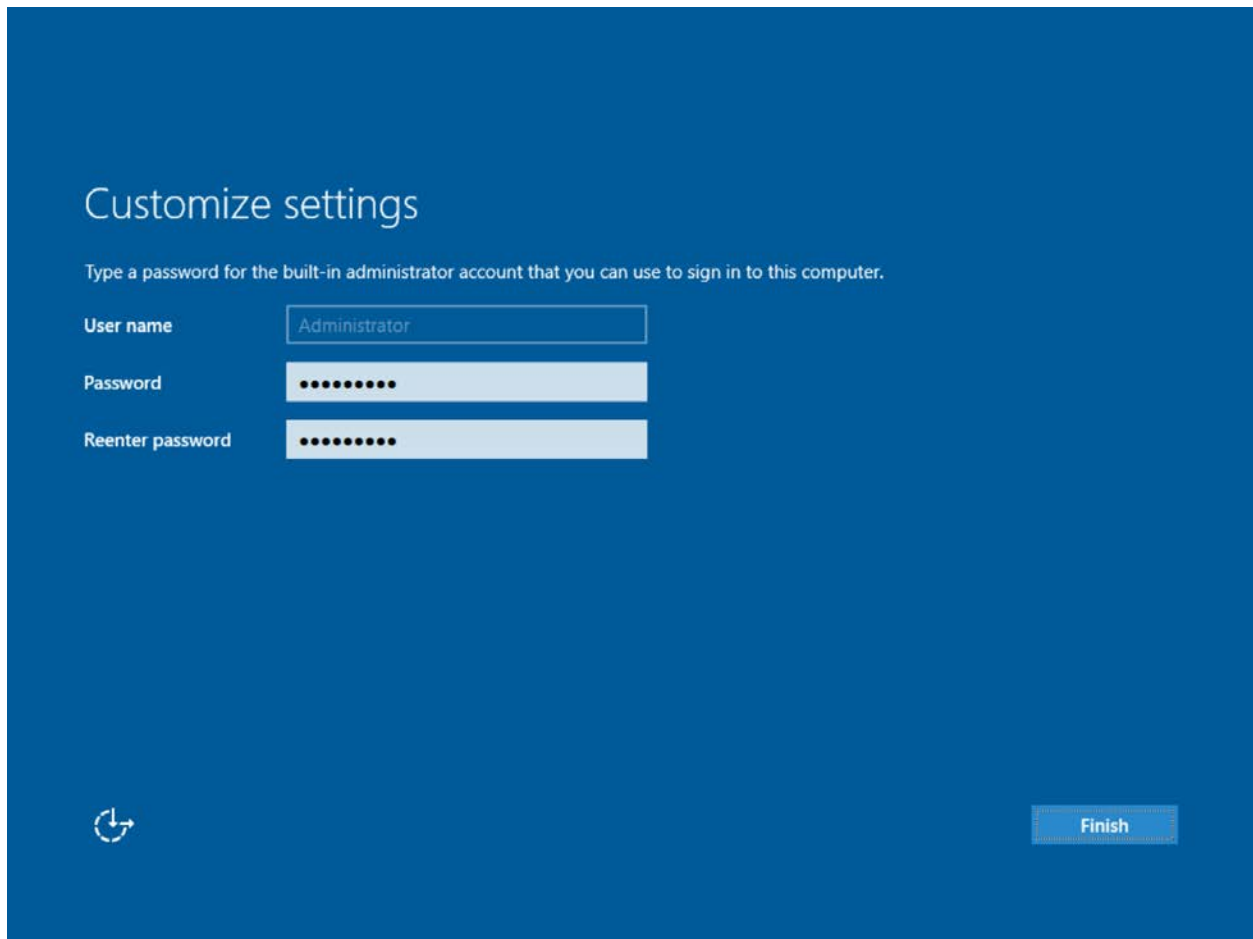


- Choose **Drive 0 Unallocated Space** or another appropriate partition or unallocated disk space
- Click **Next**

The installation should now be running.



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




Customize settings

Type a password for the built-in administrator account that you can use to sign in to this computer.

User name

Password

Reenter password



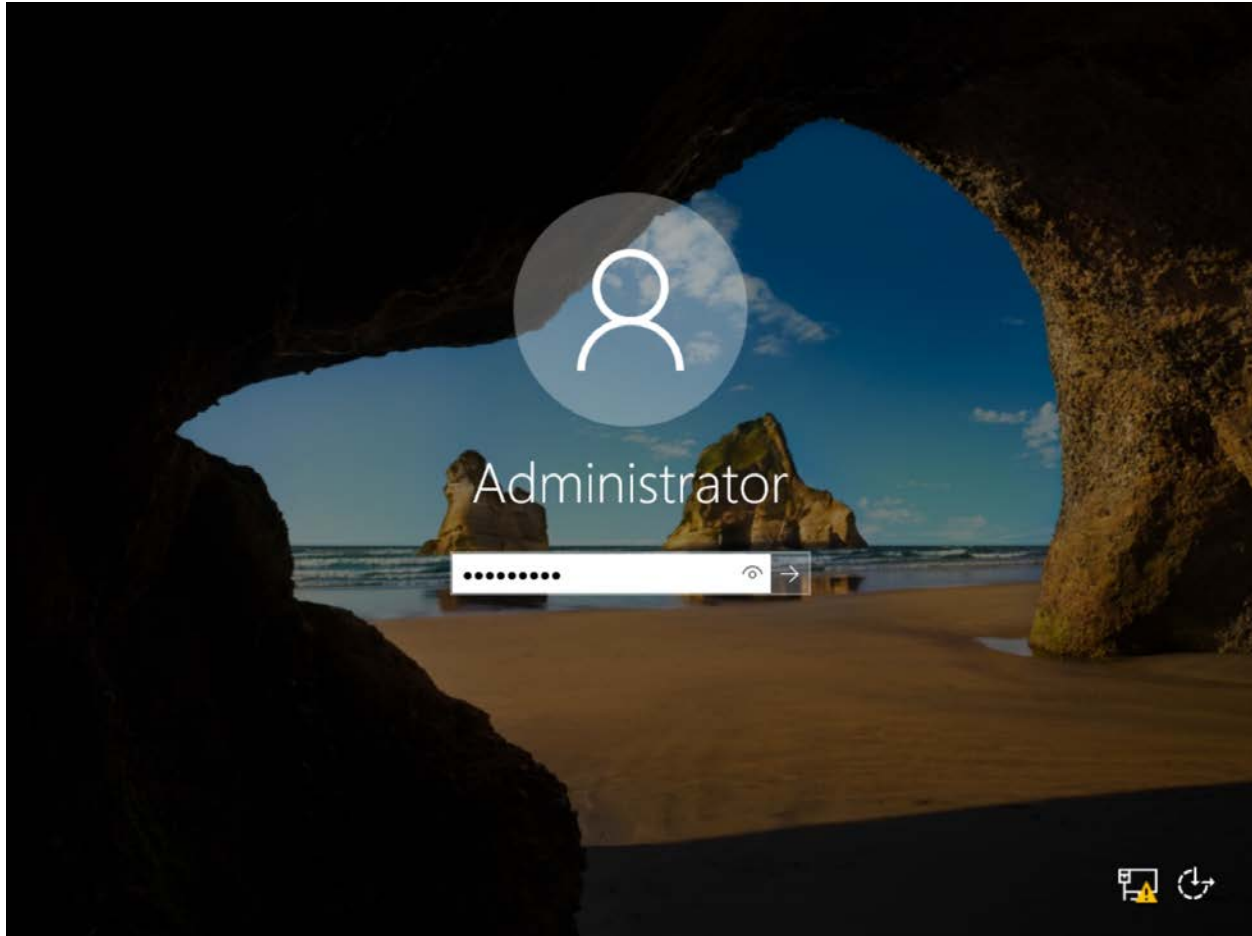
- Enter your password in the **Password** box
- Enter your password in the **Reenter password** box
- Click the **Finish** button

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



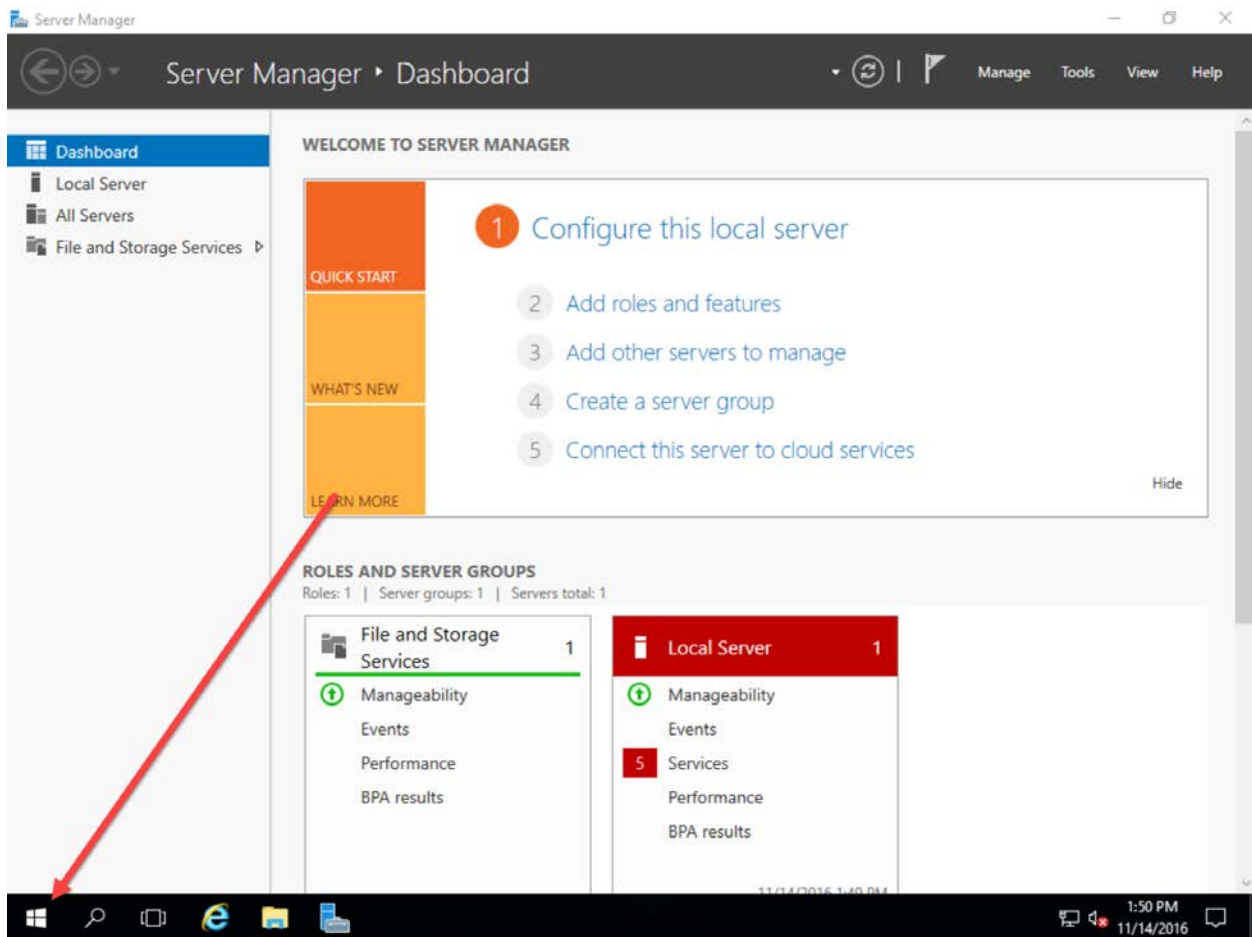
- Type **CTRL-ALT-DEL** to open a login prompt

You should see the login prompt.



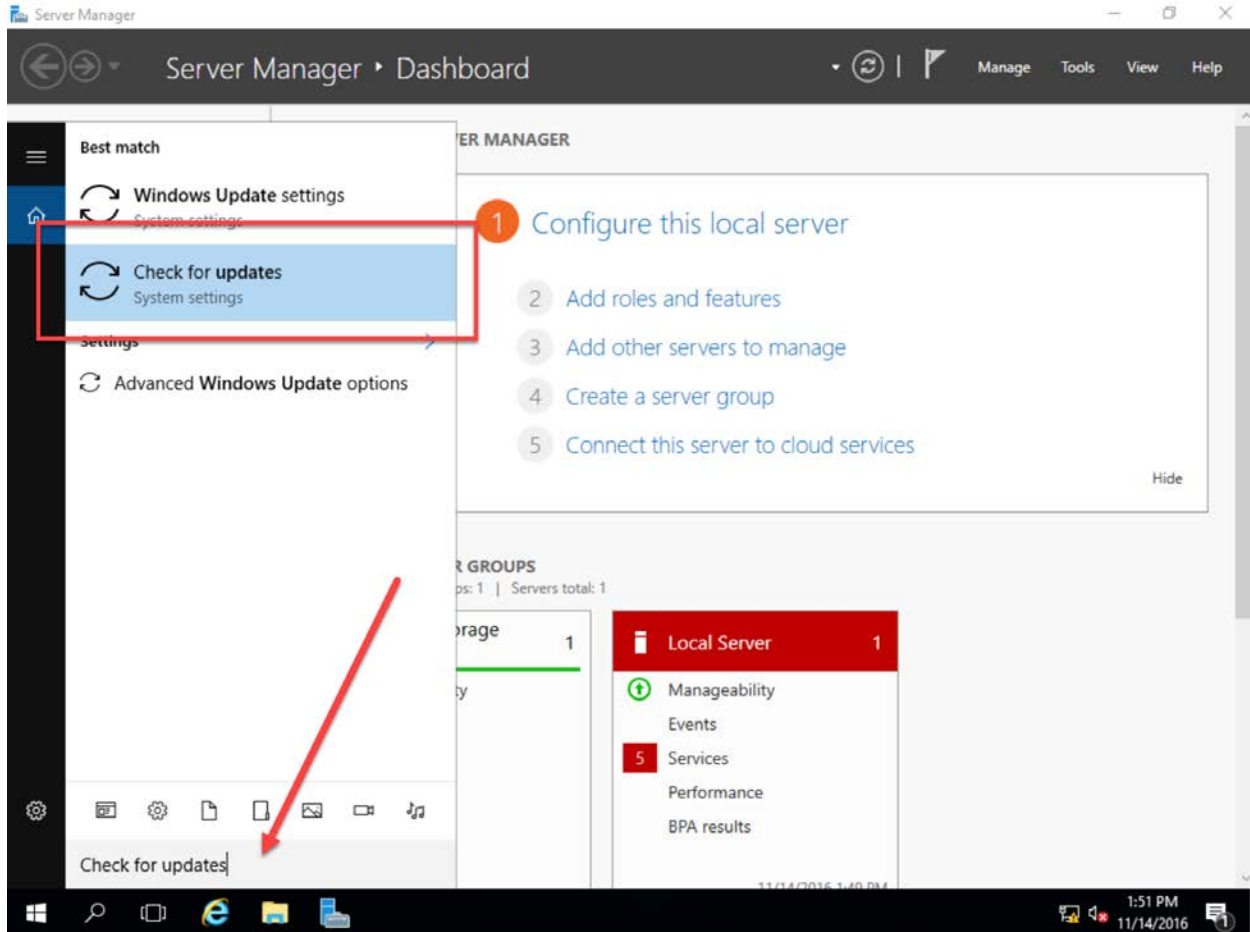
- Enter your **password** followed by **<ENTER>**

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.



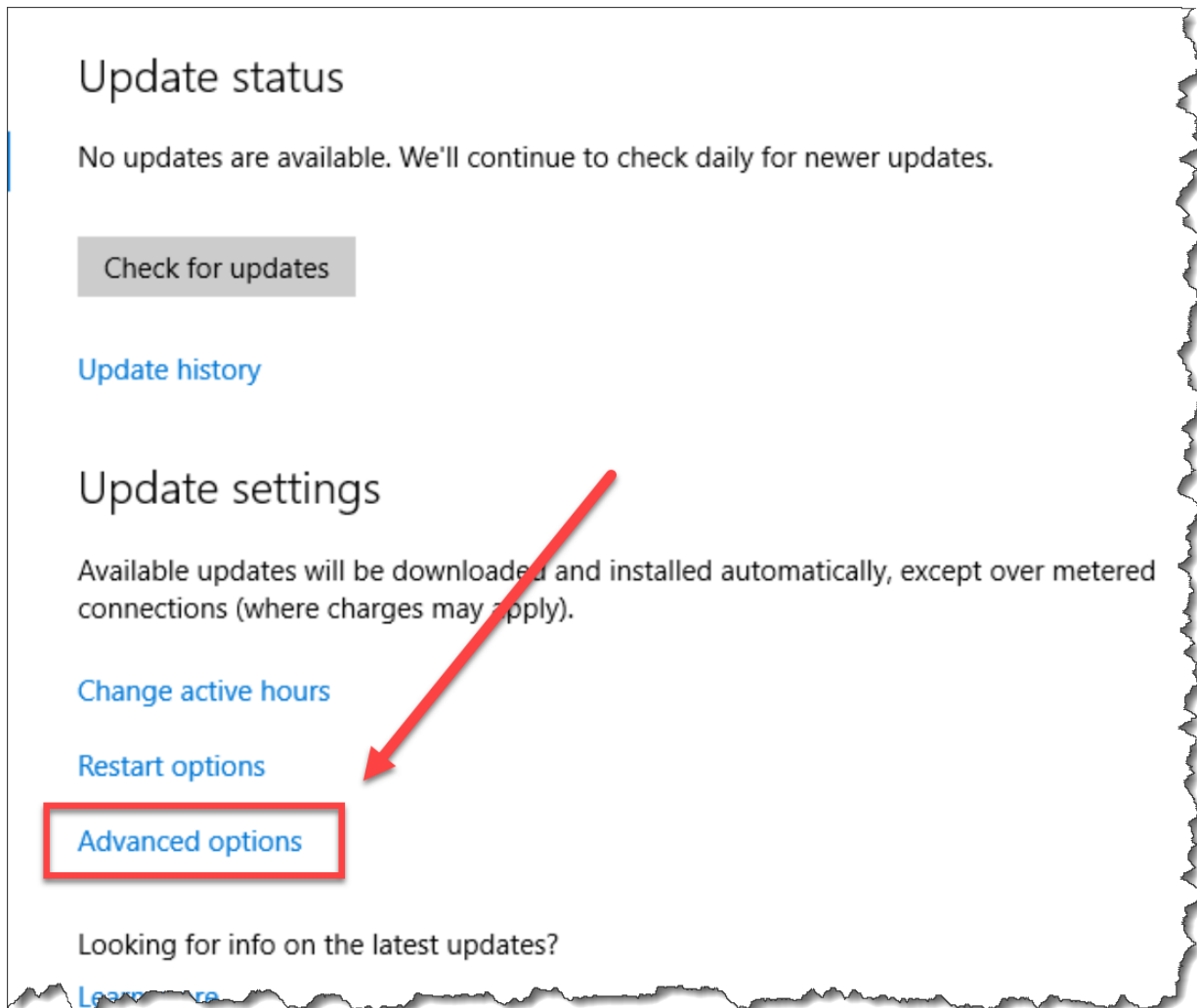
- Click the **Windows button** in the bottom left of the screen to navigate to the Start screen

You should now be at the Start menu.



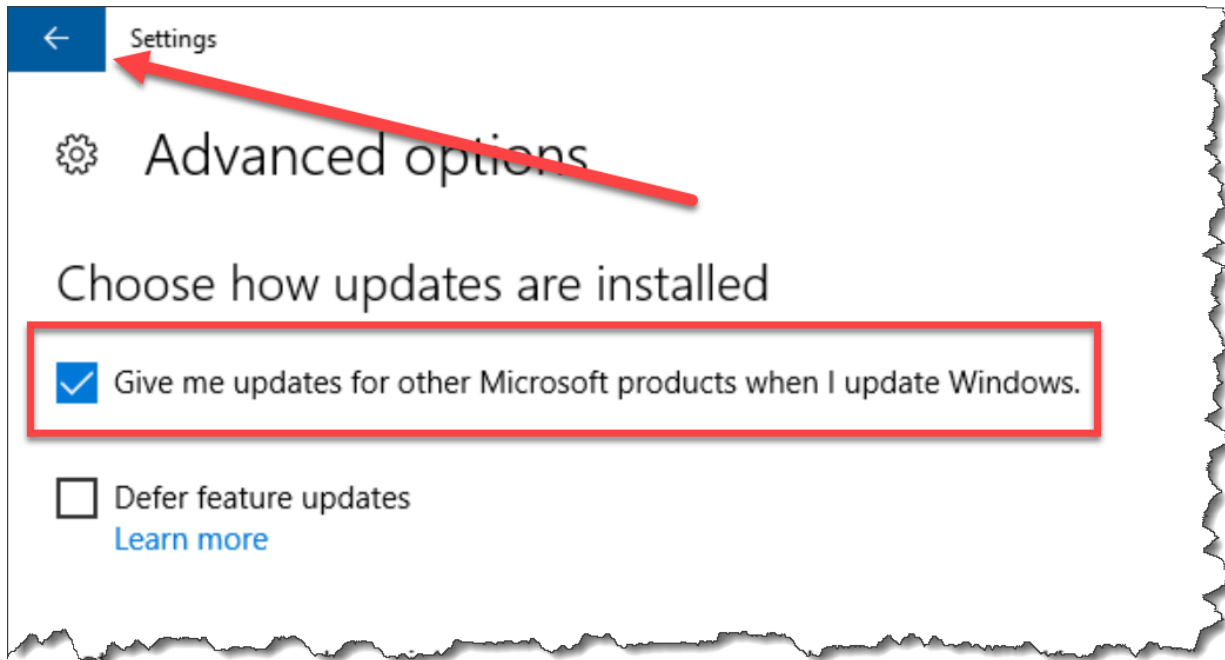
- In the search box, type **Check for updates**
- Click **Check for updates** in the search results

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.



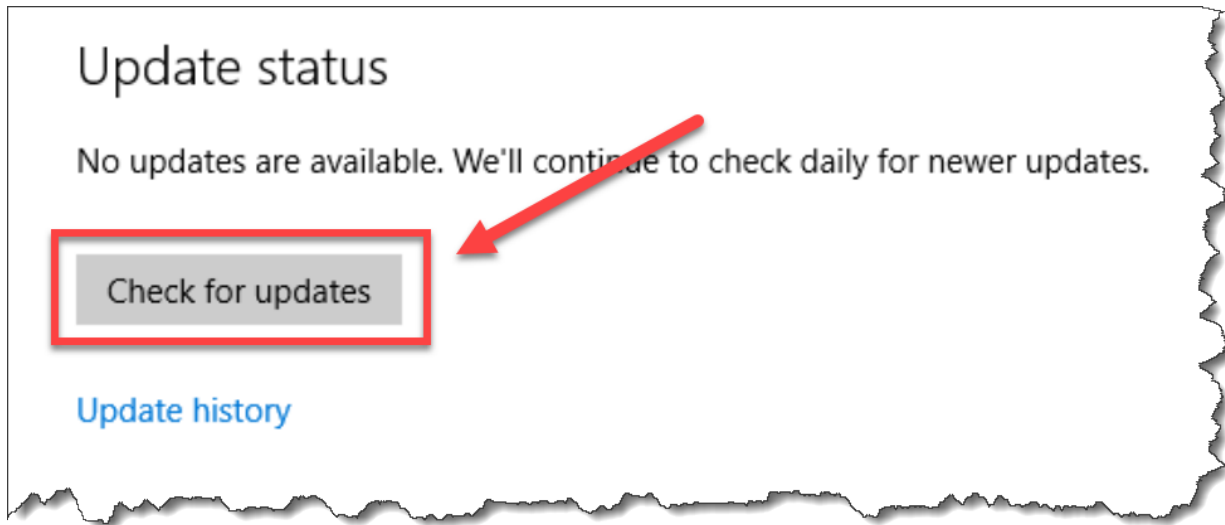
- Click the **Advanced options** link

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



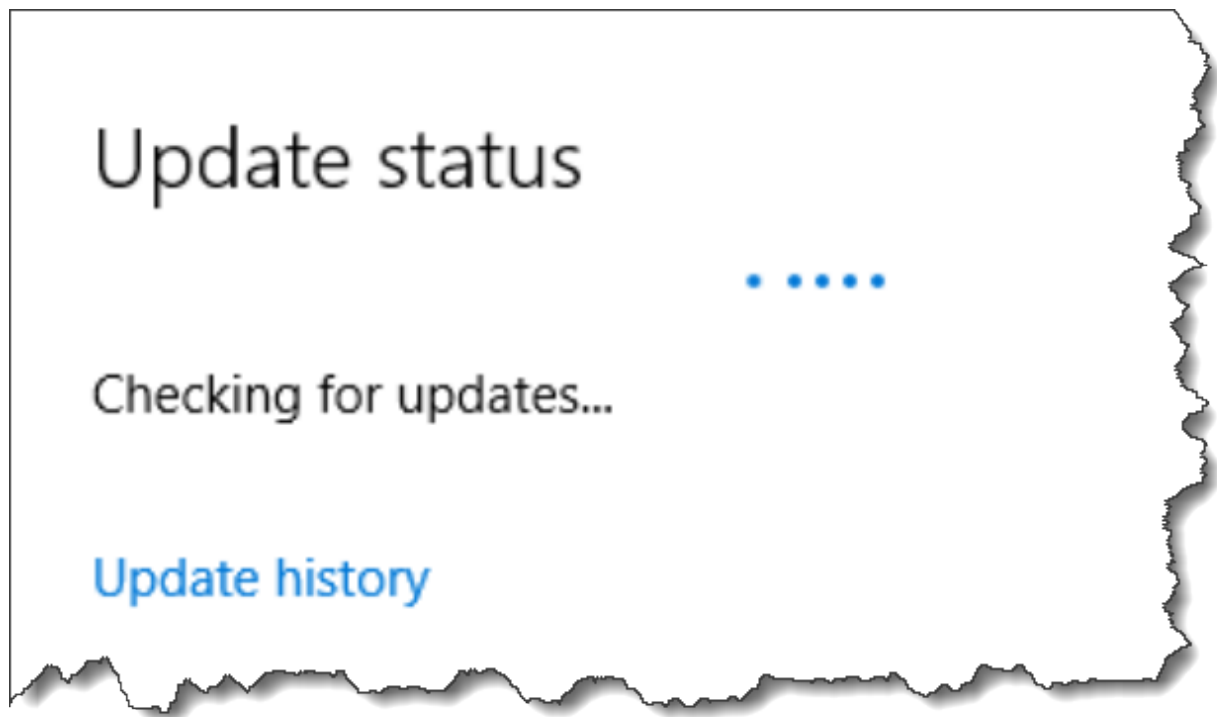
- Check **Give me updates for other Microsoft products when I update Windows**
- In the upper left corner of the screen, click the back arrow button

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



- 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 setp of disabling a useless and annoying anti-feature in Windows called IE Enhanced Security.

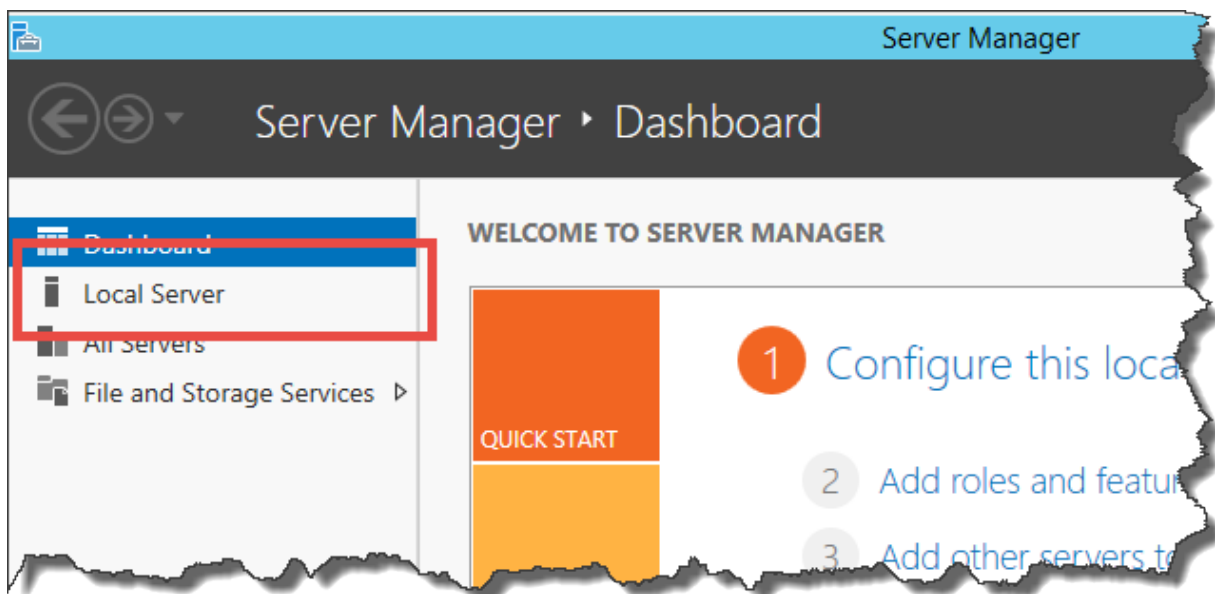
(Optional) Turn off IE Enhanced Security Configuration

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.

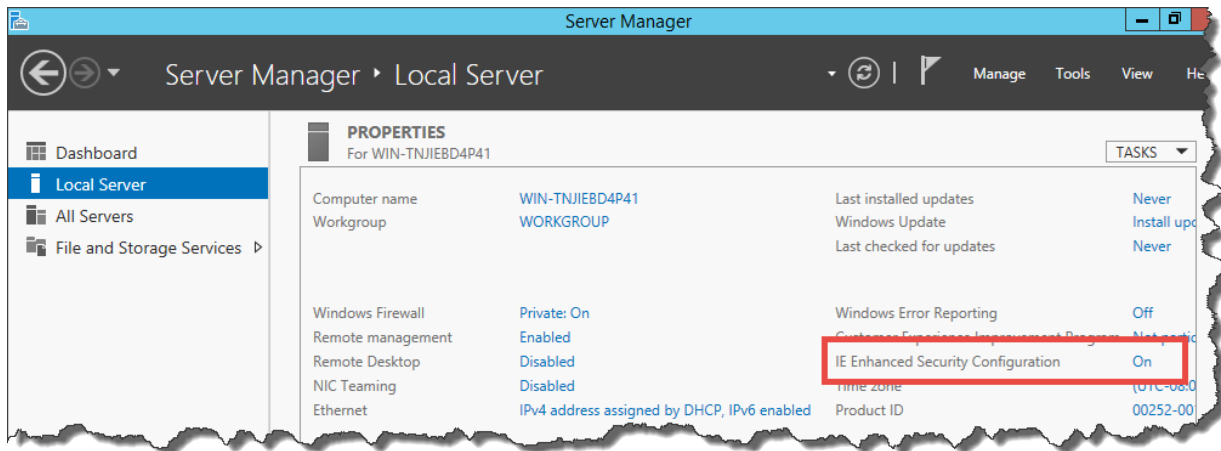
Let's turn it off.

You'll start this process by using **Server Manager**.



- 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**.



- Click the link that says **On**

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



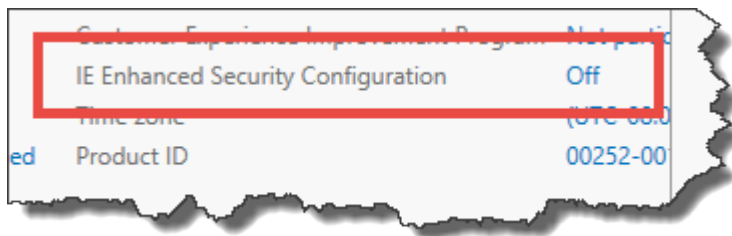
- Under Administrators, select the **Off** radio button
- (Optional) Under Users, select the **Off** radio button
- Click the **OK** button

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

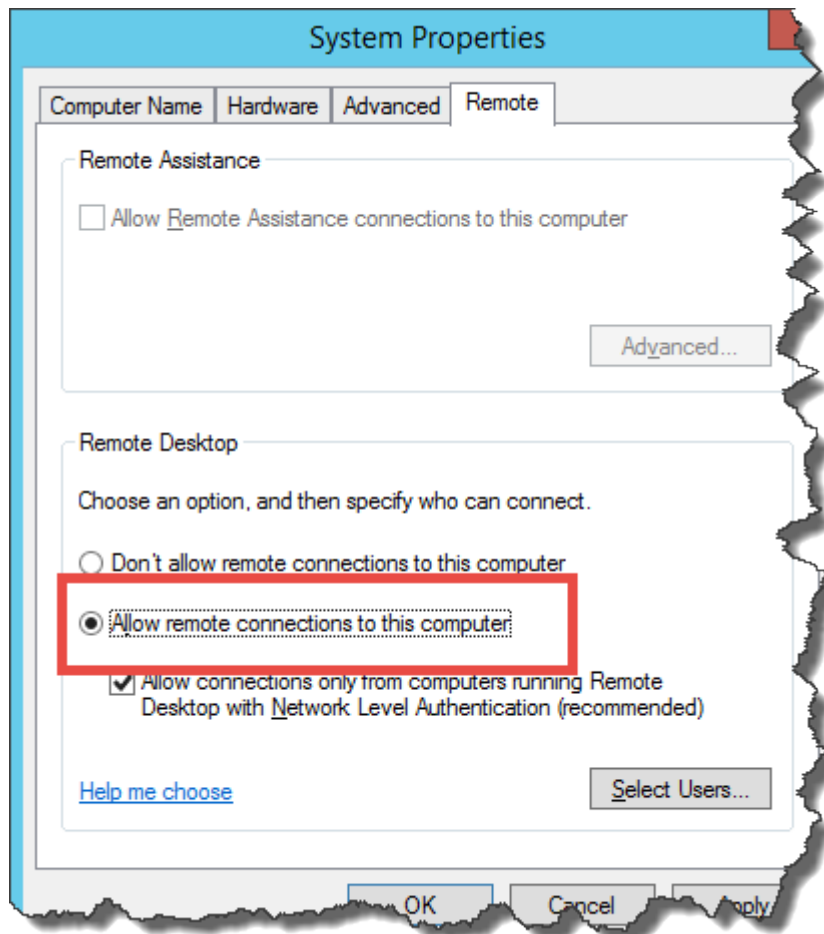
Are you lazy or maybe lazy-ish? Do you like convenience? Yah. Me, too. So that means that you'll probably want to enable Remote Desktop. If you're a member of the Tinfoil Hat Patrol, you'll probably want to skip this section.

- Find **Remote Desktop** in Server Manager



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

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



- 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

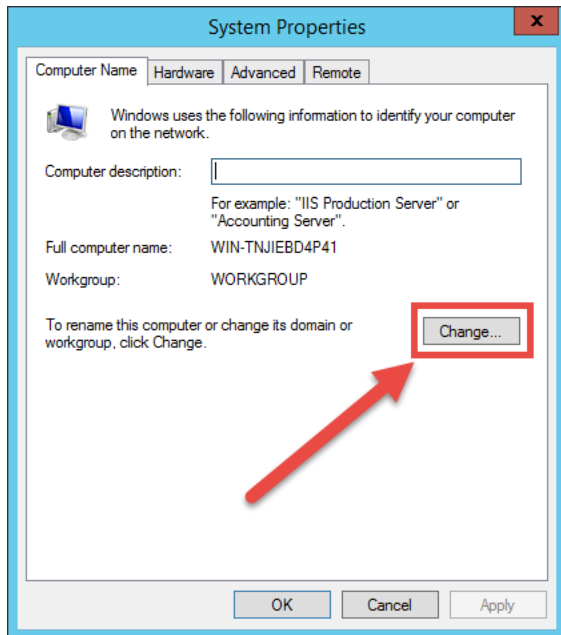
At the moment, you've got a stand-alone server with a wacky name that's not attached to anything. Workgroups? That's like the networking equivalent of having a stand-alone MP3 player that only syncs over USB. Who does that? What year is this?! 2005?! Not very useful. You'll now rename this computer and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

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



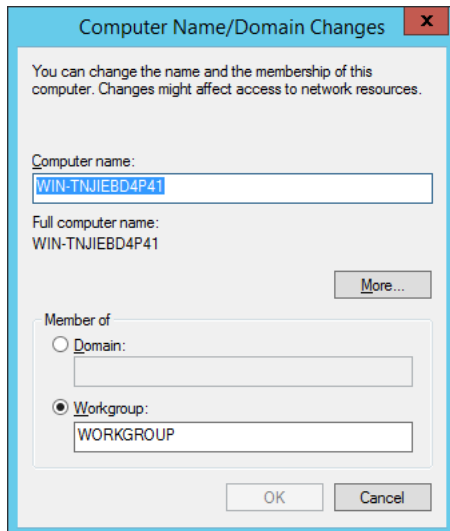
- Click on the computer name link

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

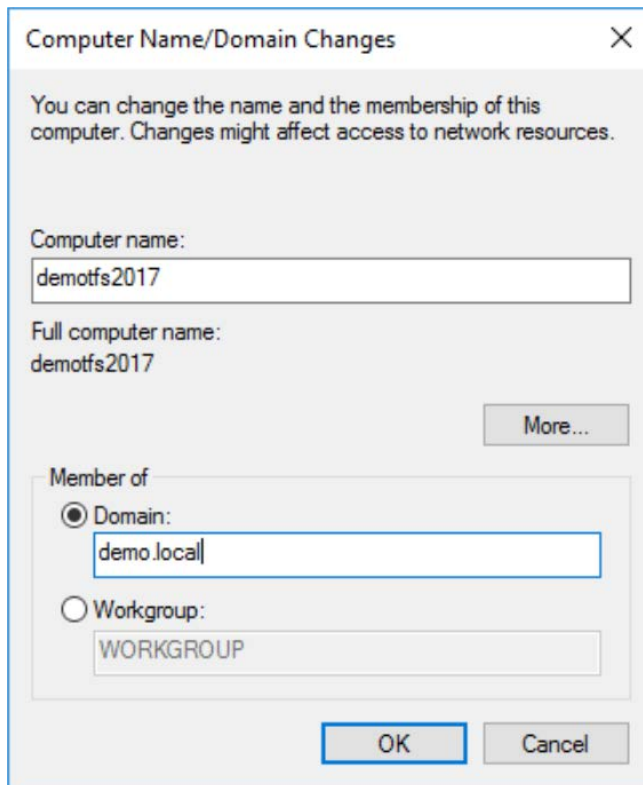


- Click the **Change...** button

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.



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 resources.

Computer name:
demotfs2017

Full computer name:
demotfs2017

More...

Member of

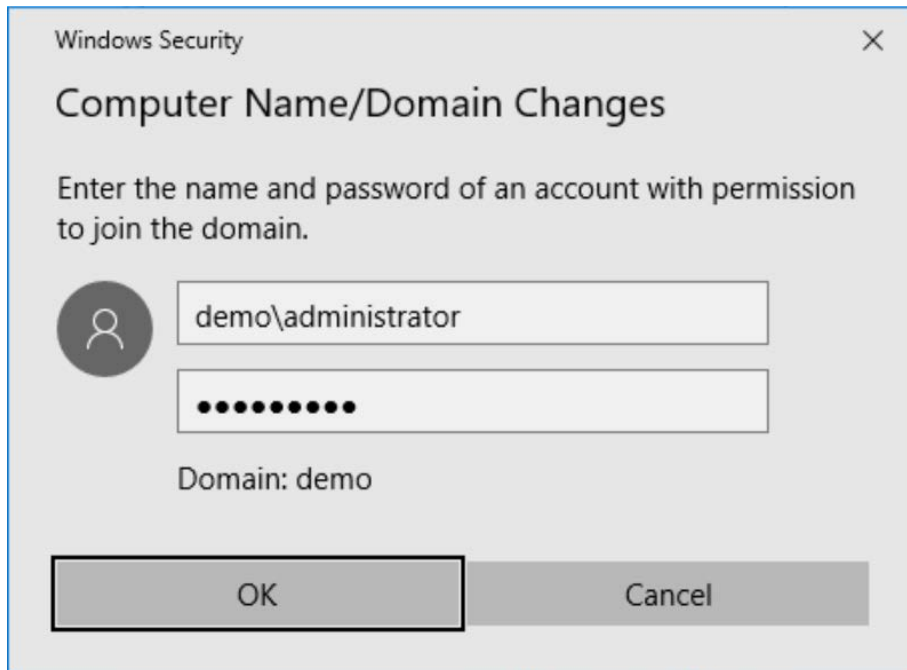
Domain:
demo.local

Workgroup:
WORKGROUP

OK Cancel

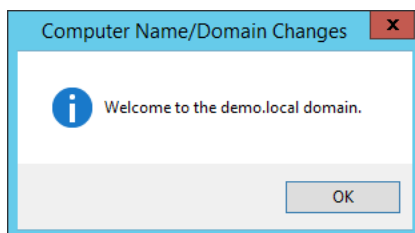
- In the Computer name textbox, enter the desired name for this server
- Under **Member of** choose the **Domain** radio button
- In the **Domain** textbox, enter the name of the Active Directory domain
- Click the **OK** button

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



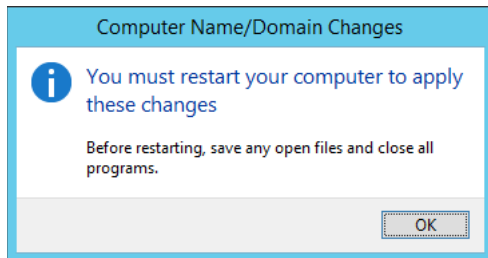
- Enter the username and password
- Click **OK**

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

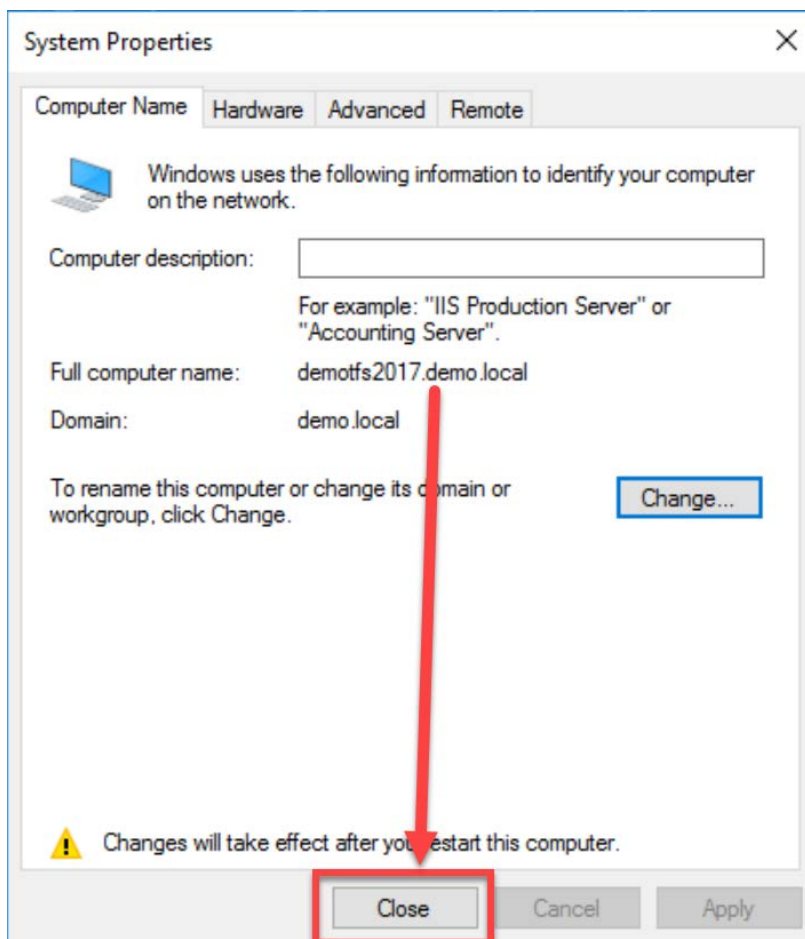


- Click **OK**

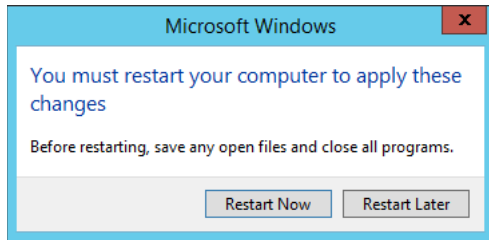
You'll be notified that you'll need to reboot this server.



- 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 2: Install SQL Server 2017 for TFS2018

Introduction

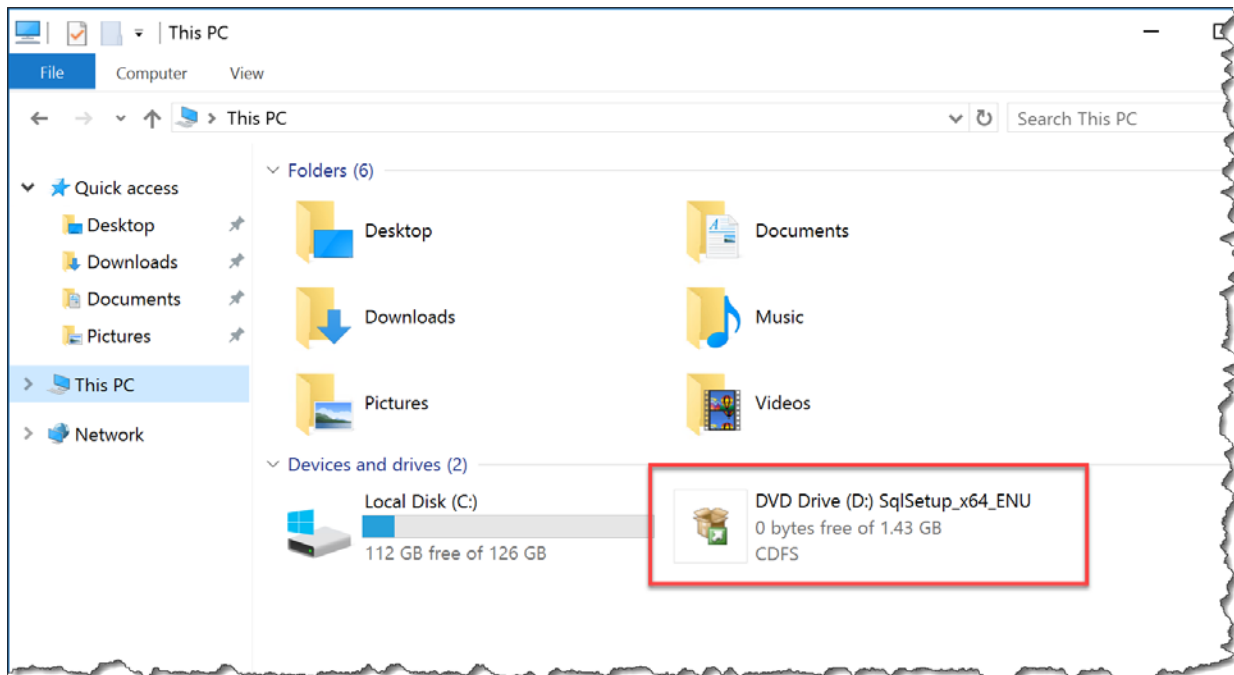
Team Foundation Server 2018 (TFS2018) uses SQL Server for all its back-end storage. There's been a change in this version of TFS and you no longer need to install SQL Server Reporting Services or SQL Server Analysis Services. This part of the guide will walk you through installing SQL Server 2017 for TFS2018.

Install SQL Server 2017

- Either insert your **SQL Server 2017 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

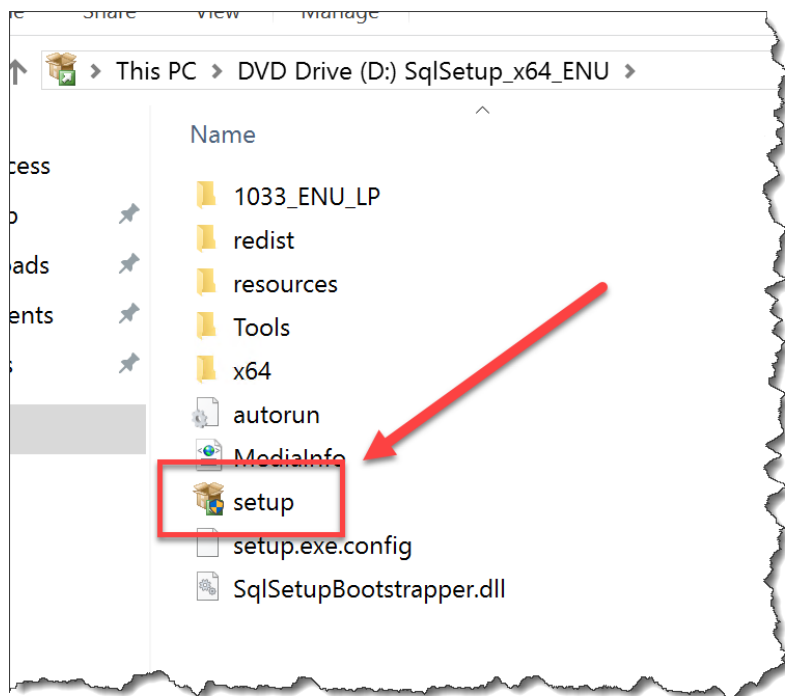
You should see a view that's similar to the screenshot below and you should see a DVD drive with **SqlSetup_x64_ENU** or another similar version of SQL Server in the drive.



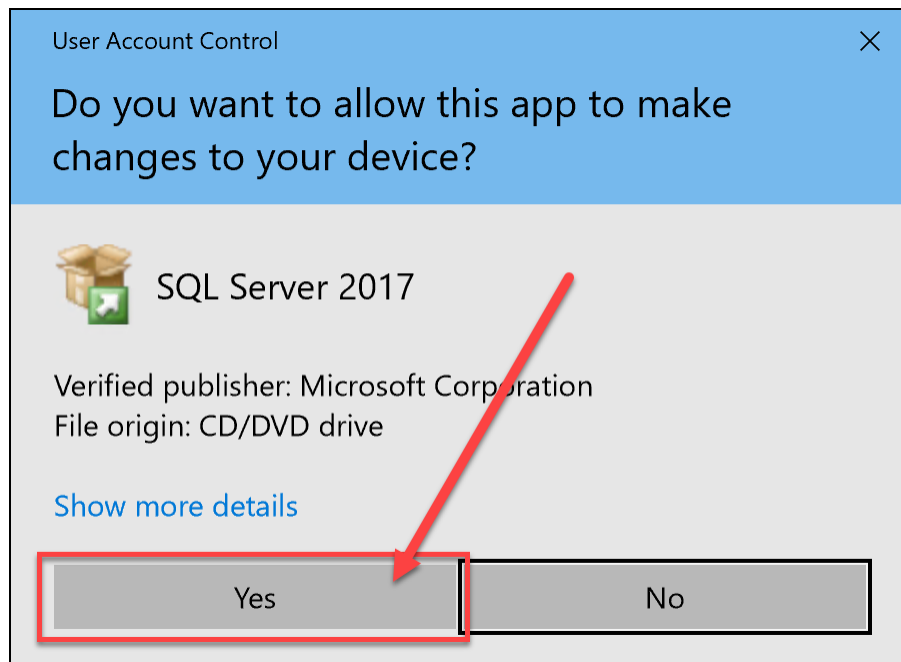
- Double-click on the DVD drive with the SQL Server installer

You should see the contents of the SQL installer.

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

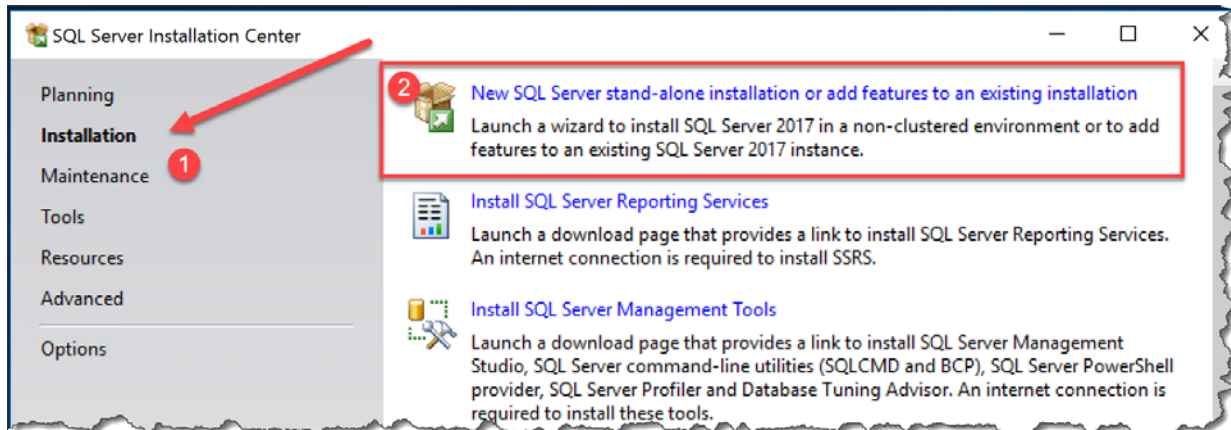


- Click **Yes** on the User Account Control dialog



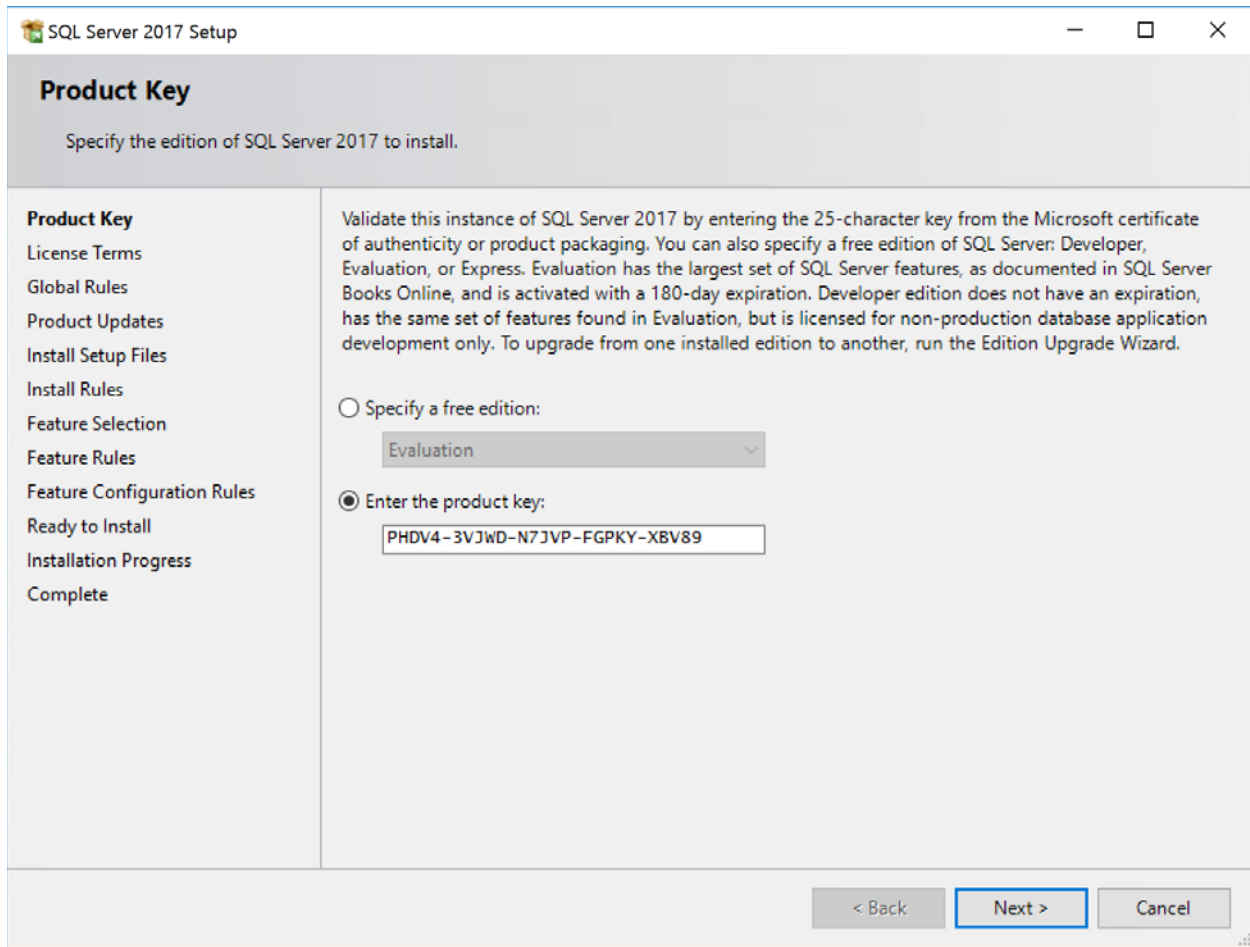
You should now see the **SQL Server Installation Center** window.

- 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 2017 Setup wizard will prompt you for a product key. It should already be filled in with a product key.

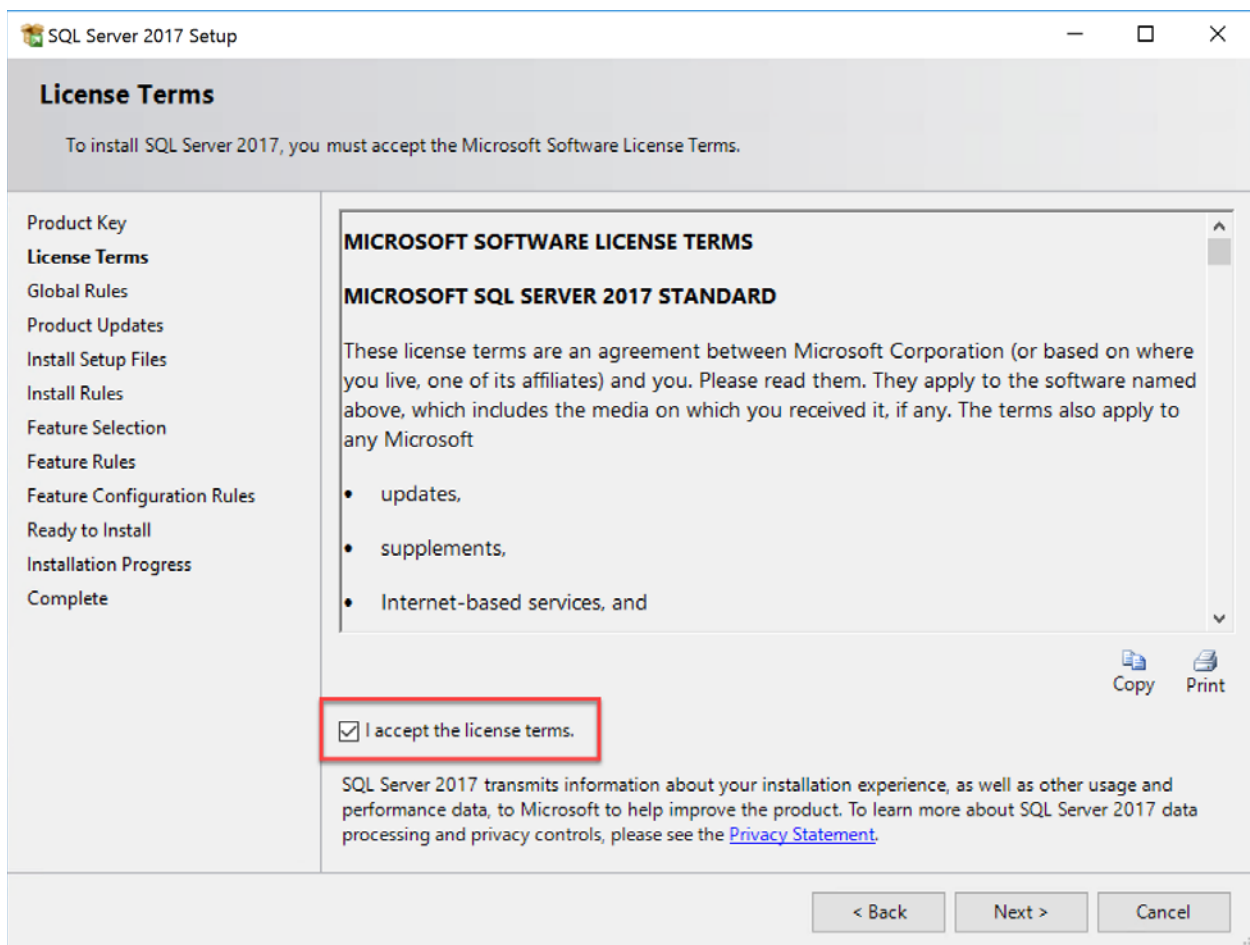
- Click **Next**



The screenshot shows the 'SQL Server 2017 Setup' window with the 'Product Key' tab selected. The window title bar includes standard minimize, maximize, and close buttons. The main content area is titled 'Product Key' and contains the instruction: 'Specify the edition of SQL Server 2017 to install.' Below this, a list of installation steps is shown on the left, with 'Product Key' highlighted. The main area contains a validation message and two radio button options: 'Specify a free edition:' (with a dropdown menu showing 'Evaluation') and 'Enter the product key:' (which is selected and has a text box containing 'PHDV4-3VJWD-N7JVP-FGPKY-XBV89'). At the bottom right, there are three buttons: '< Back', 'Next >' (highlighted with a blue border), and 'Cancel'.

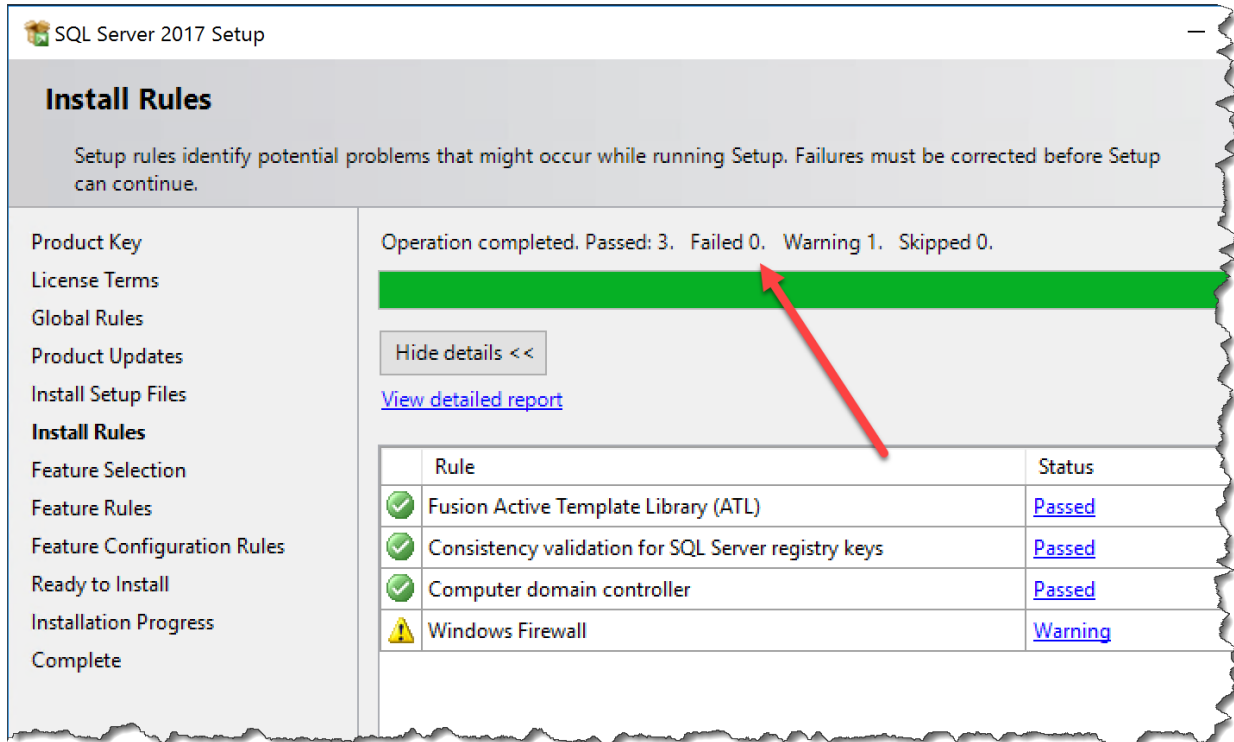
You should now be on the **License Terms** page.

- 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**



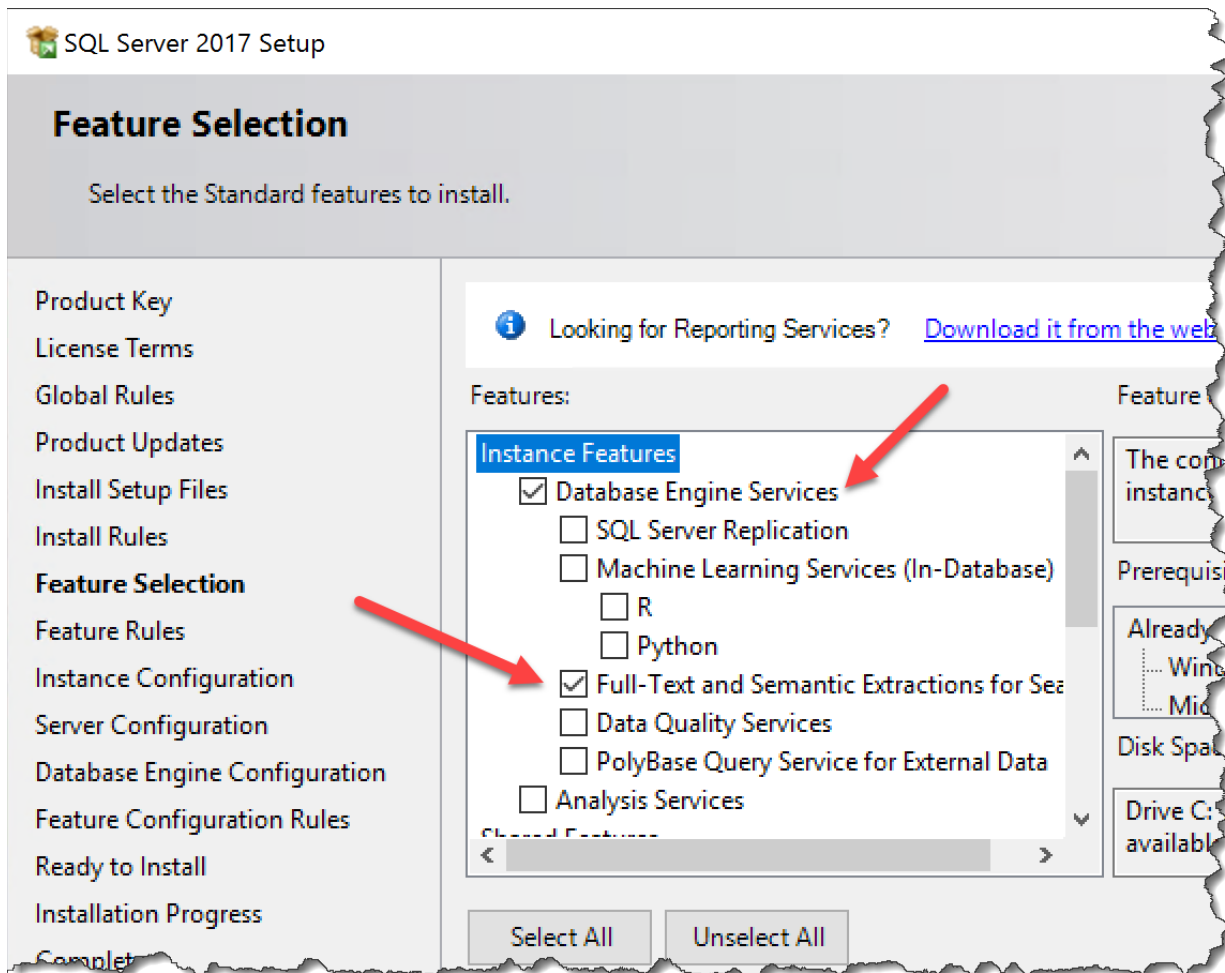
The install wizard will work on a few things and run some pre-install checks.

- Verify that there are zero failed rules
- Click **Next**



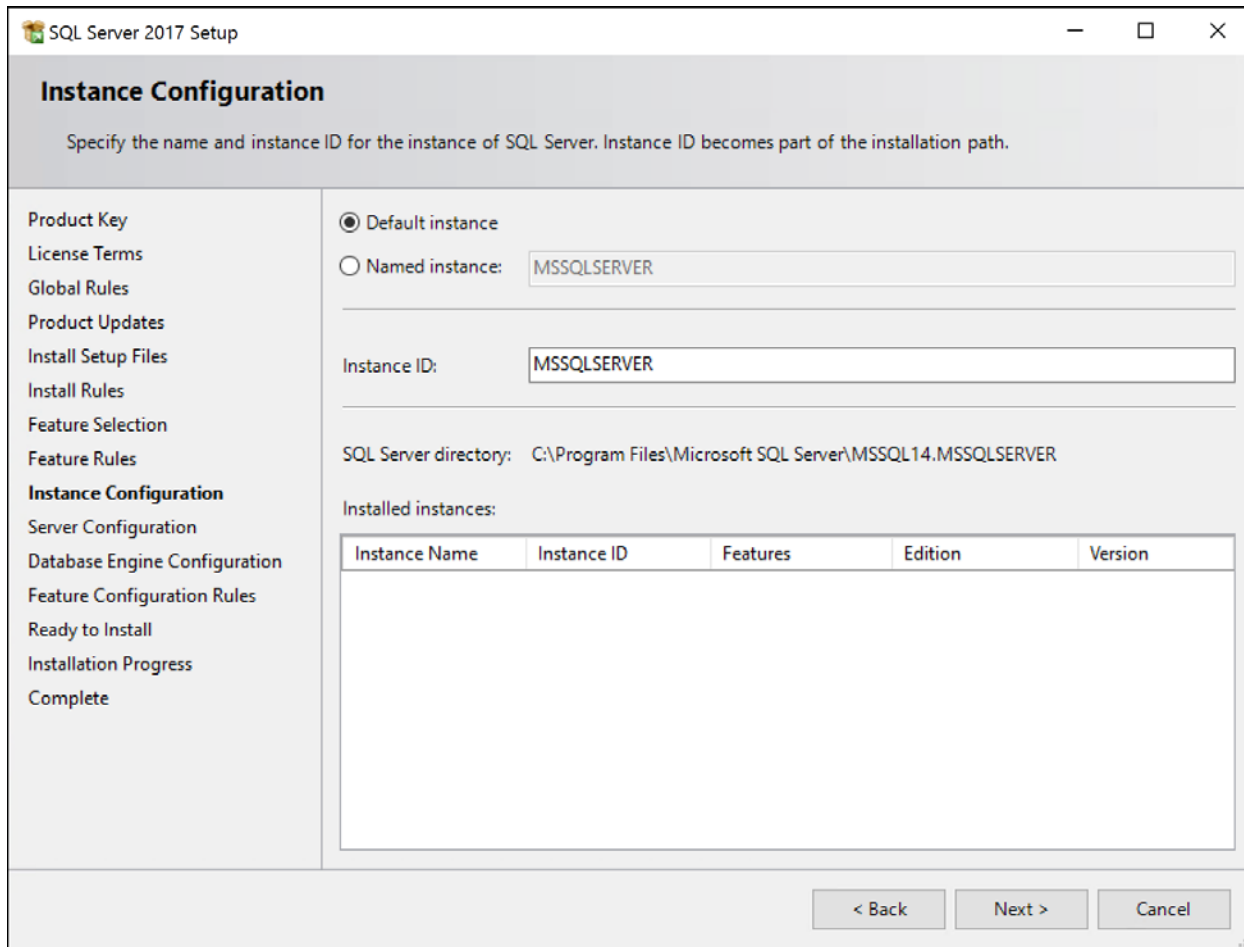
You should now be on the **Feature Selection** page.

- 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**



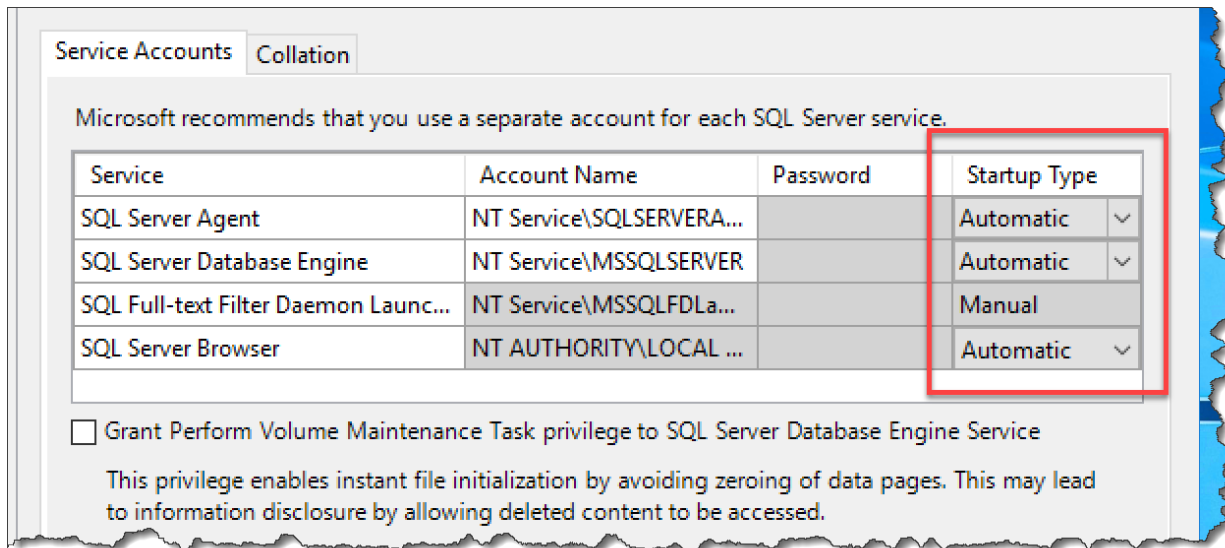
You should now see the **Instance Configuration** page of the install wizard. Do yourself a favor and just keep the default values.

- Click **Next**



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)
- Click **Next**



Service Accounts Collation

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

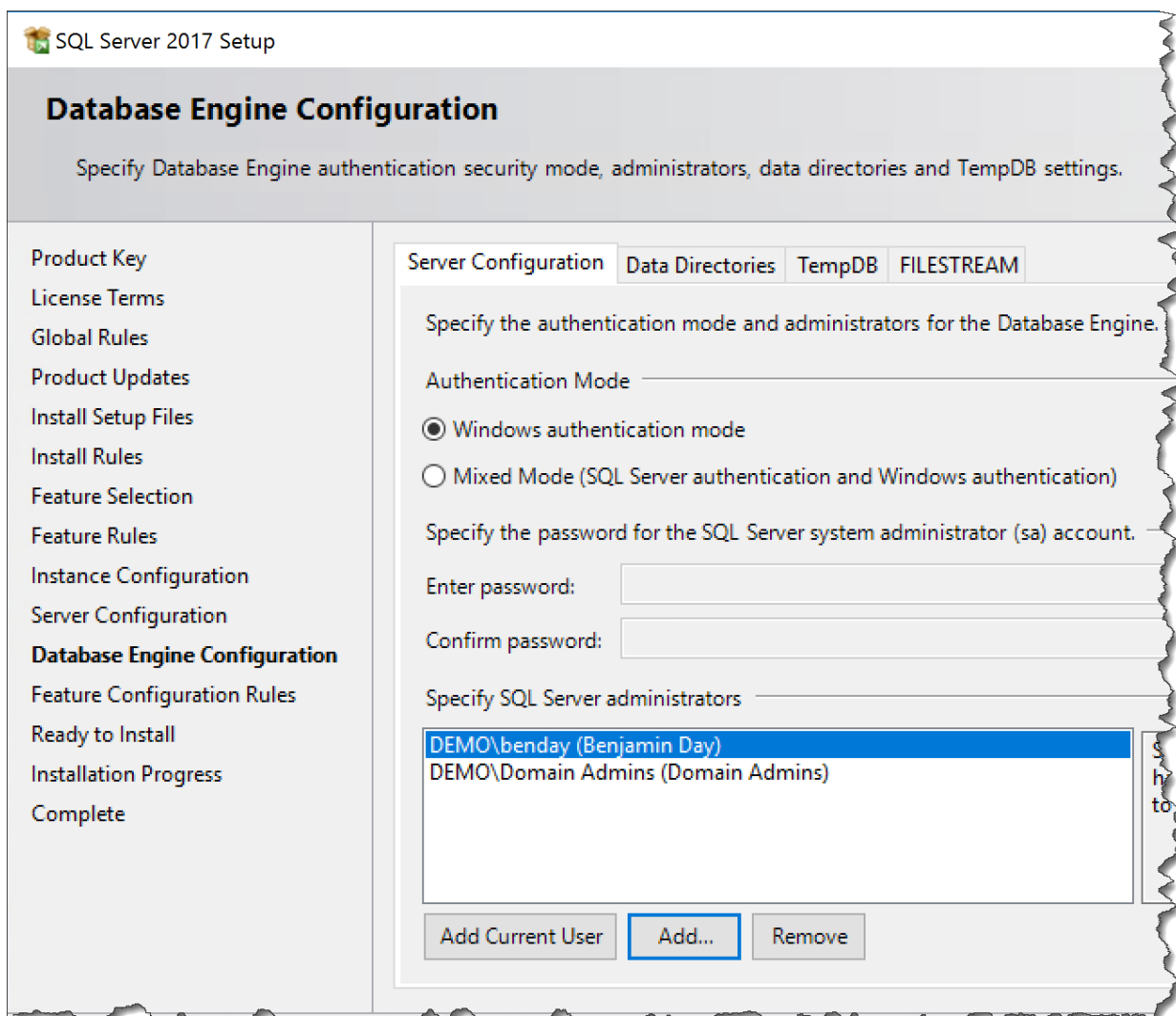
Service	Account Name	Password	Startup Type
SQL Server Agent	NT Service\SQLSERVERA...		Automatic ▾
SQL Server Database Engine	NT Service\MSSQLSERVER		Automatic ▾
SQL Full-text Filter Daemon Launc...	NT Service\MSSQLFDLa...		Manual
SQL Server Browser	NT AUTHORITY\LOCAL ...		Automatic ▾

Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service

This privilege enables instant file initialization by avoiding zeroing of data pages. This may lead to information disclosure by allowing deleted content to be accessed.

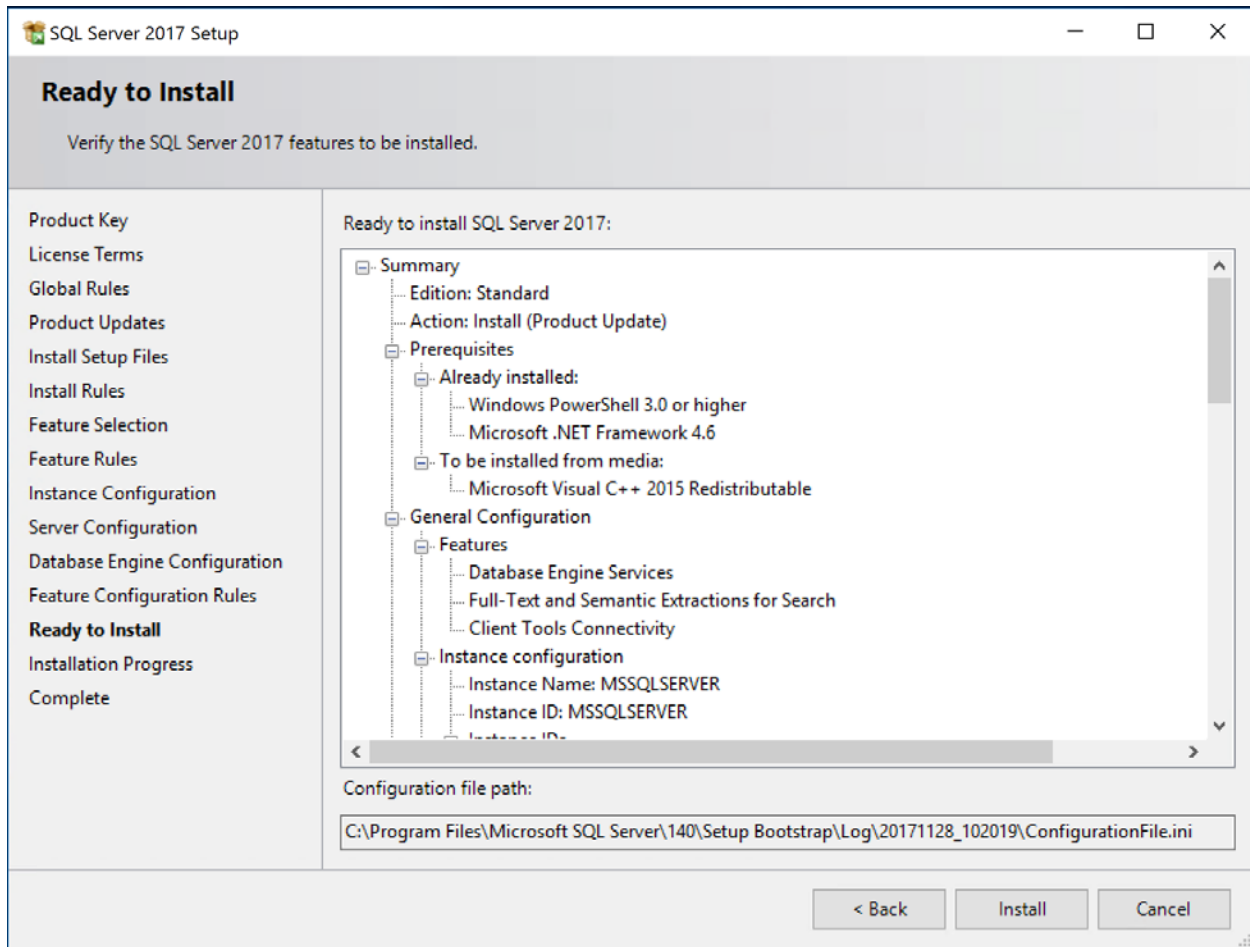
You should now be on the **Database Engine Configuration** page. On this page, you'll pretty much just be specifying who should be an administrator on your new SQL Server instance. By default, the installer does not automatically make Windows administrators members of the sysadmin group in SQL Server.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

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

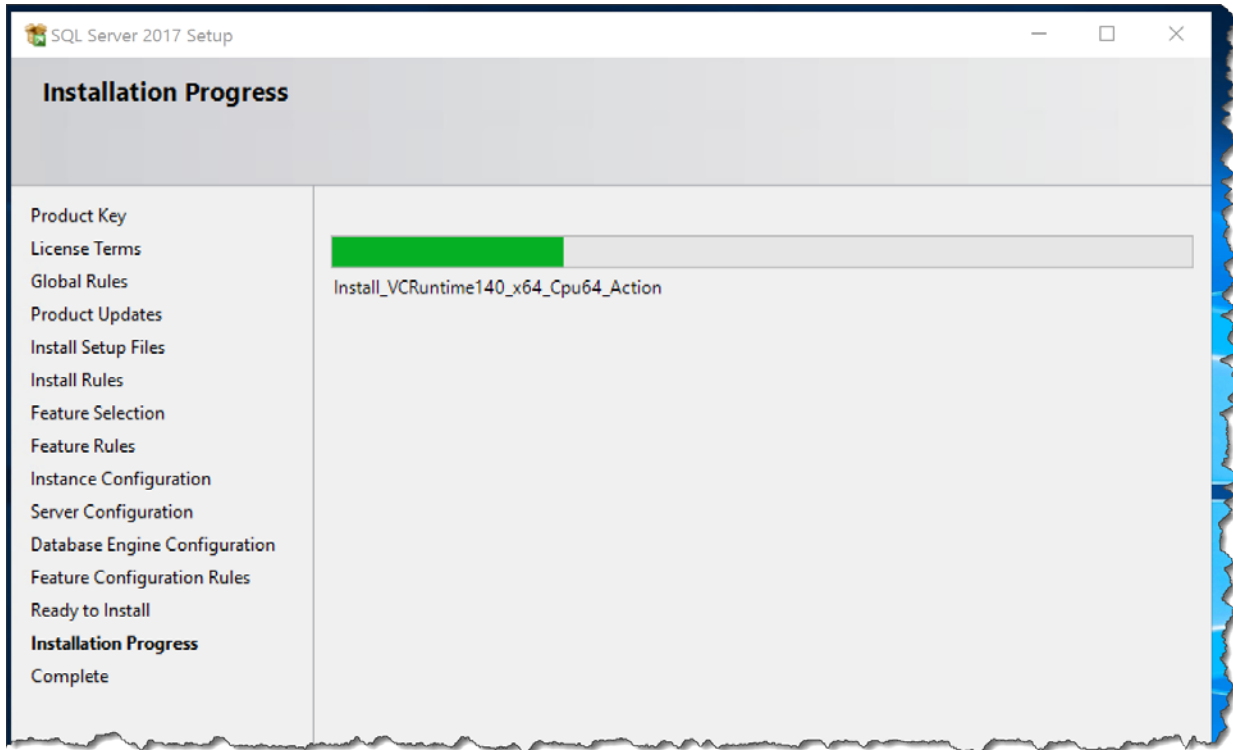


You should now be on the **Ready to Install** page of the dialog and you should see a summary of what is going to be installed.

- Click **Install**

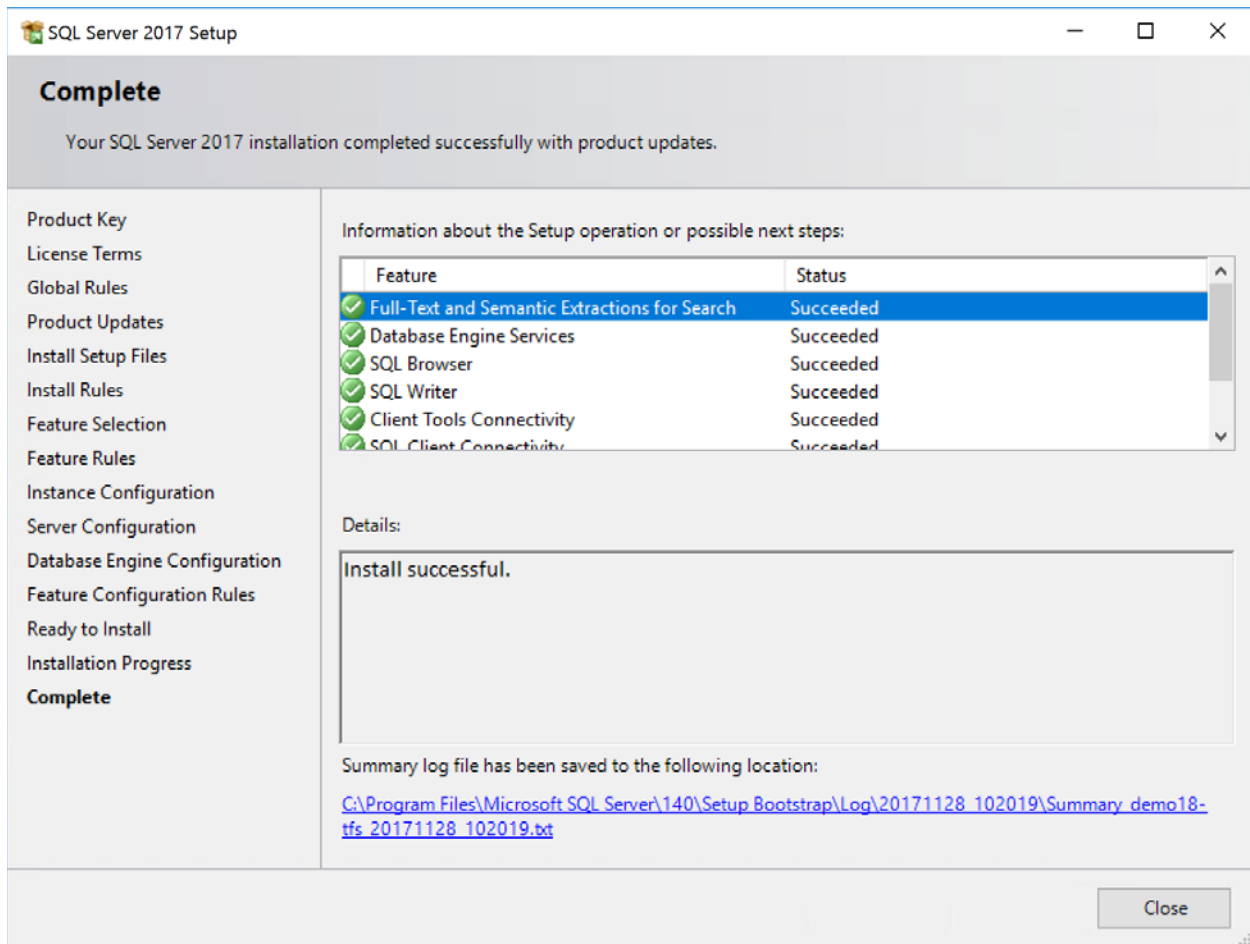


The installer should now be running.



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

- Click **Close** to exit



SQL Server 2017 is now installed.

Chapter 3: Install Team Foundation Server 2018

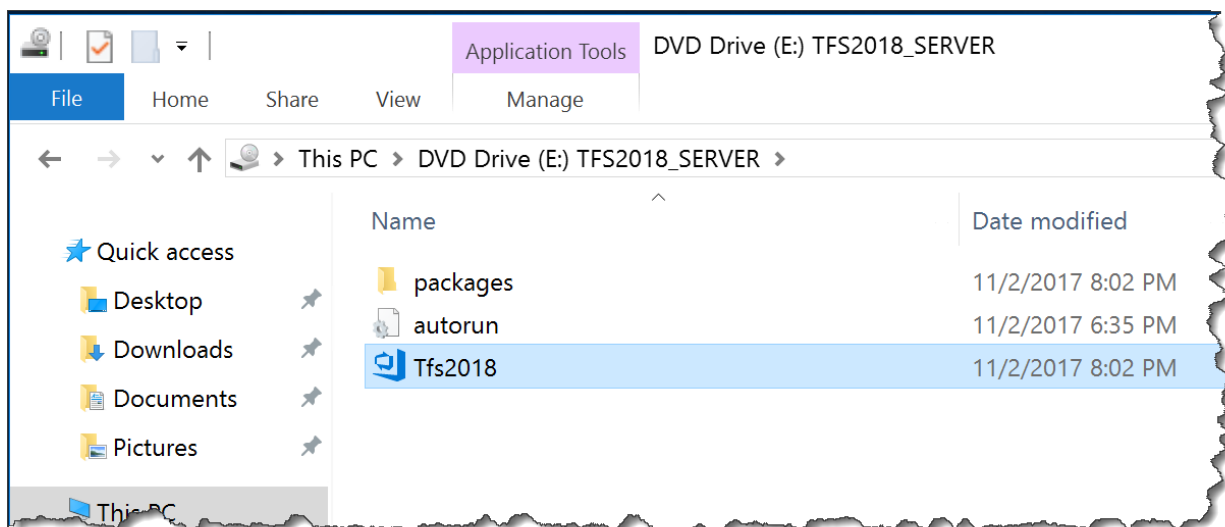
Introduction

Now that Windows and SQL Server are installed, you're ready to install Team Foundation Server 2018 (TFS2018). You'll probably want to create three domain accounts for use by the various pieces of TFS: TFS Service (*domain\tfsservice*), TFS Reports (*domain\tfsreports*), and TFS Build (*domain\tfsbuild*).

- 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 Team Foundation Server 2018 to install along with SQL Server.
- Gather the username and passwords for the 3 TFS service accounts (see above)
- Log on to the server using a user account with Administrator privileges

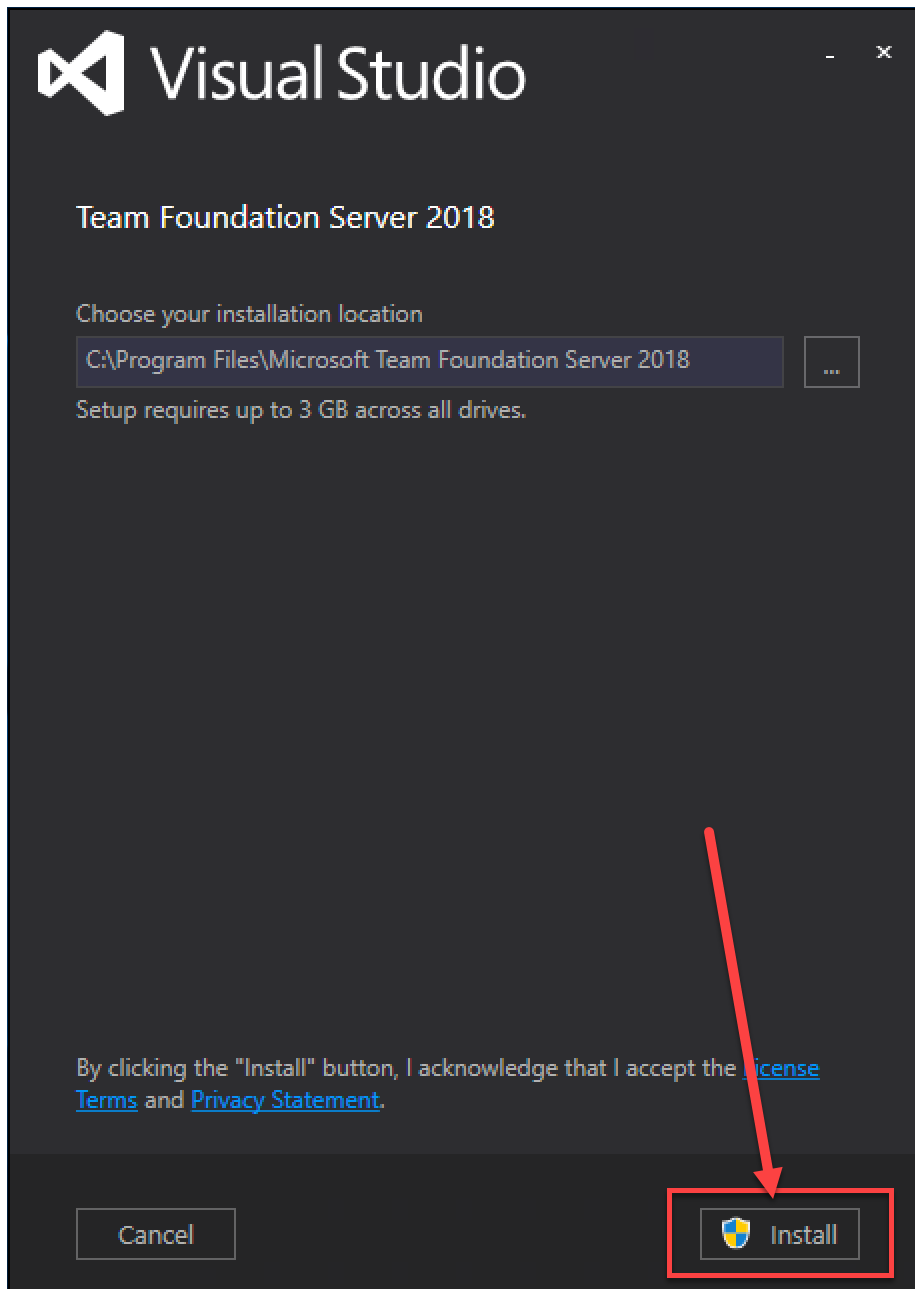
Run the Installer

- Mount the TFS2018 ISO image or insert a TFS2018 installer DVD
- Using Windows Explorer (explorer.exe), navigate to the installer directory



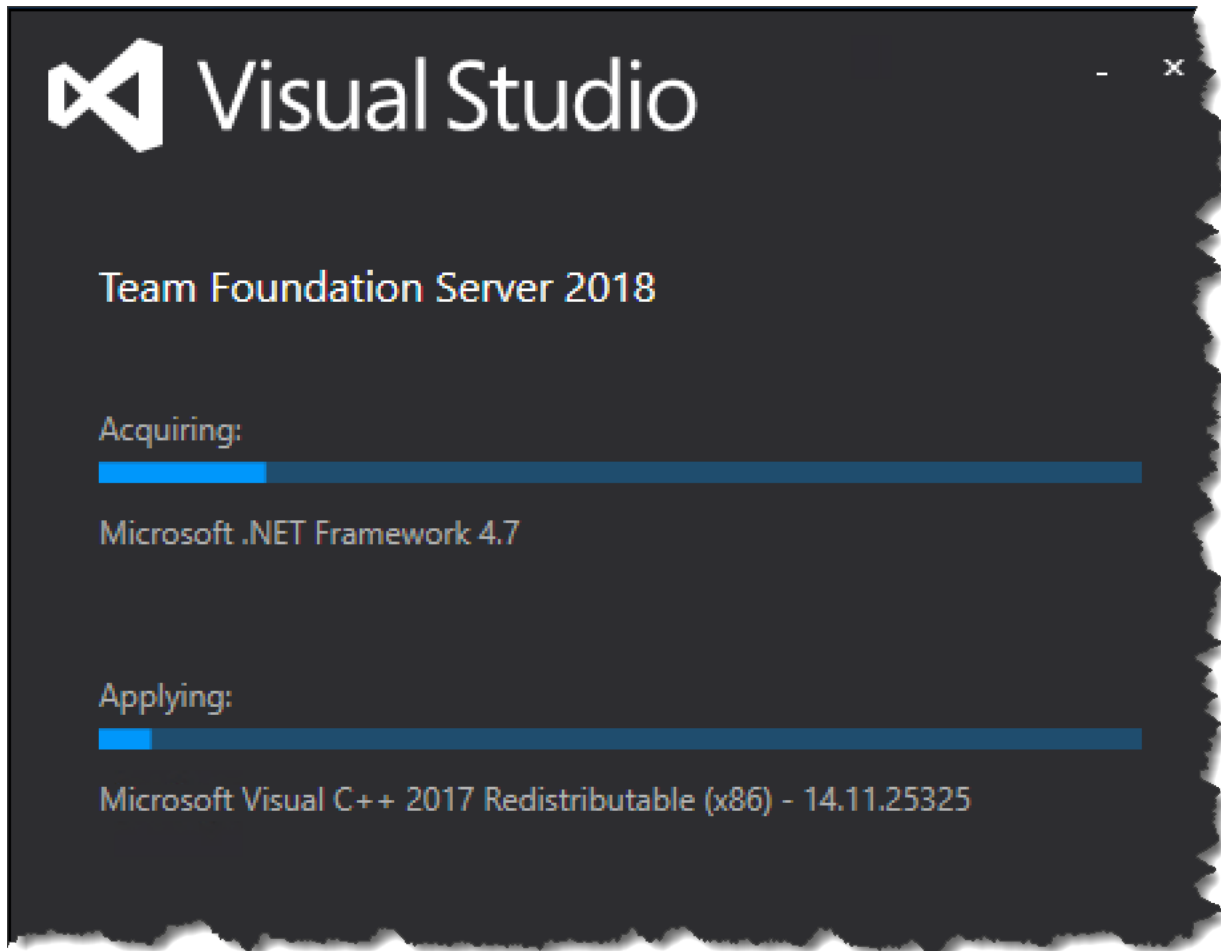
- Run **Tfs2018.exe**

You should see the **Team Foundation Server Setup** dialog.



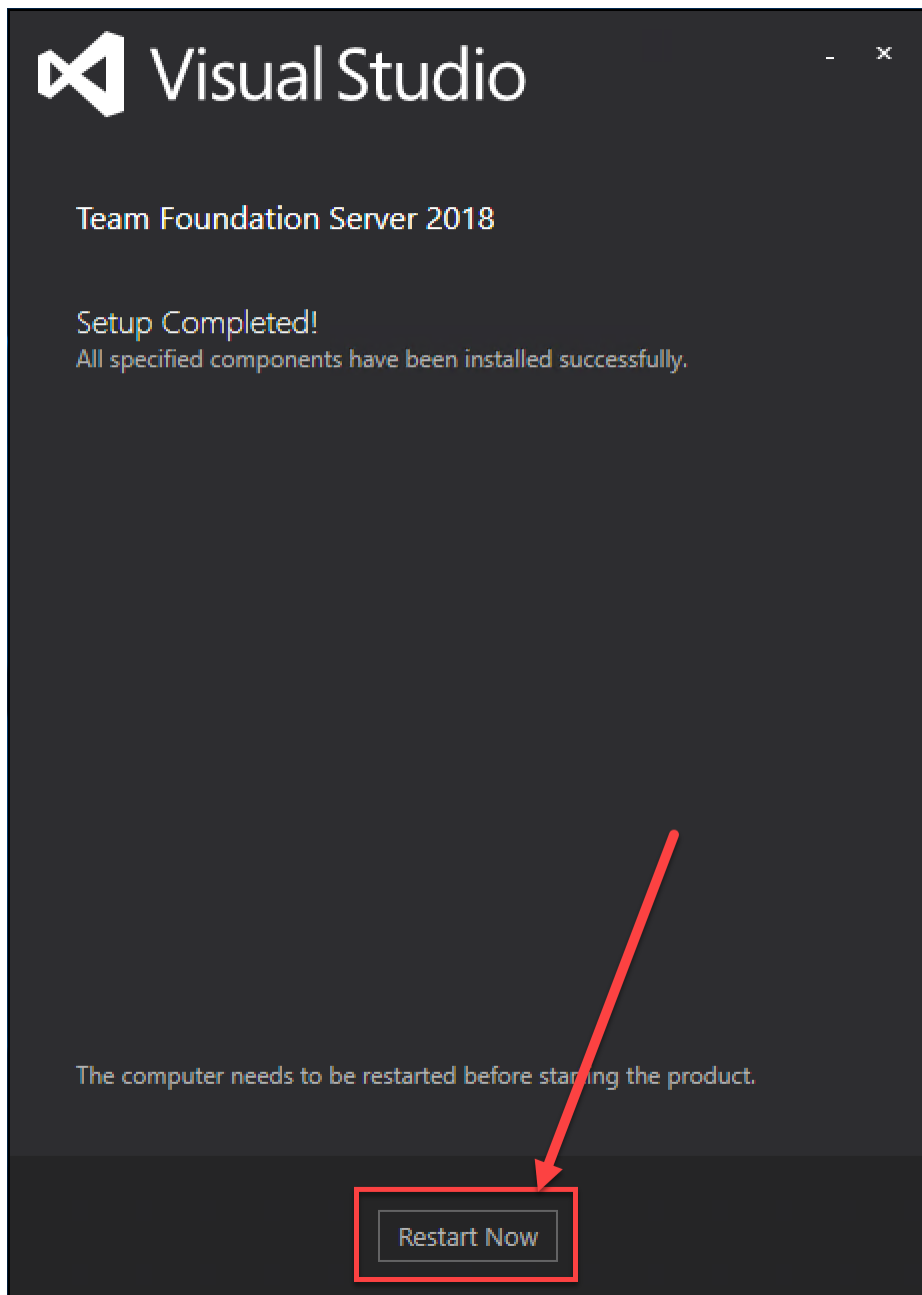
- Click **Install**

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



After running for a while (probably a long while), you should see a message saying “**Setup Completed!**” and requesting that you reboot your machine.

- Click the **Restart Now** button

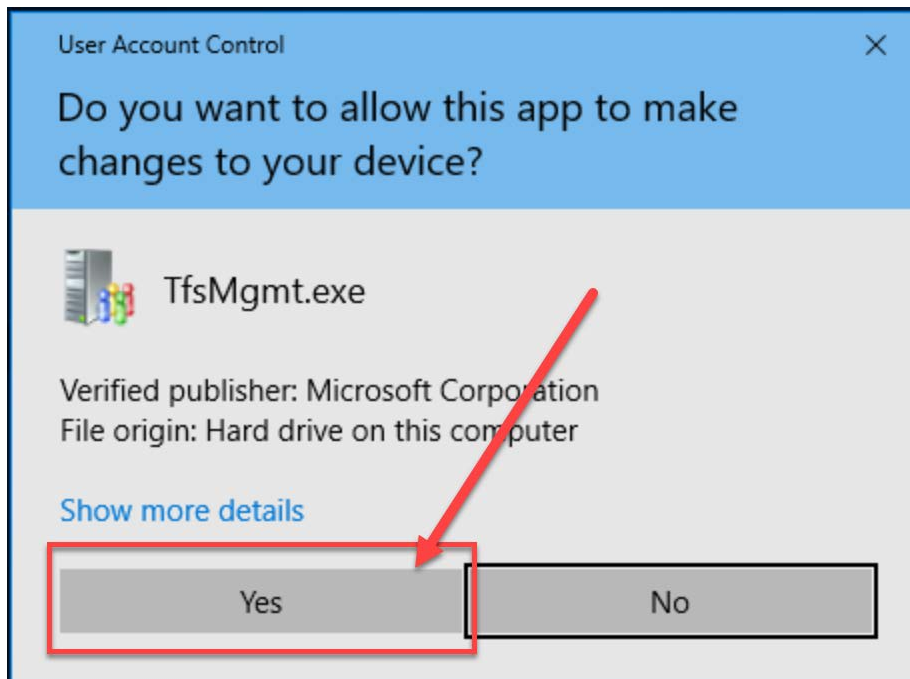


Your machine will reboot.

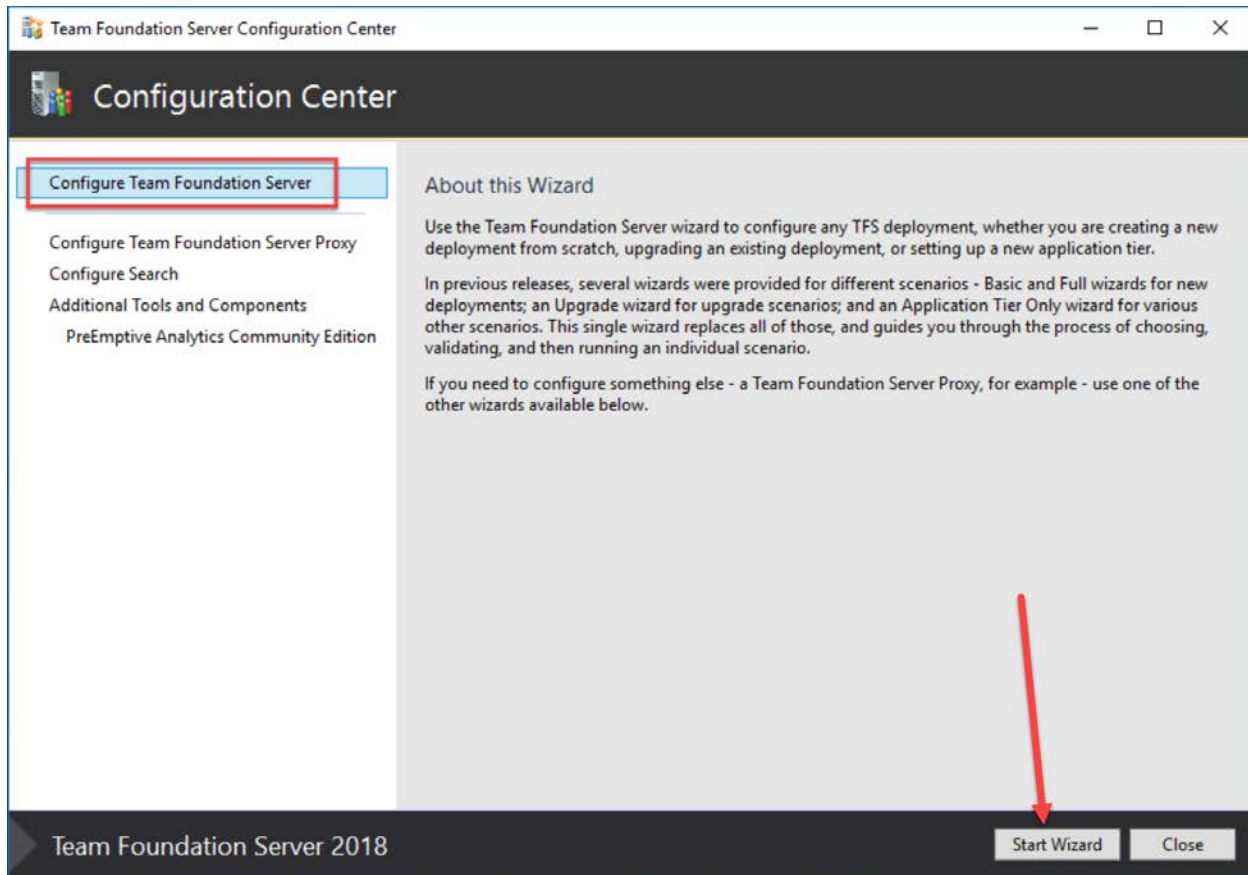
- Log in to your machine

When you log in, the TFS management application will automatically start and you'll be prompted with a User Account Control dialog.

- Click **Yes** on the User Account Control dialog

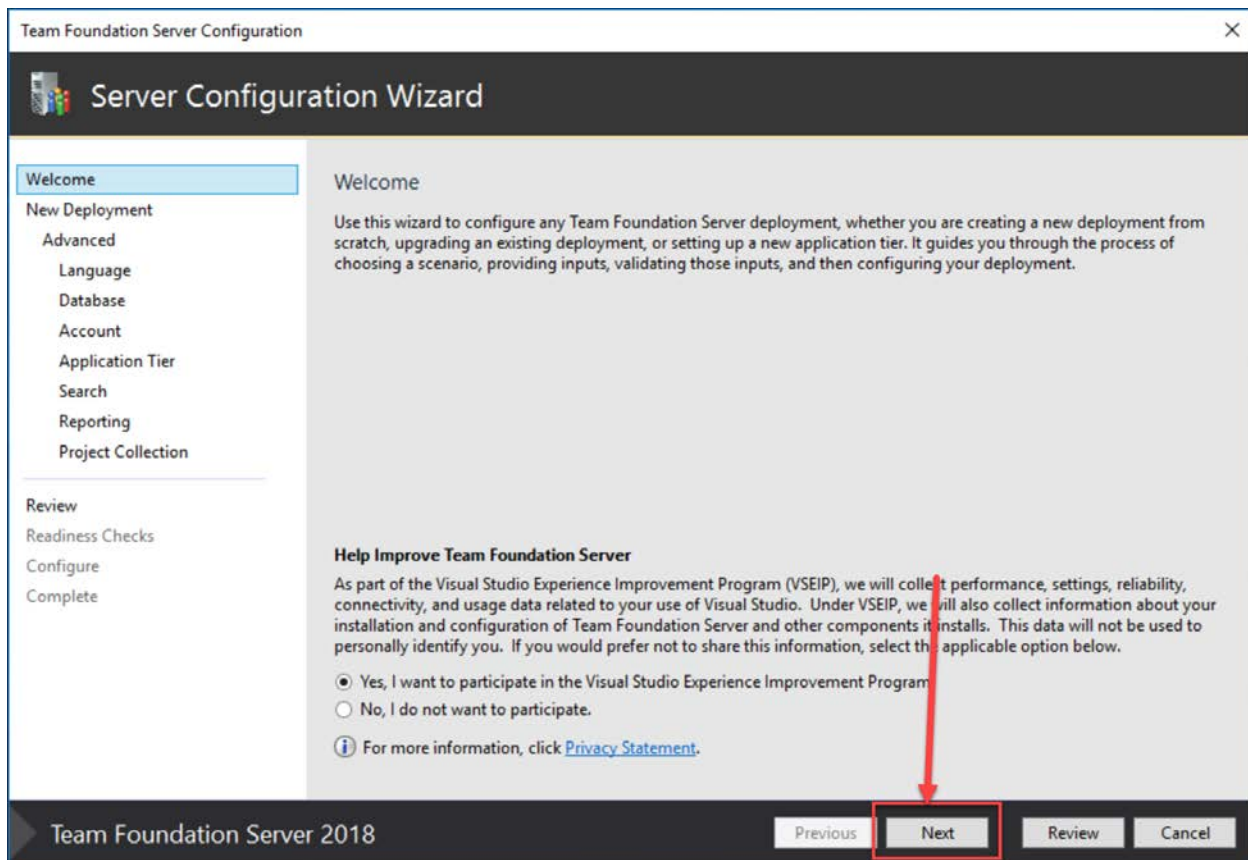


You should now see the **Team Foundation Server Configuration Center**.



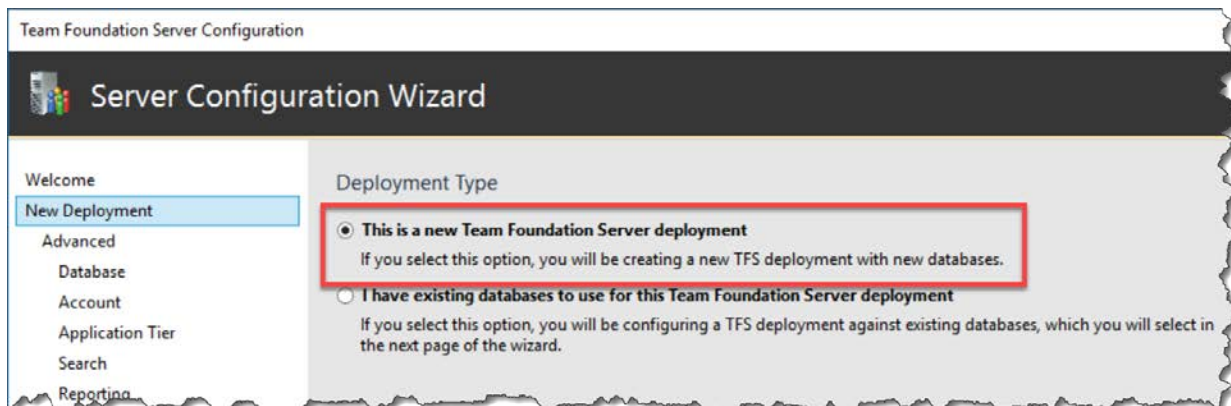
- Choose **Configure Team Foundation Server**
- Click **Start Wizard**

You should now be on the welcome page.



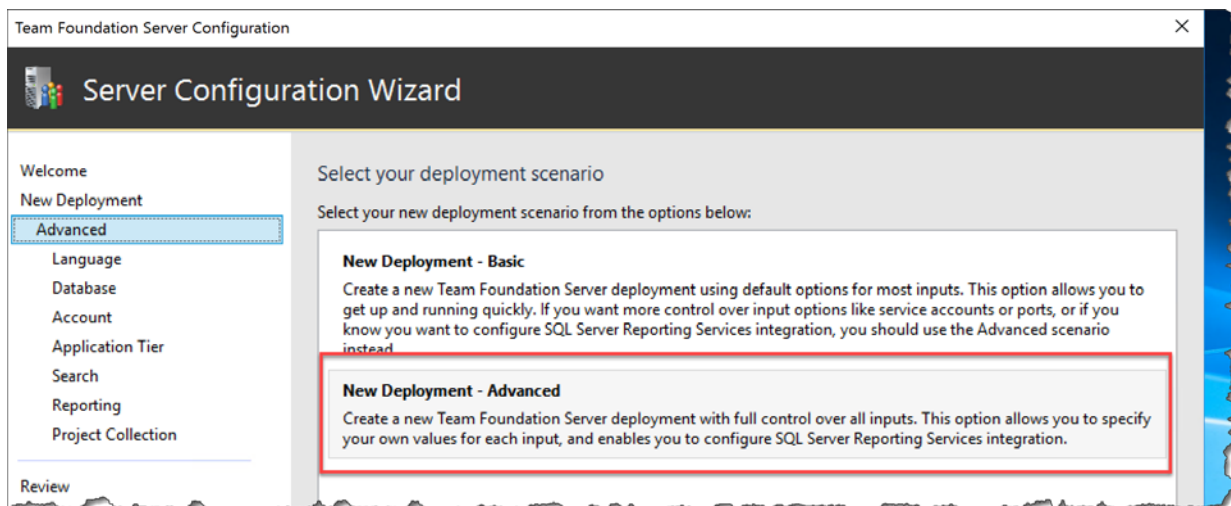
- Choose **Yes, I want to participate in the Visual Studio Experience Improvement Program**
- Click **Next**

You should now be on the Deployment Type page.



- Select **This is a new Team Foundation Server deployment**
- Click **Next**

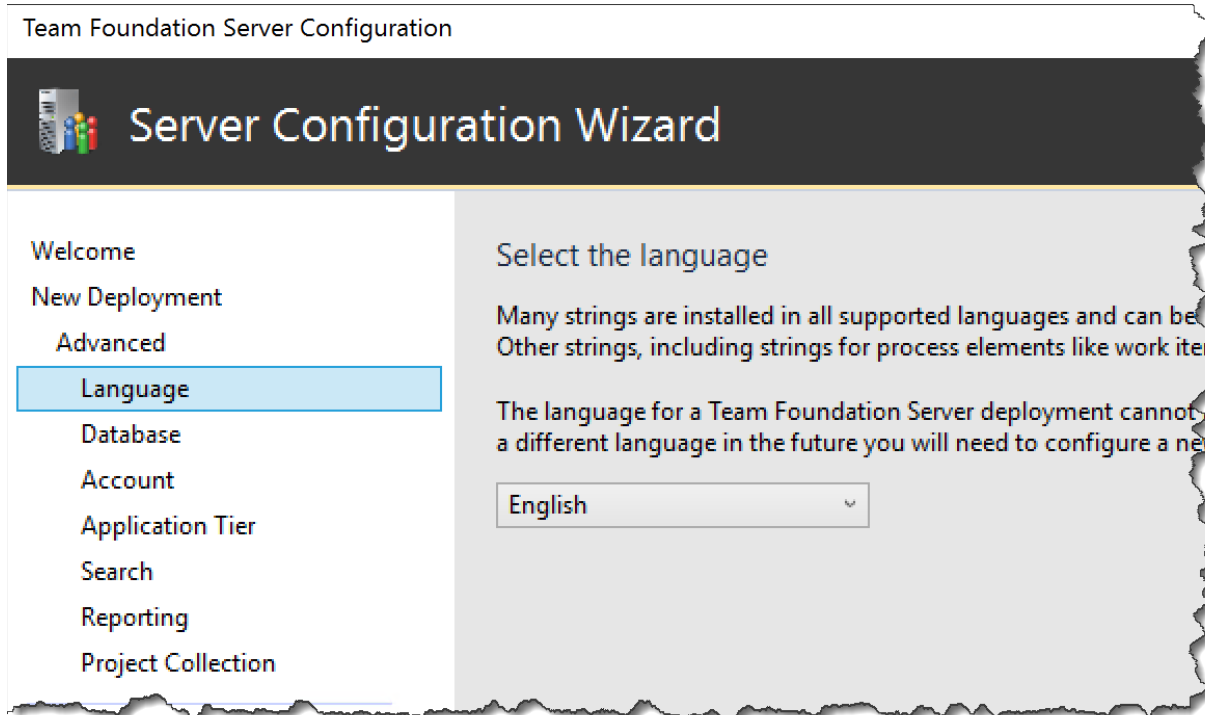
On the **Select your deployment scenario** page, you'll be prompted to choose between a TFS Basic or TFS Advanced deployment. Since this guide assumes that you're using SQL Server Reporting Services with TFS, you'll need to choose the Advanced version.



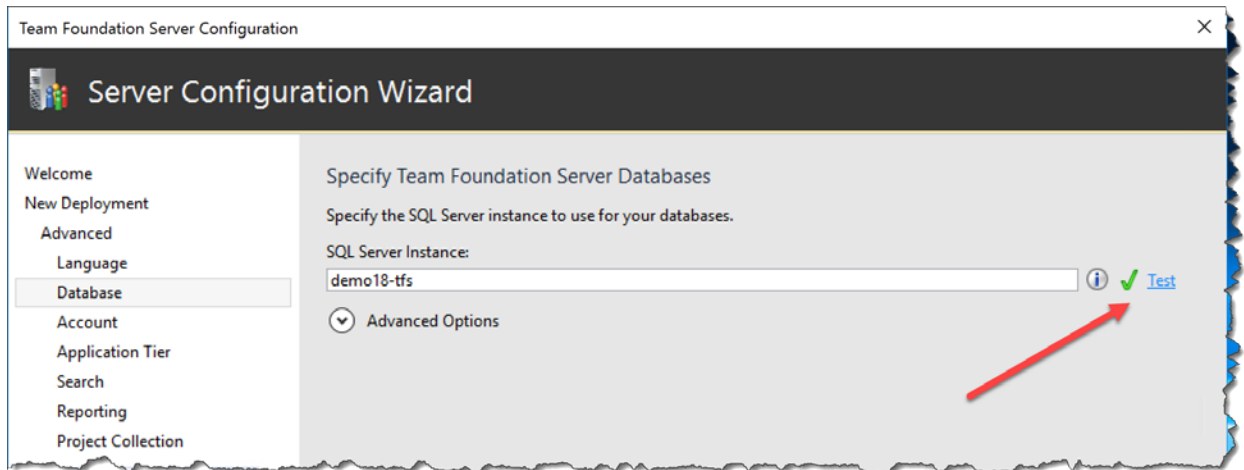
- Choose **New Deployment – Advanced**
- Click **Next**

Choose your language.

- Choose the language
- Click Next



The **Specify Team Foundation Server Databases** page prompts you to choose your SQL Server database. This guide assumes that you installed SQL Server 2017 Standard on the same machine as TFS.



- 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 TFS 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 TFS as a separate service account.

Provide the Service Account

Service Account

The service account is used as the primary account for Team Foundation Server. If you want to use the same account for all TFS-related services including Reporting integration, you will need to enter a user account here.

Use a system account : NT AUTHORITY\NETWORK SERVICE

Use a user account :

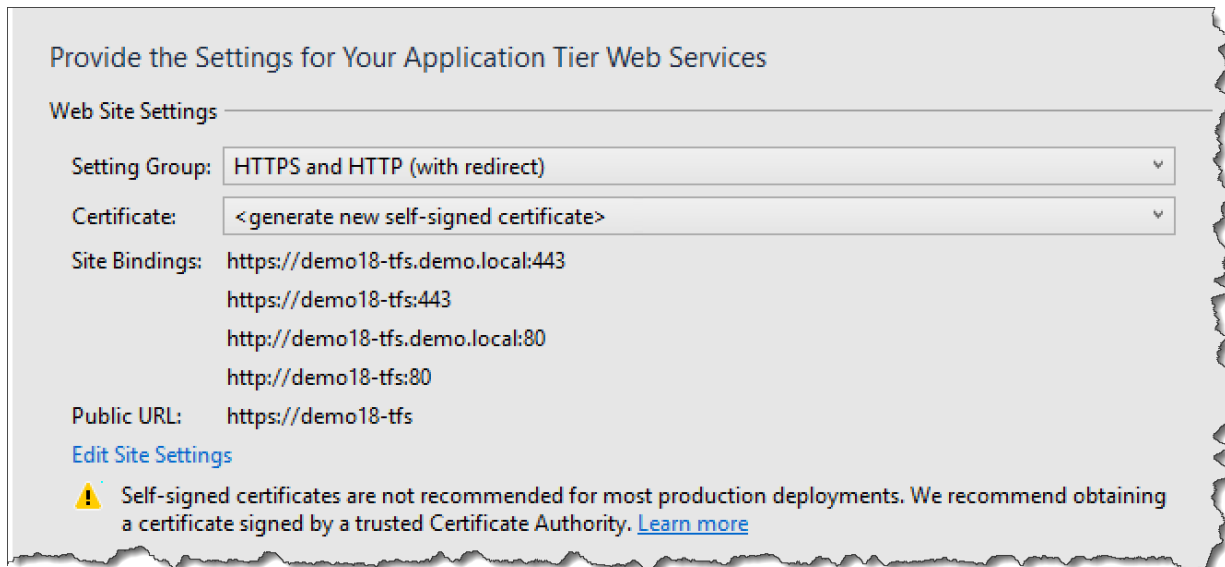
Account Name: demo\tfsservice [✓ Test](#)

Password: ●●●●●●●●●

- Choose **Use a user account**
- In the **Account Name** textbox, type the fully-qualified name of the service account.
Example: *demo\tfsservice*
- 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 TFS in IIS. You may see a warning about using SSL encryption. It's a good idea but it's not required. Thankfully, they give you the option to generate a self-signed certificate.

- From the **Setting Group** box, choose **HTTPS and HTTP (with redirect)**



Provide the Settings for Your Application Tier Web Services

Web Site Settings


Setting Group:

Certificate:

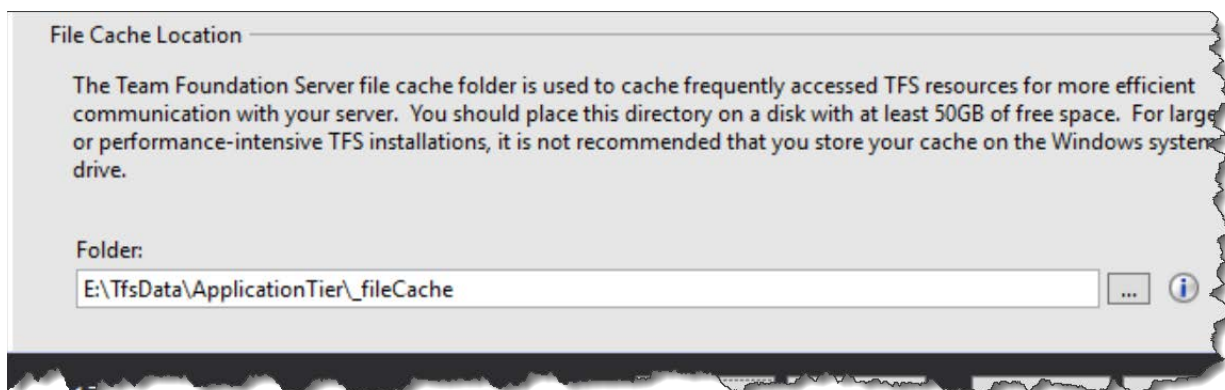
Site Bindings: https://demo18-tfs.demo.local:443
https://demo18-tfs:443
http://demo18-tfs.demo.local:80
http://demo18-tfs:80

Public URL: https://demo18-tfs

[Edit Site Settings](#)

 Self-signed certificates are not recommended for most production deployments. We recommend obtaining a certificate signed by a trusted Certificate Authority. [Learn more](#)

(Optional) At the bottom of this page, there's a section for **File Cache Location**. TFS 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 Team Foundation Server file cache folder is used to cache frequently accessed TFS 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 TFS installations, it is not recommended that you store your cache on the Windows system drive.

Folder:

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

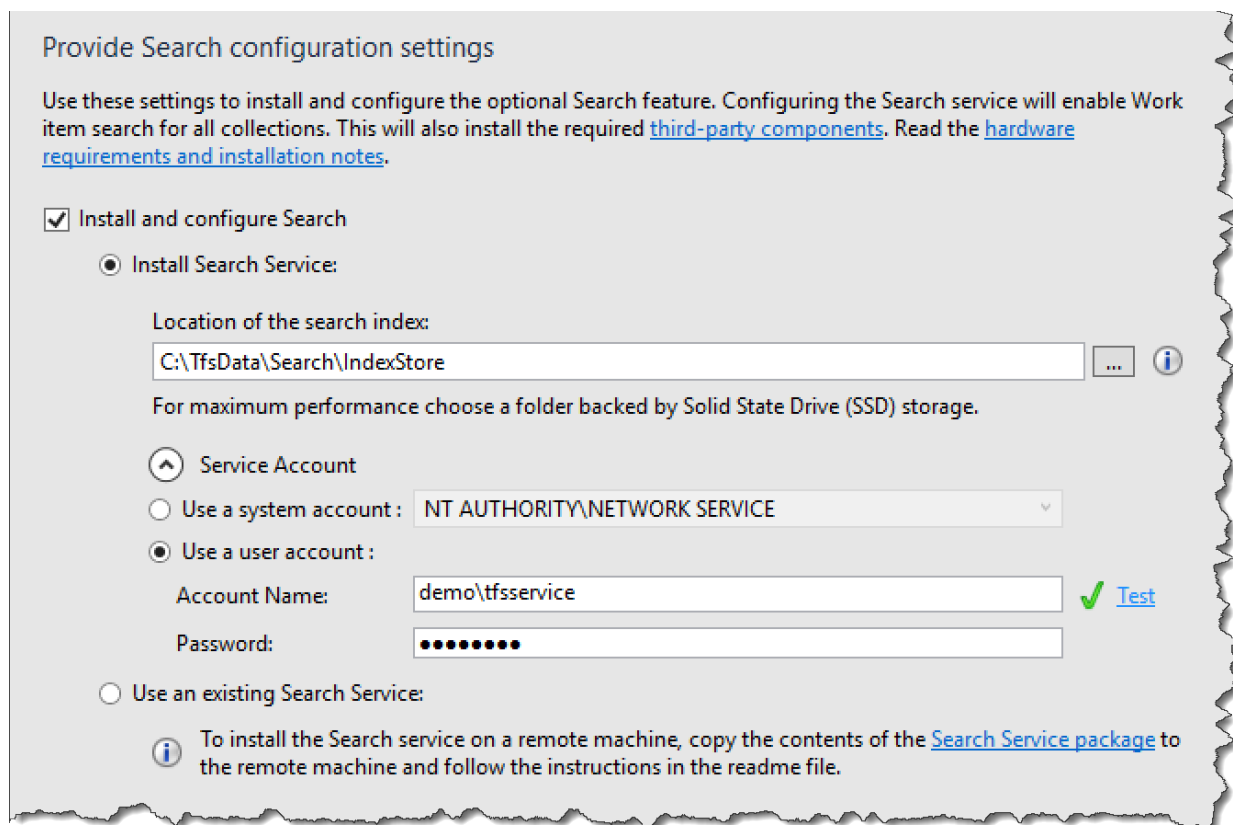
You should now be on the **Provide Search configuration settings** page of the wizard. This is an optional feature.

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**



Provide Search configuration settings

Use these settings to install and configure the optional Search feature. Configuring the Search service will enable Work item search for all collections. This will also install the required [third-party components](#). Read the [hardware requirements and installation notes](#).

Install and configure Search

Install Search Service:

Location of the search index:
C:\TfsData\Search\IndexStore

For maximum performance choose a folder backed by Solid State Drive (SSD) storage.

Service Account

Use a system account: NT AUTHORITY\NETWORK SERVICE

Use a user account:

Account Name: demo\tfsservice

Password: ●●●●●●

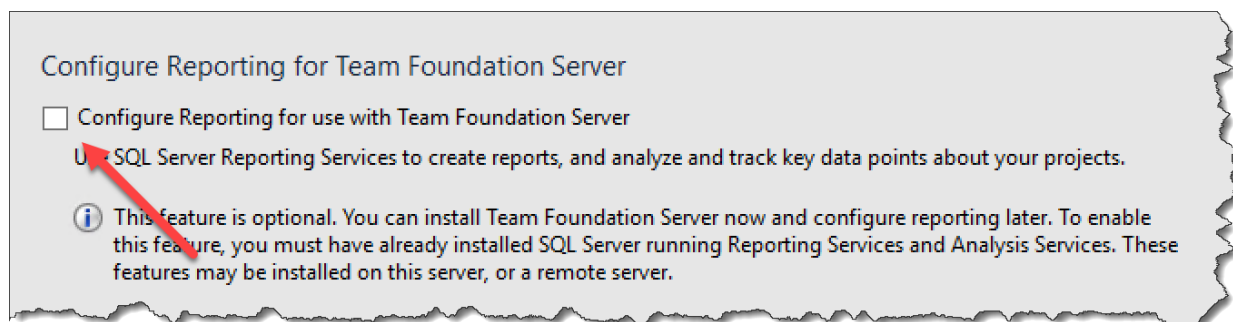
Use an existing Search Service:

To install the Search service on a remote machine, copy the contents of the [Search Service package](#) to the remote machine and follow the instructions in the readme file.

- 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 TFS installation is large and busy, you may want to put this on its own drive by itself.
- Under Service Account choose **Use a user account**

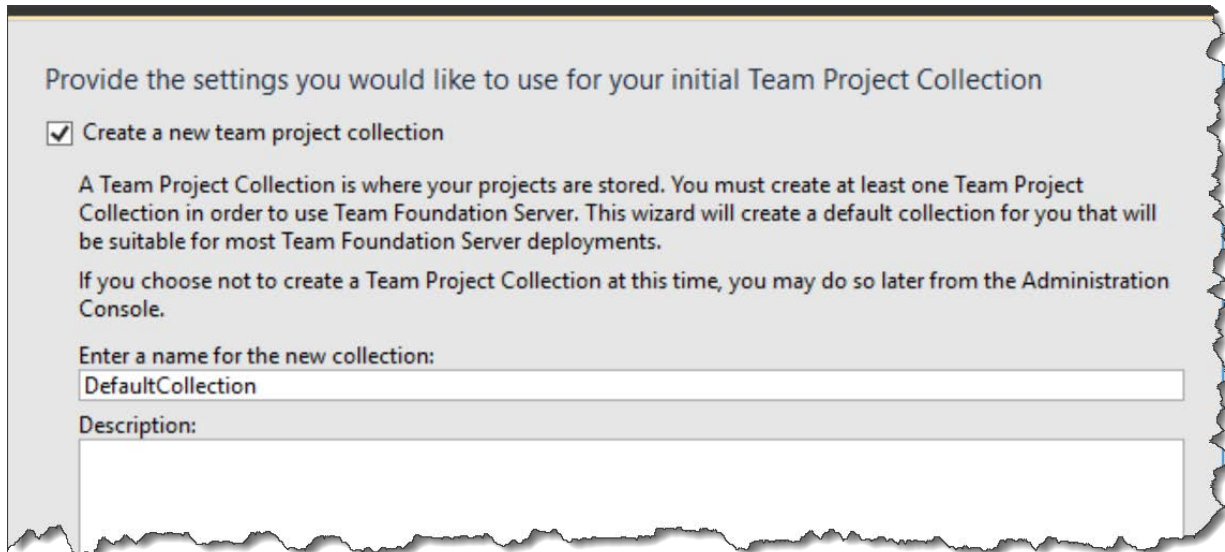
- Set **Account Name** to the service account want to use to run search. In this configuration, I'm using the same account at the TFS Service, demo\tfsservice
- Set the **Password** for the service account
- Click the **Test** link to verify the service credentials
- Click **Next**

You should now see the **Configure Reporting for Team Foundation Server** page. This is another optional feature. This feature is not very useful so this guide assumes that you're NOT installing support for SQL Server Reporting Services with TFS2018.



- Uncheck **Configure Reporting for use with Team Foundation Server**
- 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.



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 Team Foundation Server. This wizard will create a default collection for you that will be suitable for most Team Foundation Server deployments.

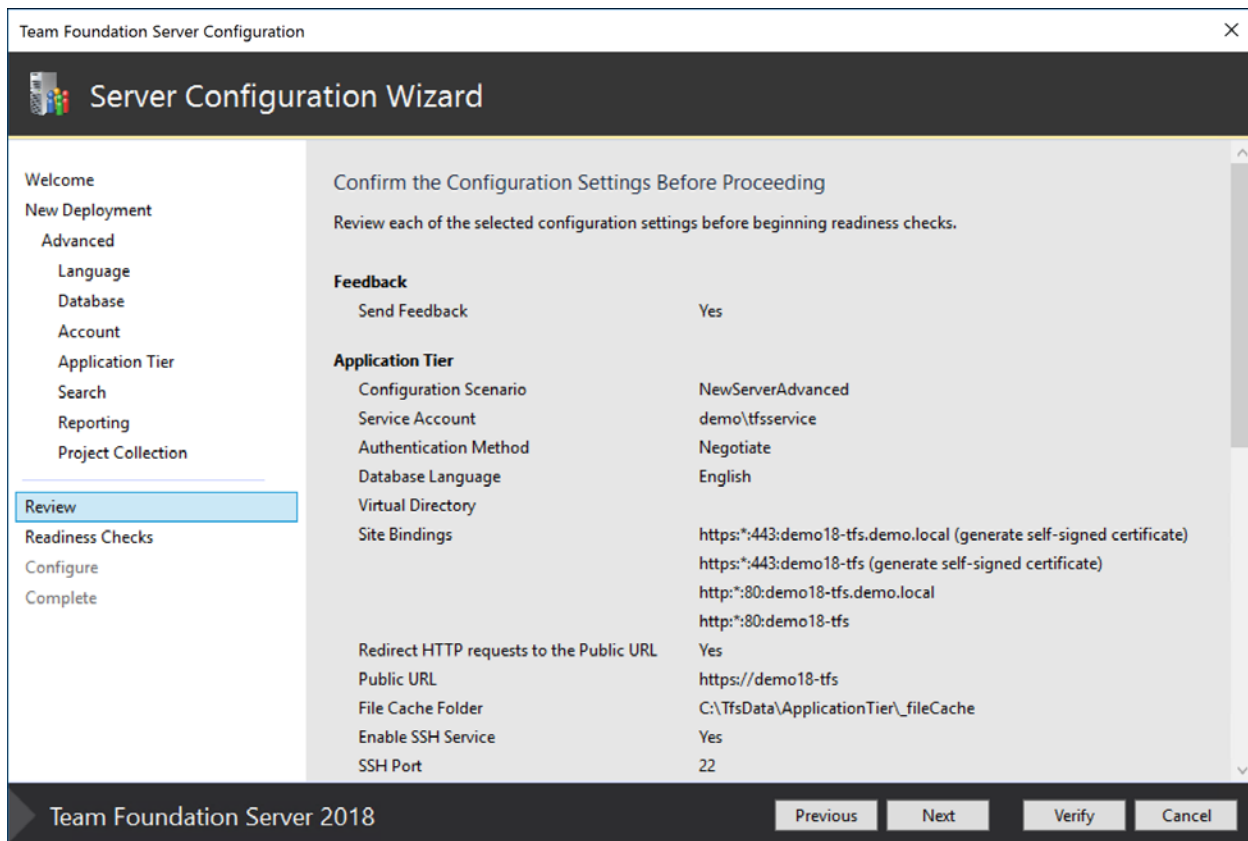
If you choose not to create a Team Project Collection at this time, you may do so later from the Administration Console.

Enter a name for the new collection:
DefaultCollection

Description:

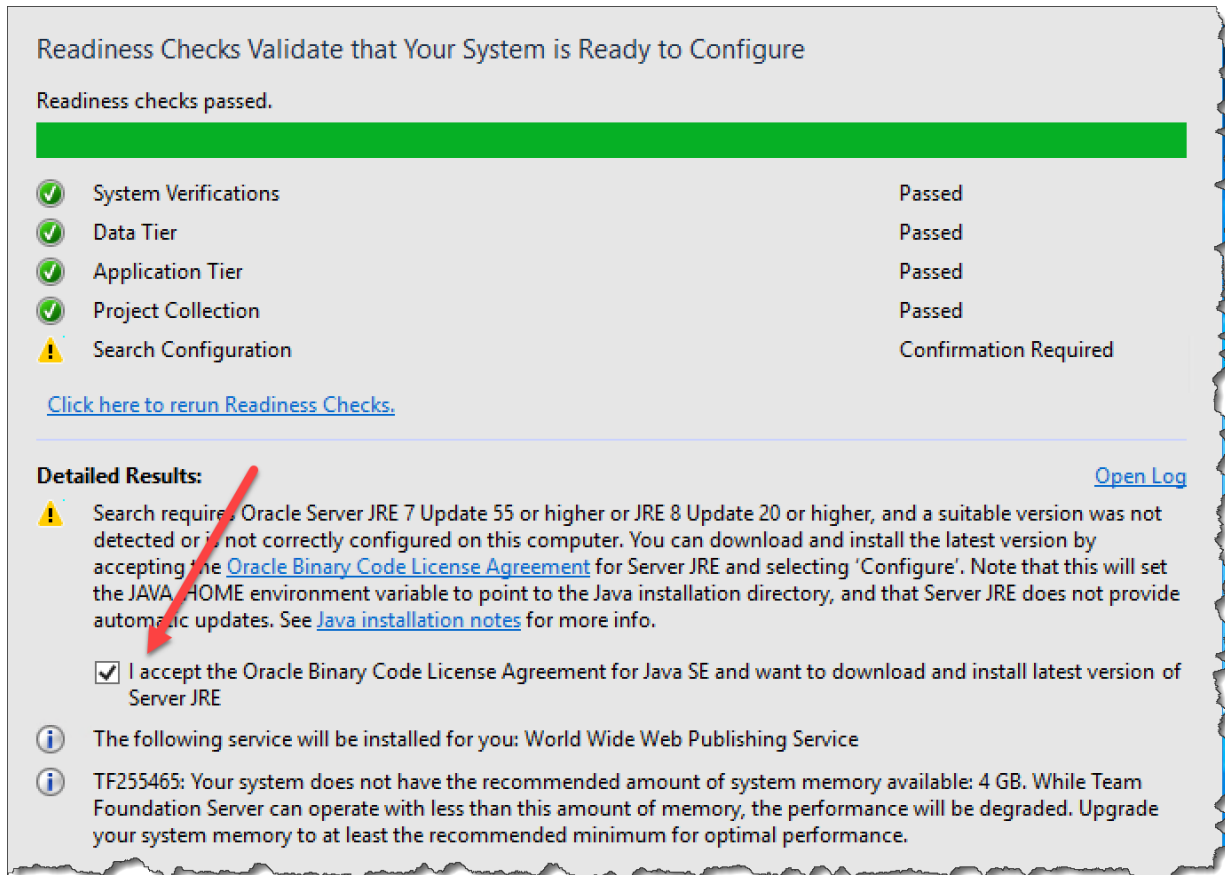
- Check **Create a new team project collection**
- Click **Next**

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



- 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 Oracle Server JRE to be installed and this warning is prompting you to accept the licensing agreement for the JRE.



Readiness Checks Validate that Your System is Ready to Configure

Readiness checks passed.

✓	System Verifications	Passed
✓	Data Tier	Passed
✓	Application Tier	Passed
✓	Project Collection	Passed
⚠	Search Configuration	Confirmation Required

[Click here to rerun Readiness Checks.](#)

Detailed Results: [Open Log](#)

⚠ Search requires Oracle Server JRE 7 Update 55 or higher or JRE 8 Update 20 or higher, and a suitable version was not detected or is not correctly configured on this computer. You can download and install the latest version by accepting the [Oracle Binary Code License Agreement](#) for Server JRE and selecting 'Configure'. Note that this will set the JAVA_HOME environment variable to point to the Java installation directory, and that Server JRE does not provide automatic updates. See [Java installation notes](#) for more info.

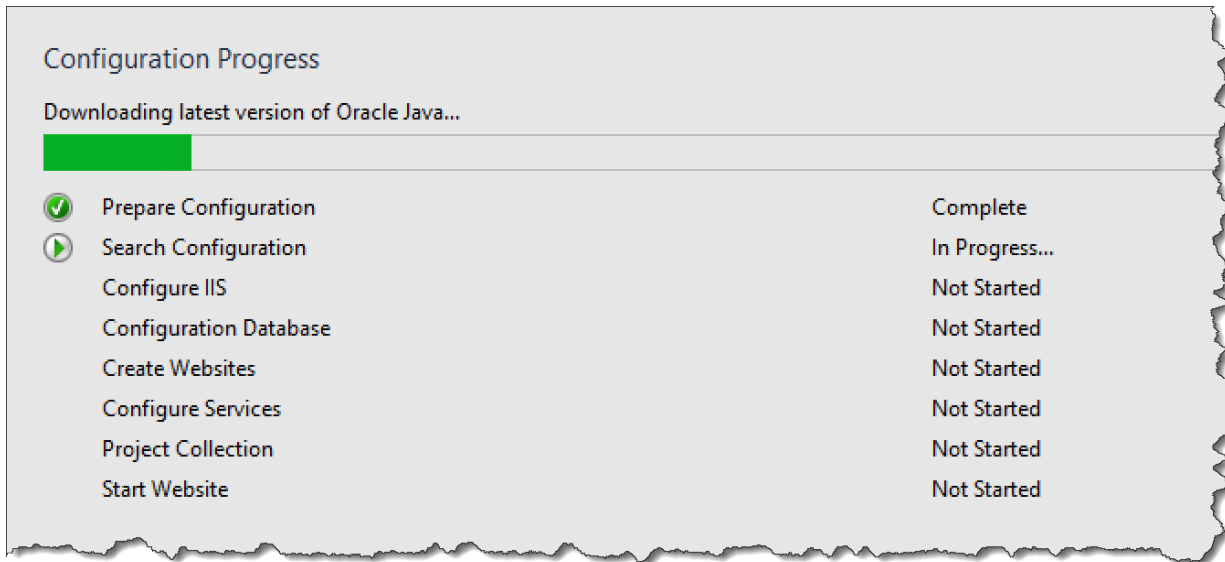
I accept the Oracle Binary Code License Agreement for Java SE and want to download and install latest version of Server JRE

ⓘ The following service will be installed for you: World Wide Web Publishing Service

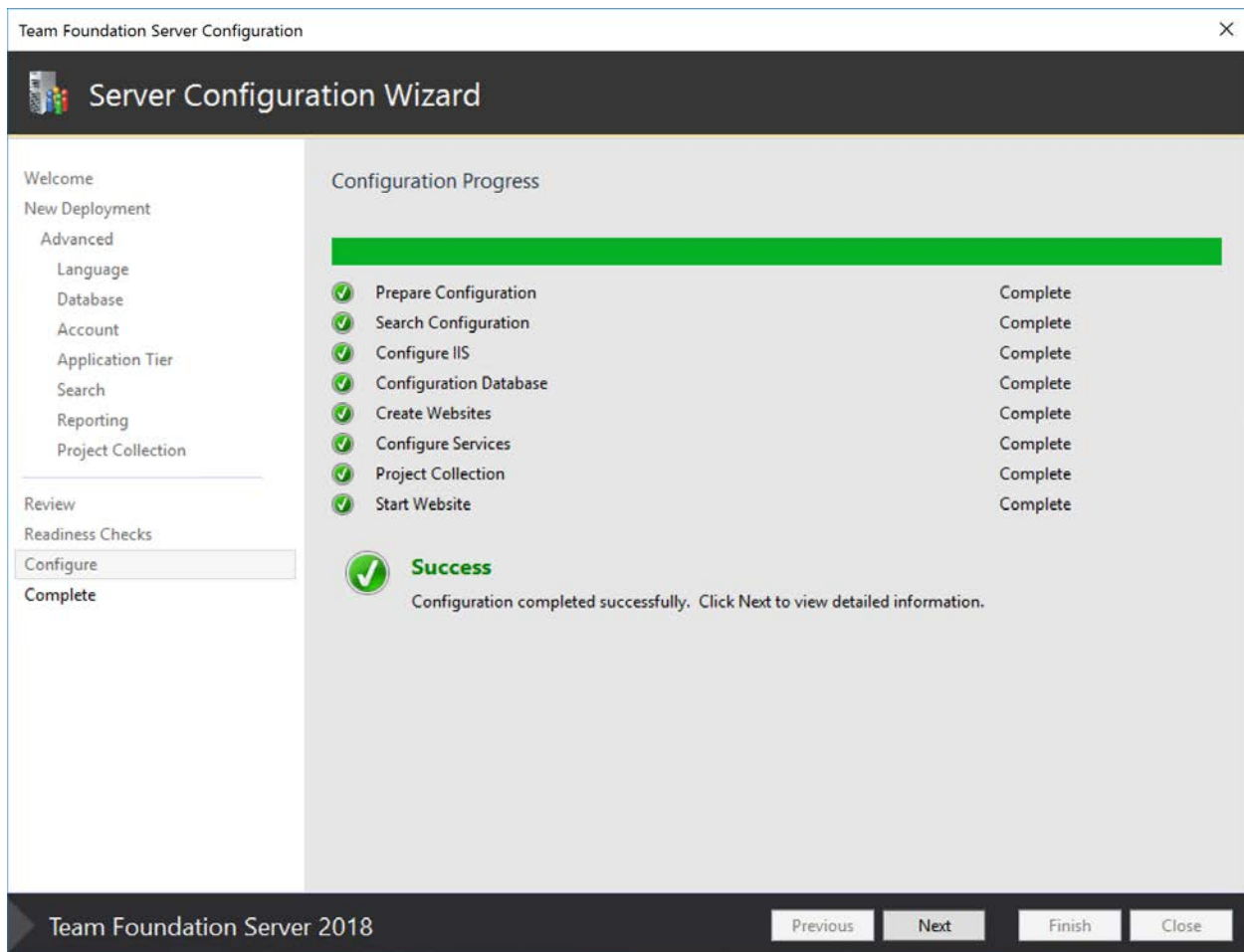
ⓘ TF255465: Your system does not have the recommended amount of system memory available: 4 GB. While Team Foundation Server can operate with less than this amount of memory, the performance will be degraded. Upgrade your system memory to at least the recommended minimum for optimal performance.

- Check **I accept the Oracle Binary Code License Agreement for Java SE...**
- Click the **Configure** button

The configuration process should now be running.

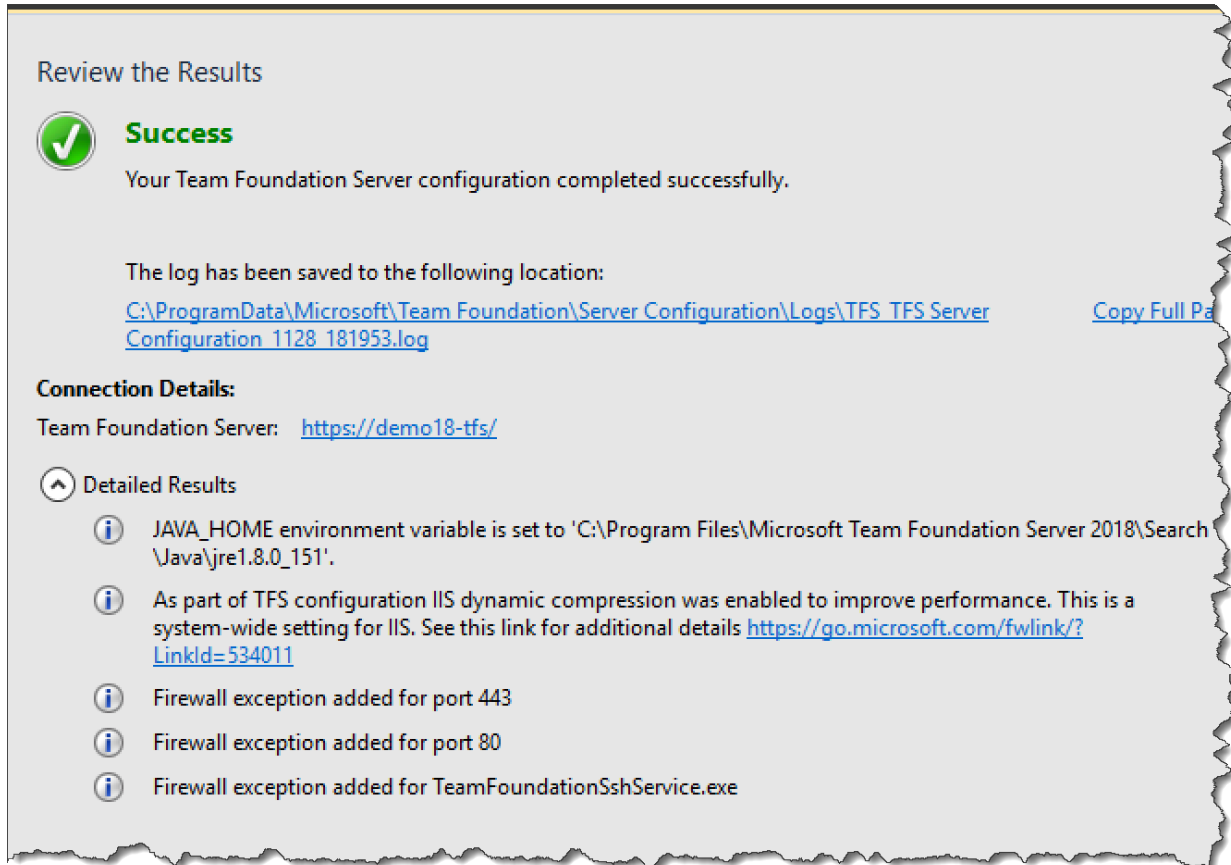


The configuration process should end with a message saying Success.



- Click **Next**

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



- Click **Close**

Team Foundation Server 2018 is now configured and running.

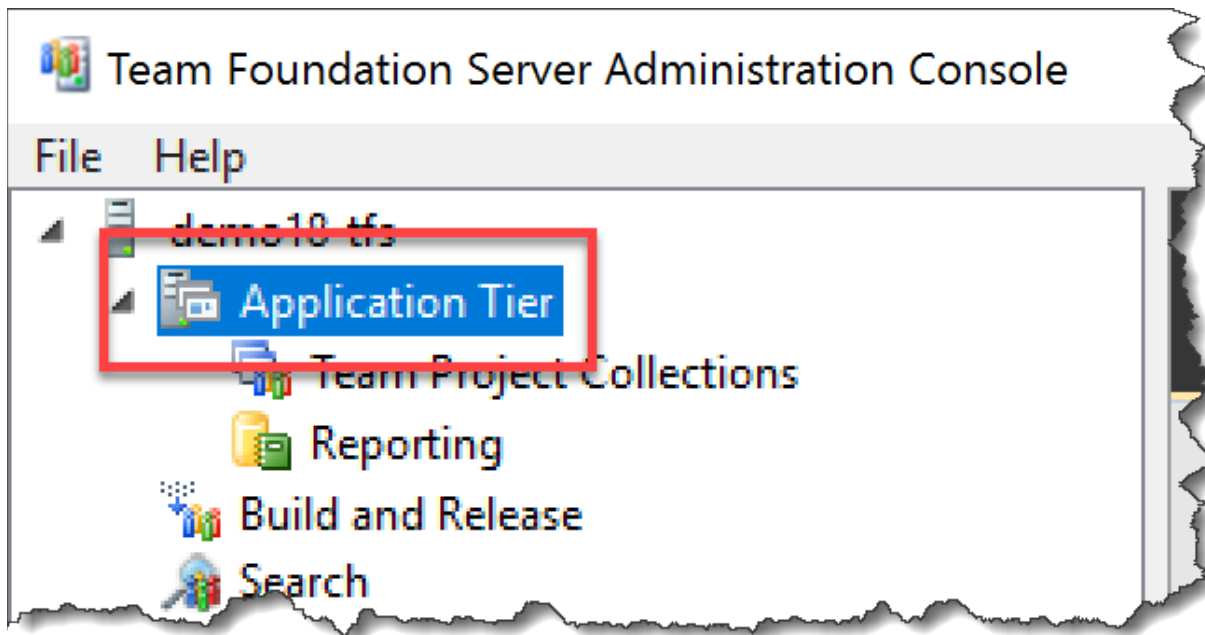
Chapter 4: Configure an SMTP Server for Team Foundation Server 2018

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

You probably already have an SMTP server available to you but, if you don't, you can enable the SMTP Server feature in Windows Server 2016.

- Log in to your TFS2018 machine as an administrator
- Go to the Start menu
- Search for **Team Foundation Administrator Console**

You should see the Team Foundation Administrator Console.



- In the left column, click on **Application Tier**

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



- Click **Alert Settings**

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

Email Alert Settings

Enable Email Alerts

SMTP Server: localhost Port: 25

This server requires a secured connection (SSL)

Send From Address: tfsservice@demo.local

Authentication

Use IFS Service Account

Use Specified

User Name:

Password:

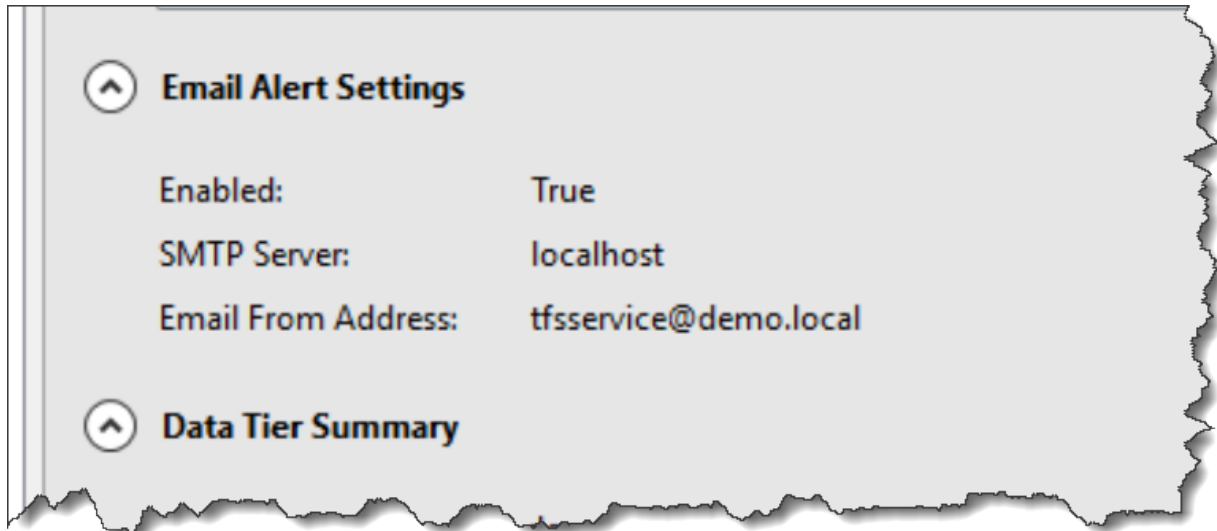
Not Required

Advanced

OK Cancel

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

You should now be back on the main window of the admin console. The email alert settings should now be populated with your SMTP server.



Your TFS is ready to send emails.

Chapter 5: Install TFS2018 / VSTS Build Agent on Windows Server

This chapter will walk you through the process of creating a build server on Windows. That's a slightly inaccurate sentence – this chapter will walk you through the process of installing a build & release agent on Windows. The build agent and the release agent are the same installer and process in TFS2018 and a single installation of this agent will allow you to do "build" activities and also "release" activities.

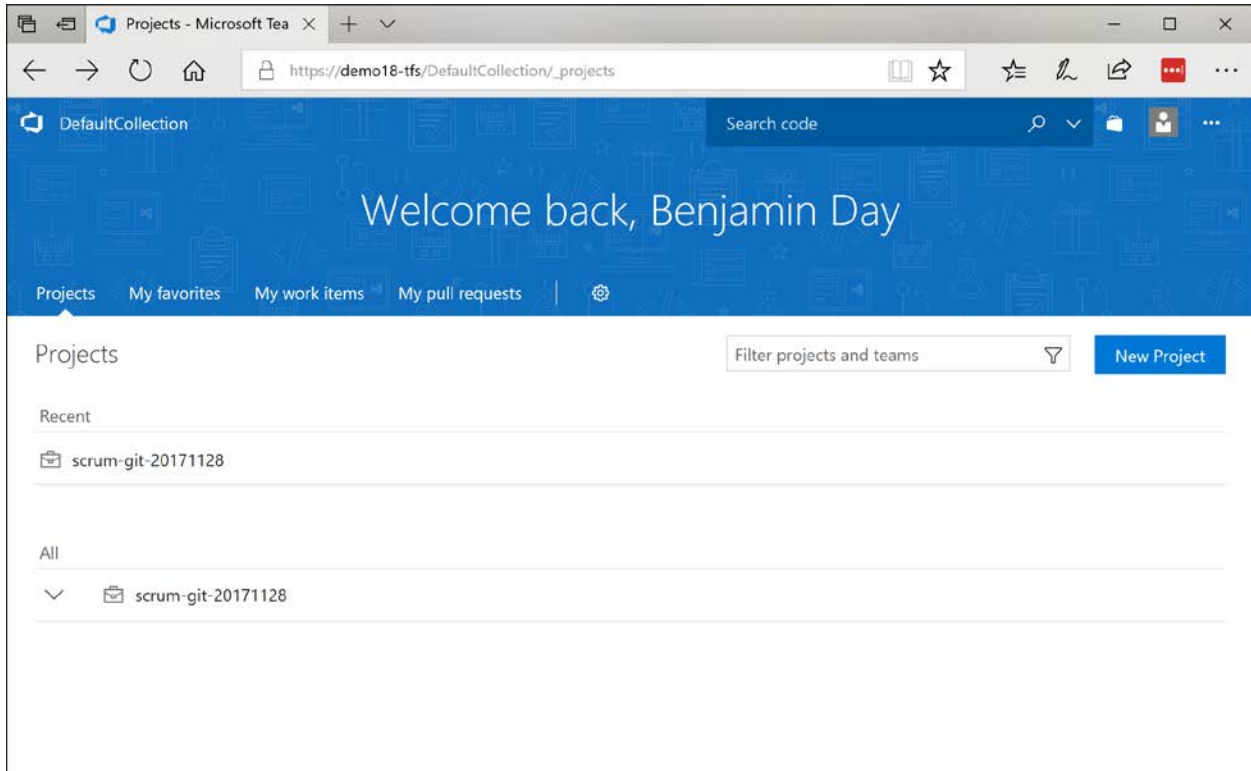
NOTE: If you want to do this install entirely via the command line or you want to install the agent on Windows Server Core, skip this chapter and go to the "Install TFS2018 / VSTS Build Agent on Windows Server Core" chapter.

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

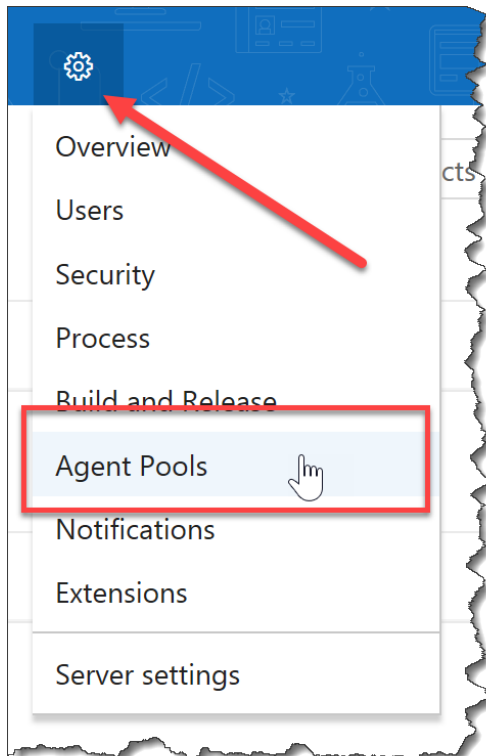
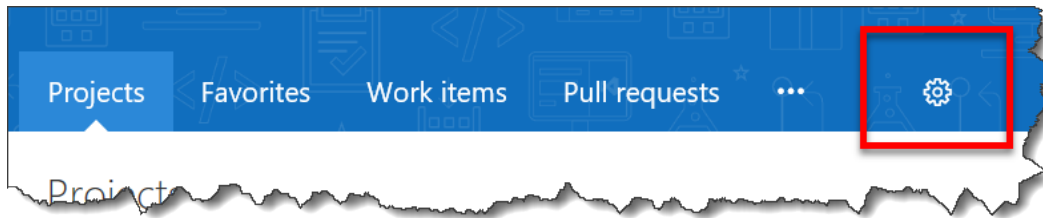
Download the Agent Installer

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

You should see a screen that looks like this.

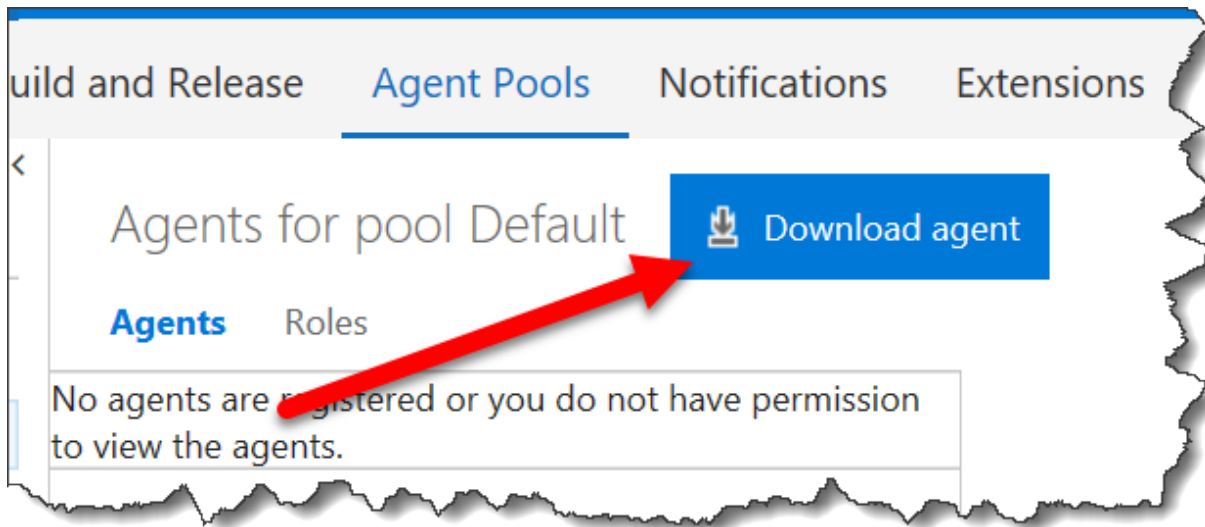


On the right side of the menu bar, there is a gear icon.



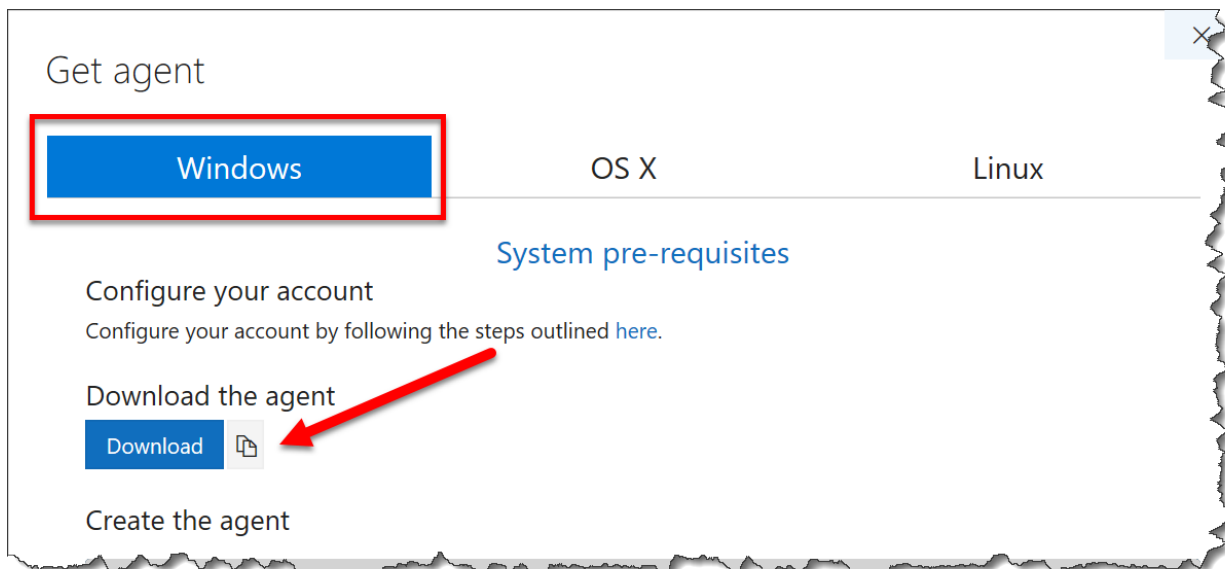
- Click the **gear icon** to bring up the **Settings menu**
- Choose **Agent Pools**

You should now see the admin screen for you team project collection and you should be looking at the Agent Pools tab. There should be a button that says "Download agent".



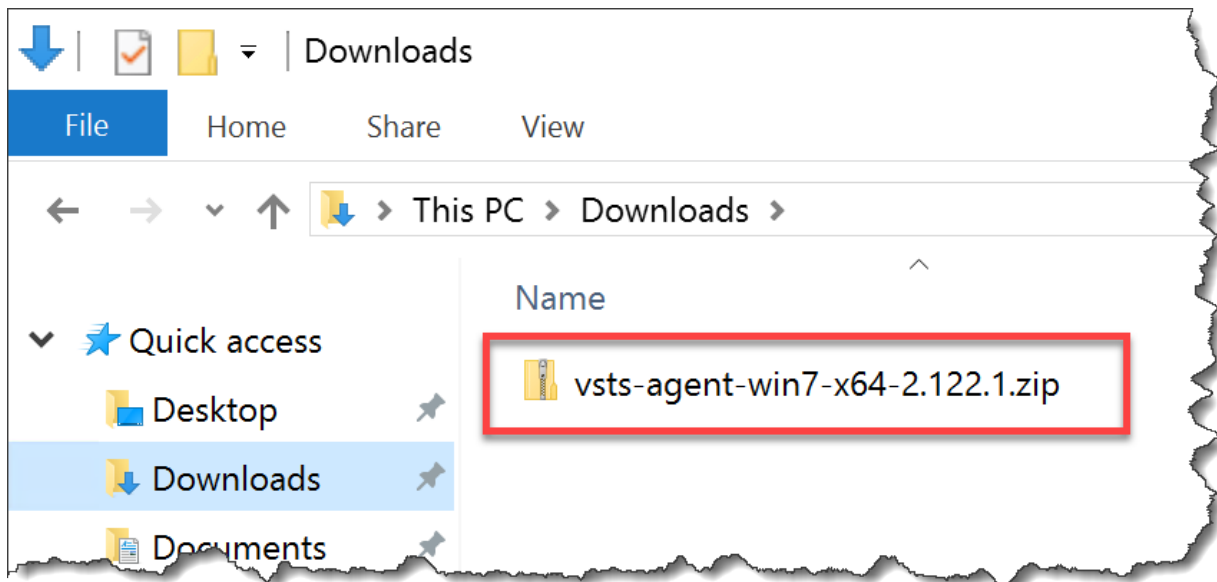
- Click the **Download agent** button

A dialog should pop up that shows you the download and installation info for Windows, Mac OS / OS X, and Linux.



- Make sure the **Windows tab** is selected
- Click the **Download** button (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.)



The screenshot shows a dialog box titled "Download the agent" with a "Download" button and a document icon. Below this, there are two sections highlighted with red boxes:

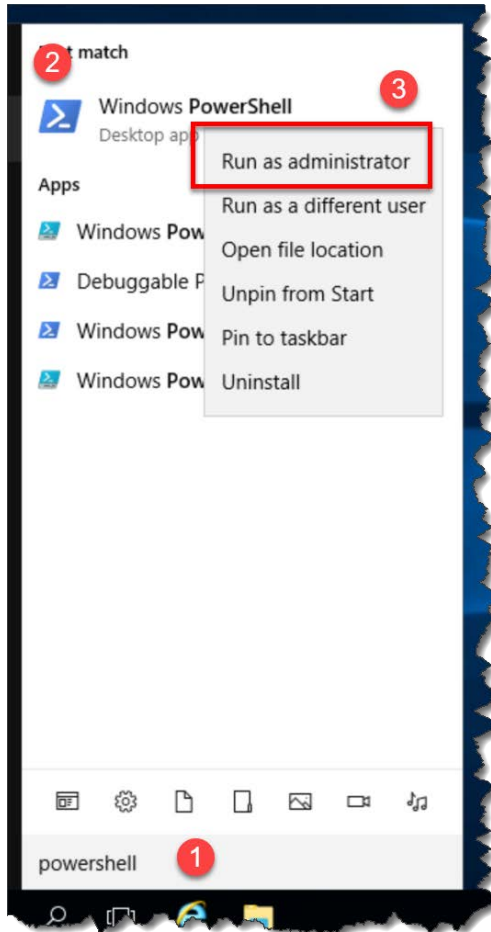
Create the agent

```
PS C:\> mkdir agent ; cd agent
PS C:\agent> Add-Type -AssemblyName System.IO.Compression.FileSystem ;
[System.IO.Compression.ZipFile]::ExtractToDirectory("$HOME\Downloads\vsts-agent-
win7-x64-2.111.1.zip", "$PWD")
```

Configure the agent [detailed instructions](#)

```
PS C:\agent> .\config.cmd
```

First up, it's time to run PowerShell.



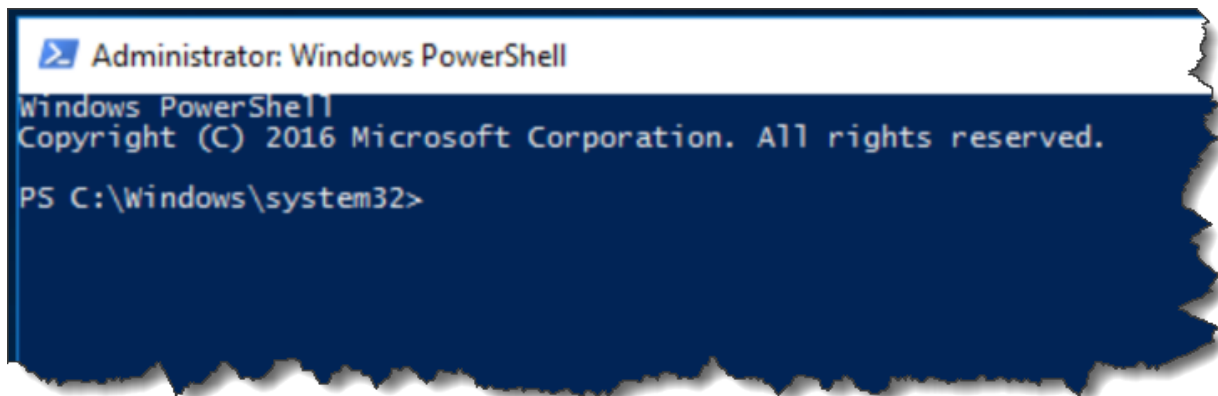
- Press the **Windows key** on your keyboard to bring up the search menu and type **PowerShell**
- From the search results, right-click **Windows PowerShell**
- From the context menu for PowerShell, choose **Run as administrator**

You'll see a User Account Control dialog.

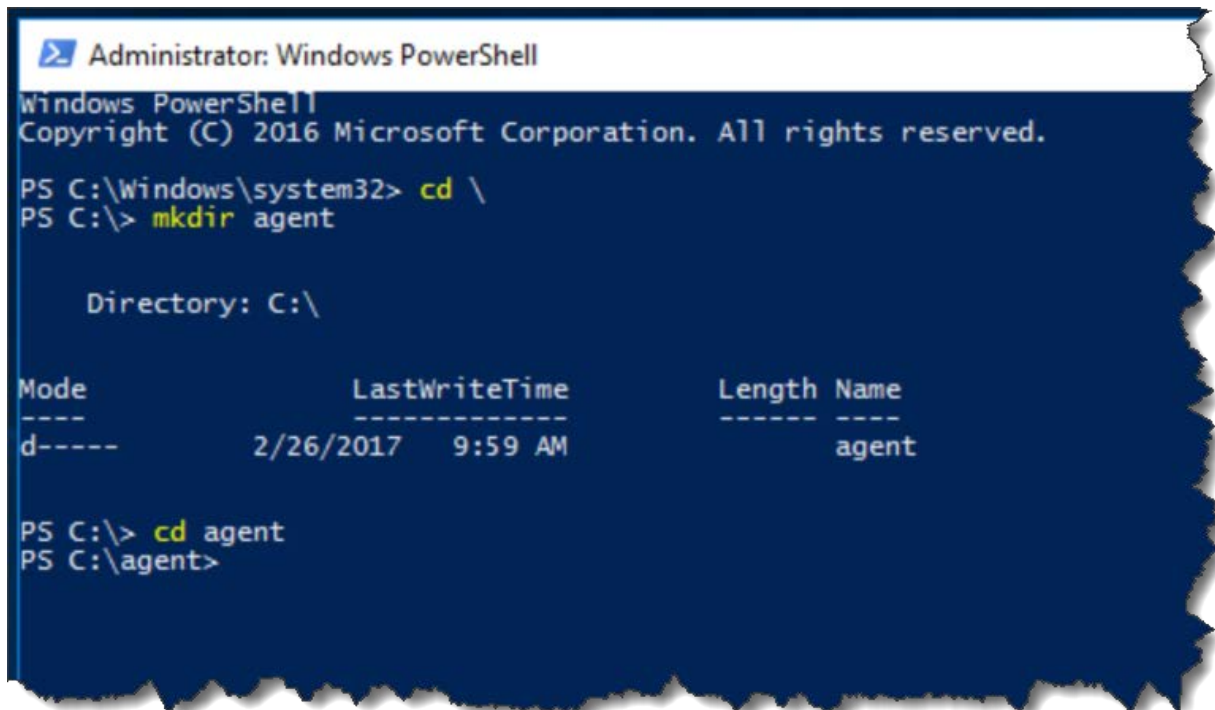


- Click **Yes**

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.

A screenshot of a Windows PowerShell window titled "Administrator: Windows PowerShell". The window shows the following text:

```
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Windows\system32> cd \
PS C:\> mkdir agent

Directory: C:\

Mode                LastWriteTime         Length Name
----                -
d-----           2/26/2017   9:59 AM         agent

PS C:\> cd agent
PS C:\agent>
```

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

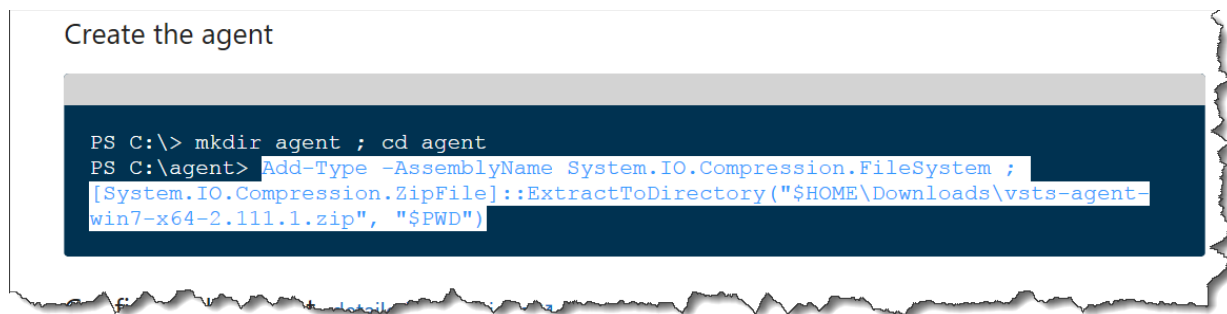
When you're done with these commands, your screen should look almost exactly the same as the image above. It's extremely important that the PowerShell screen is showing you

PS C:\agent>

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

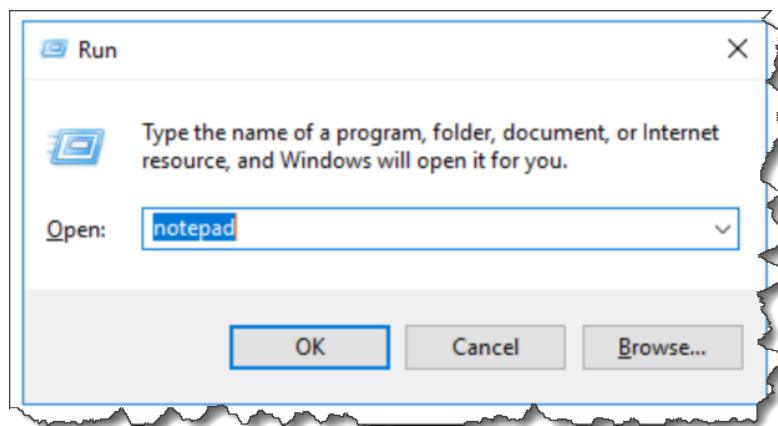
If your PowerShell window doesn't show you "PS C:\agent>", abandon all hope and reconsider all of the life choices that you've made to date. ☺

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>".



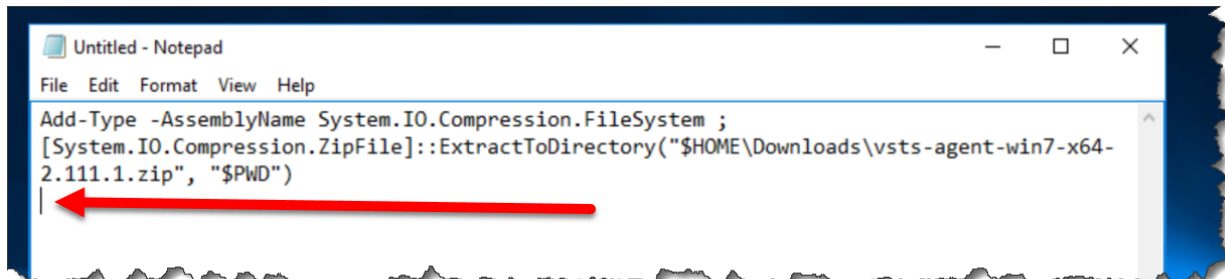
- In the web browser, copy the text of the command that starts with "Add-Type"

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.



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

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.

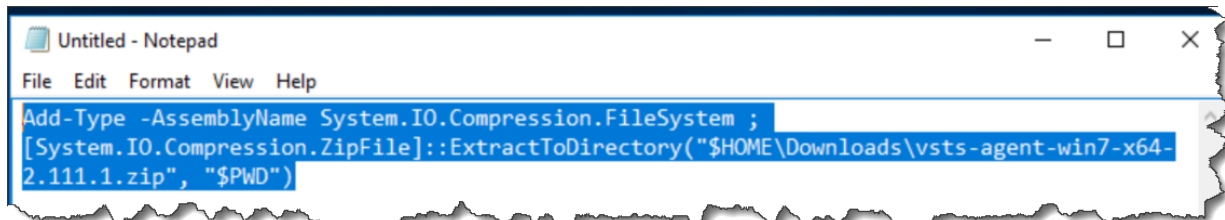


The screenshot shows a Notepad window titled "Untitled - Notepad" with a menu bar (File, Edit, Format, View, Help). The text content is a PowerShell command: `Add-Type -AssemblyName System.IO.Compression.FileSystem ; [System.IO.Compression.ZipFile]::ExtractToDirectory("$HOME\Downloads\vsts-agent-win7-x64-2.111.1.zip", "$PWD")`. A red arrow points to a blank line immediately following the command.

- 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.

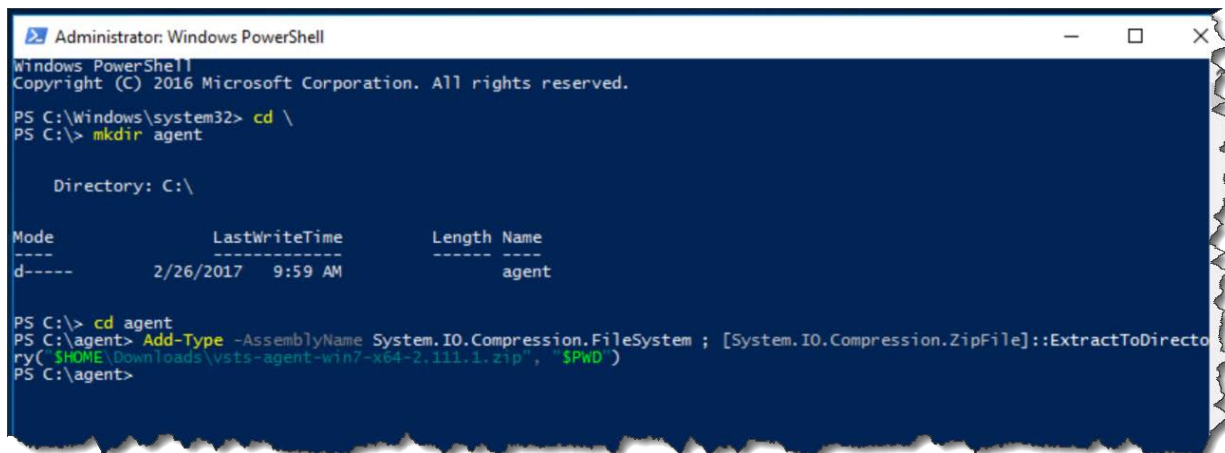
You should have a clean command that you can just paste into PowerShell and run.



The screenshot shows the same Notepad window as above, but the entire PowerShell command is highlighted in blue, indicating it has been selected for copying.

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

Now you'll run the command in PowerShell.



```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Windows\system32> cd \
PS C:\> mkdir agent

Directory: C:\

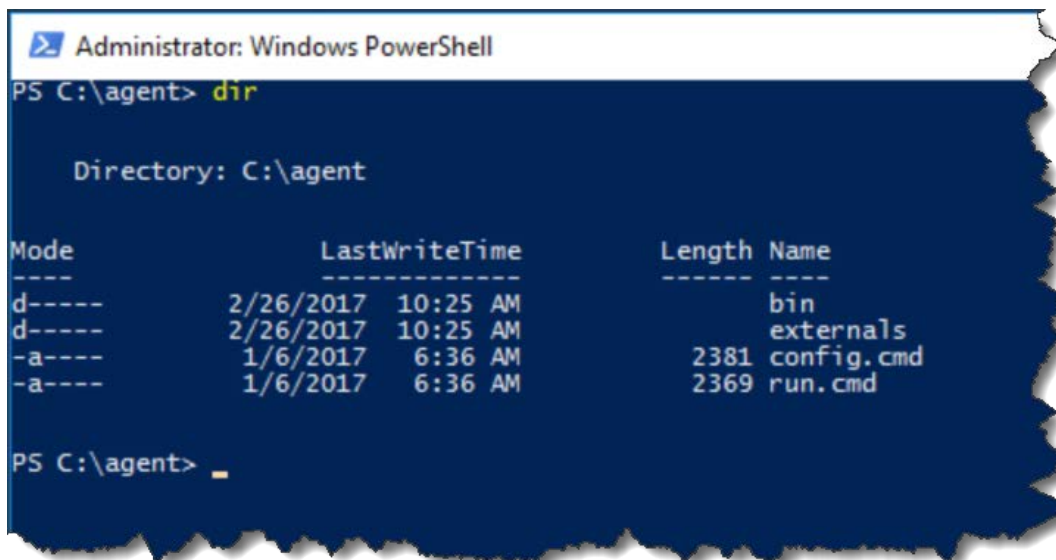
Mode                LastWriteTime         Length Name
----                -
d-----           2/26/2017   9:59 AM         agent

PS C:\> cd agent
PS C:\agent> Add-Type -AssemblyName System.IO.Compression.FileSystem ; [System.IO.Compression.ZipFile]::ExtractToDirectory("$HOME\Downloads\vsts-agent-win7-x64-2.111.1.zip", '$PWD')
PS C:\agent>
```

- 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-----           2/26/2017  10:25 AM         bin
d-----           2/26/2017  10:25 AM        externals
-a----             1/6/2017    6:36 AM         2381 config.cmd
-a----             1/6/2017    6:36 AM         2369 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 TFS 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:

- **TFS server URL:** This is the same URL that you used to access the TFS web interface. By default this will be something like <https://servername> or <http://servername:8080/tfs>
- **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 "tfsbuild". The fully qualified username for this user is "DEMO\tfsbuild".

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.

```

Administrator: Windows PowerShell
PS C:\agent> Add-Type -AssemblyName System.IO.Compression.FileSystem ;
PS C:\agent> [System.IO.Compression.ZipFile]::ExtractToDirectory("$HOME\Downloads\vsts-agent-win7-x64-2.122.1.zip", "C:\agent")
PS C:\agent> dir

Directory: C:\agent

Mode                LastWriteTime         Length Name
----                -
d-----           11/28/2017   2:48 PM         bin
d-----           11/28/2017   2:48 PM     externals
-a----           10/18/2017   4:03 PM      2384 config.cmd
-a----           10/18/2017   4:03 PM      2344 run.cmd

PS C:\agent> .\config.cmd

>> Connect:

Enter server URL > https://demo18-tfs
Enter authentication type (press enter for Integrated) >
Connecting to server ...

>> Register Agent:

Enter agent pool (press enter for default) >
Enter agent name (press enter for DEMO18-TFS) >
Scanning for tool capabilities.
Connecting to the server.
Successfully added the agent
Testing agent connection.
Enter work folder (press enter for _work) >
2017-11-28 19:50:48Z: settings Saved.
Enter run agent as service? (Y/N) (press enter for N) > Y
Enter User account to use for the service (press enter for NT AUTHORITY\NETWORK SERVICE) > demo\tfsbuild
Enter Password for the account demo\tfsbuild > *****
granting file permissions to 'demo\tfsbuild'.
Service vstsagent.demo18-tfs.DEMO18-TFS successfully installed
Service vstsagent.demo18-tfs.DEMO18-TFS successfully set recovery option
Service vstsagent.demo18-tfs.DEMO18-TFS successfully configured
Service vstsagent.demo18-tfs.DEMO18-TFS started successfully
PS C:\agent> _

```

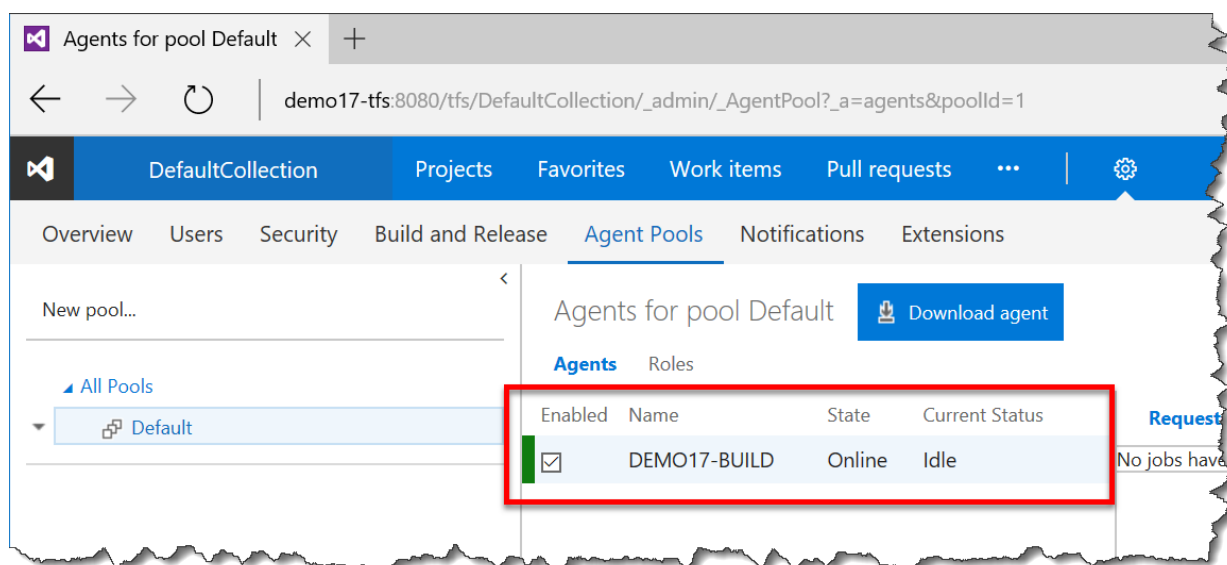
- "Enter server URL":
Type the **URL for your TFS instance** and click **Enter**
- "Enter authentication type (press enter for Integrated)":
Press **Enter**
- "Enter agent pool (press enter for default)":
Press **Enter**
- "Enter agent name (press enter for [local server name])":
Press **Enter**
- "Enter run agent as service? (Y/N)":
Type '**Y**' and press **Enter**
- "Enter User account to use for the service":
Type the **fully qualified name of the service account** (example: demo\tfsbuild) 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.demo17-tfs.DEMO17-BUILD started successfully".

NOTE: Did you get an error that says "An error occurred while sending the request"? Are you using a self-signed SSL certificate for TFS2018? If you followed the TFS install instructions and enabled SSL, you probably are using a self-signed SSL certificate. Check out this blog post for how to fix this. <https://www.benday.com/2017/12/21/tfs-build-agent-fails-to-configure-with-tfs2018-self-signed-ssl-certificate/>

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



You've successfully configured a build agent.

Chapter 6: Create a TFS Build / Release Server on Ubuntu 16.04

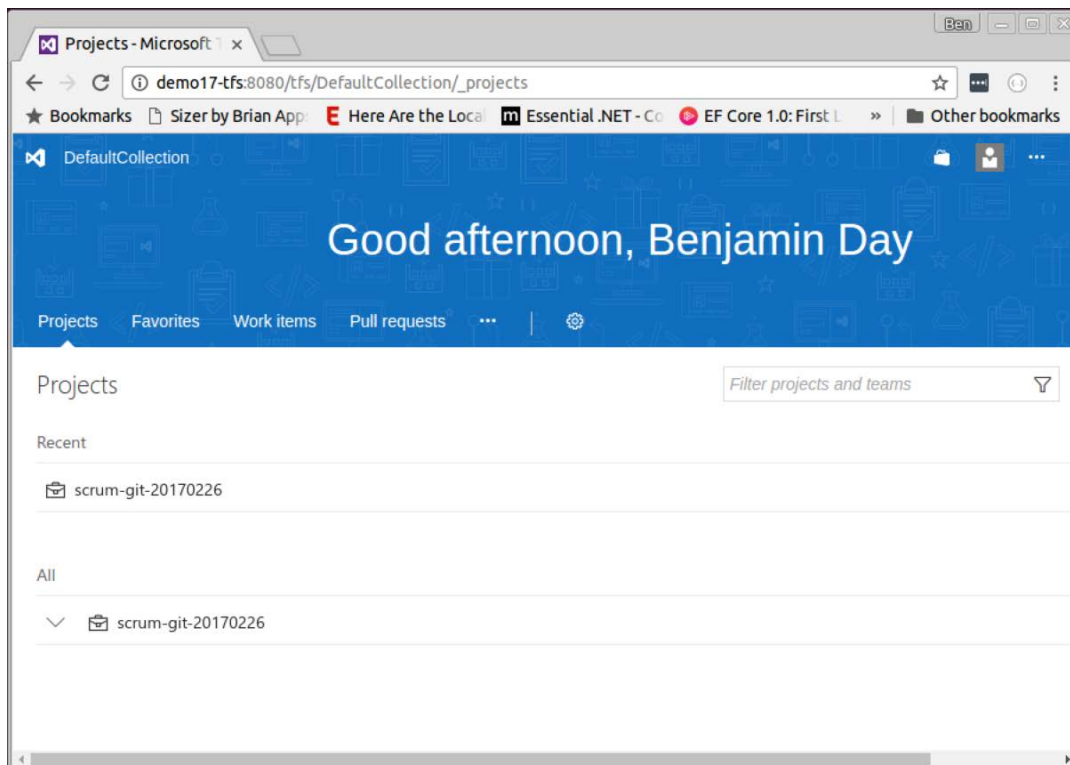
This chapter will walk you through the process of creating a build server agent on Ubuntu 16.04 Linux. The build agent will not only all you do compilation and test execution on Linux but it'll also allow you to do Release Management activities from Linux as well. (Yah...TFS is cross-platform.)

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

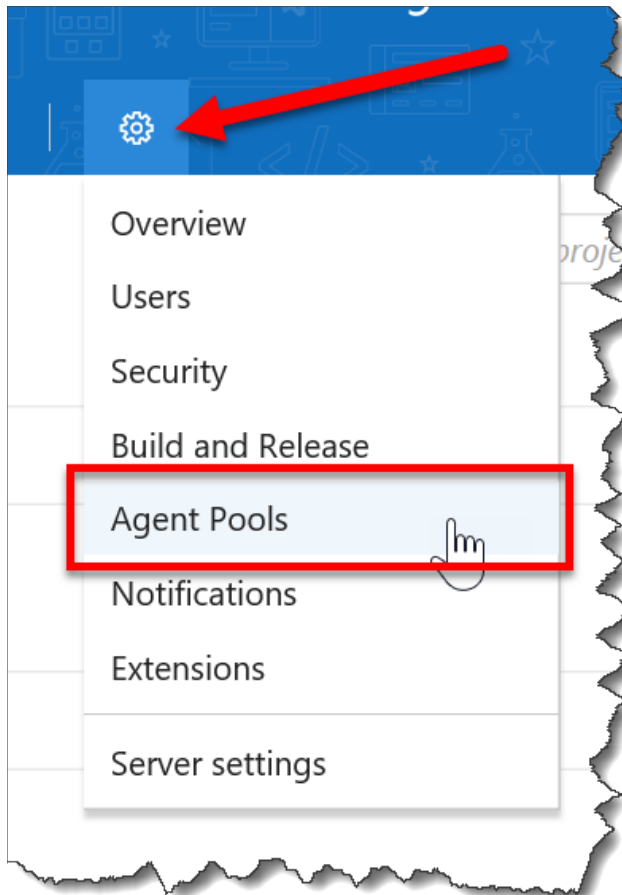
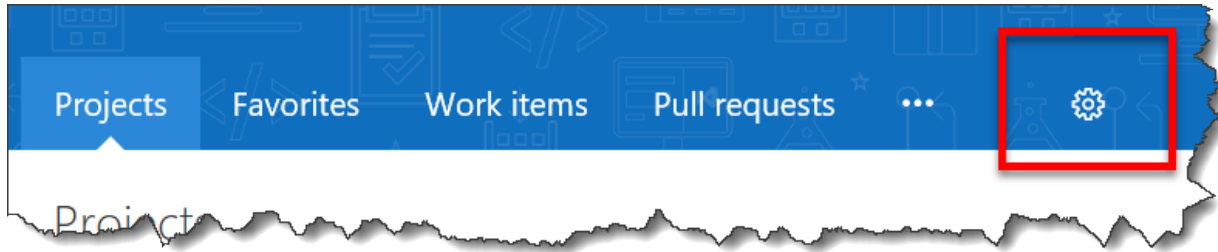
Download the Agent Installer

- Log in to the build server machine
- Open a web browser
- Navigate to your TFS web interface. By default this is <https://servername>
<http://servername:8080/tfs>.

You should see a screen that looks like this.

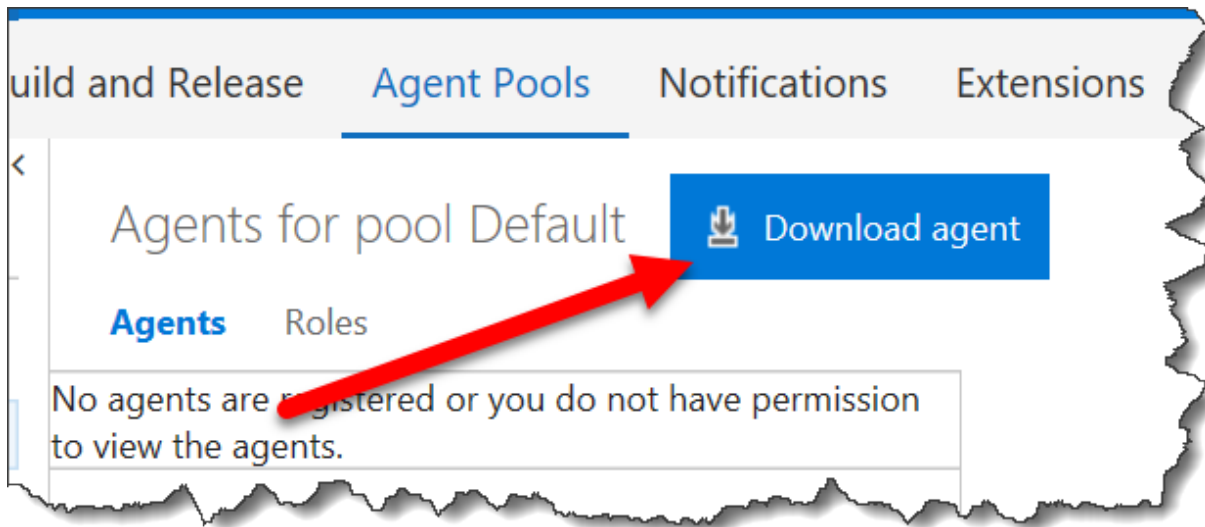


On the right side of the menu bar, there is a gear icon.



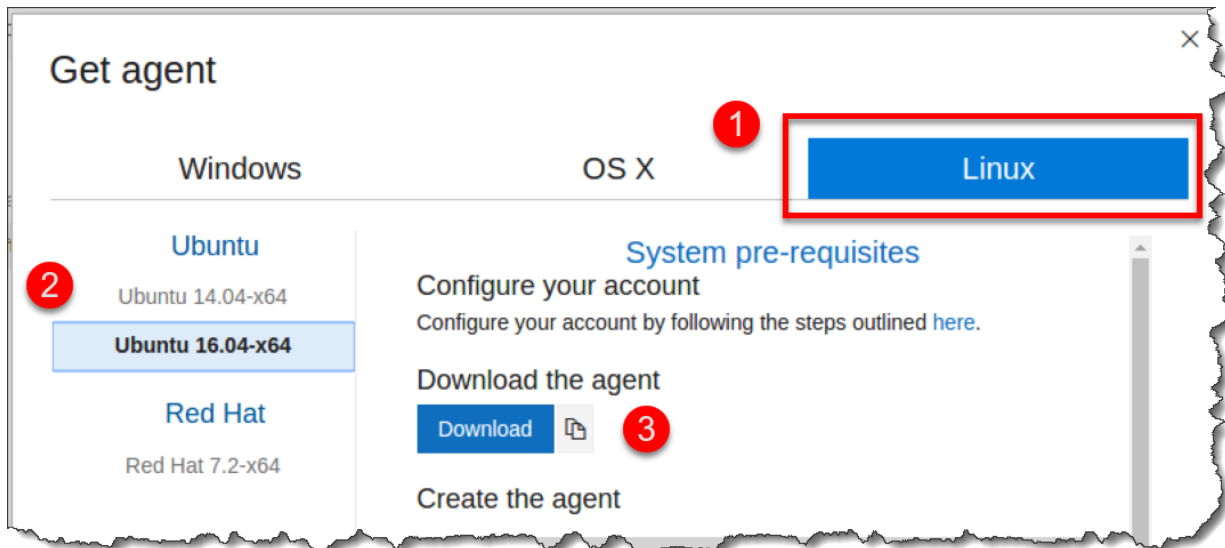
- Click the **gear icon** to bring up the **Settings menu**
- Choose **Agent Pools**

You should now see the admin screen for you team project collection and you should be looking at the Agent Pools tab. There should be a button that says "Download agent".



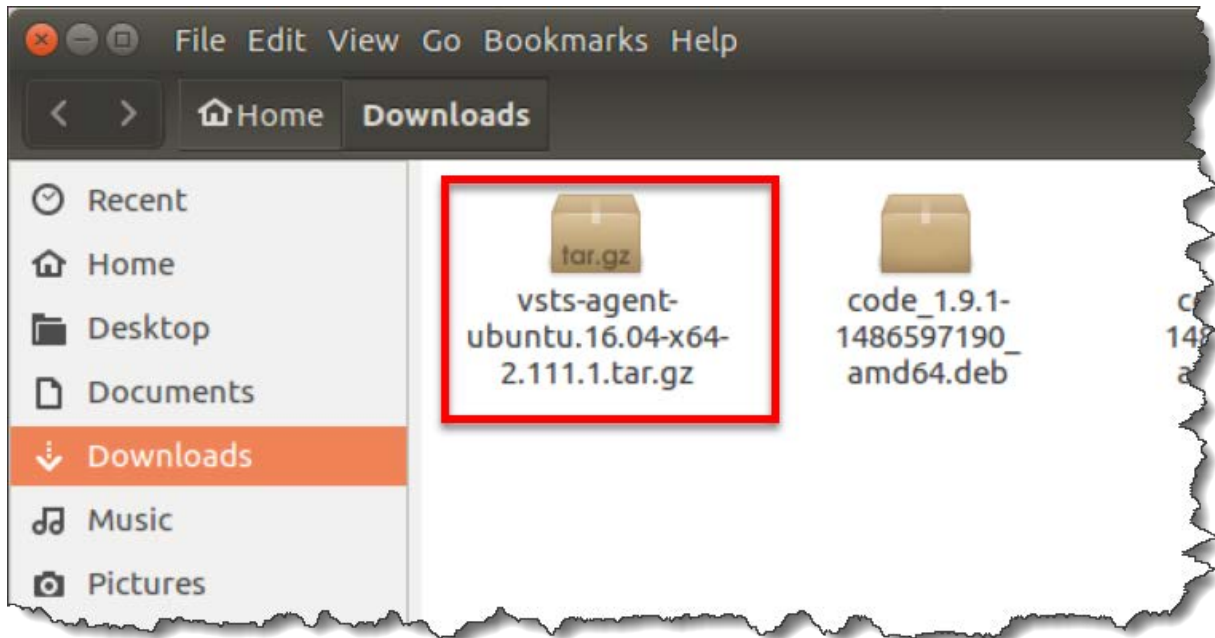
- Click the **Download agent** button

A dialog should pop up that shows you the download and installation info for Windows, Mac OS / OS X, and Linux.



- Make sure the **Linux tab** is selected
- In the left column, choose **Ubuntu 16.04-x64**
- Click the **Download** button (NOTE: this guide assumes you're doing the default browser behavior and downloading the agent tar.gz to the downloads directory for your user profile.)

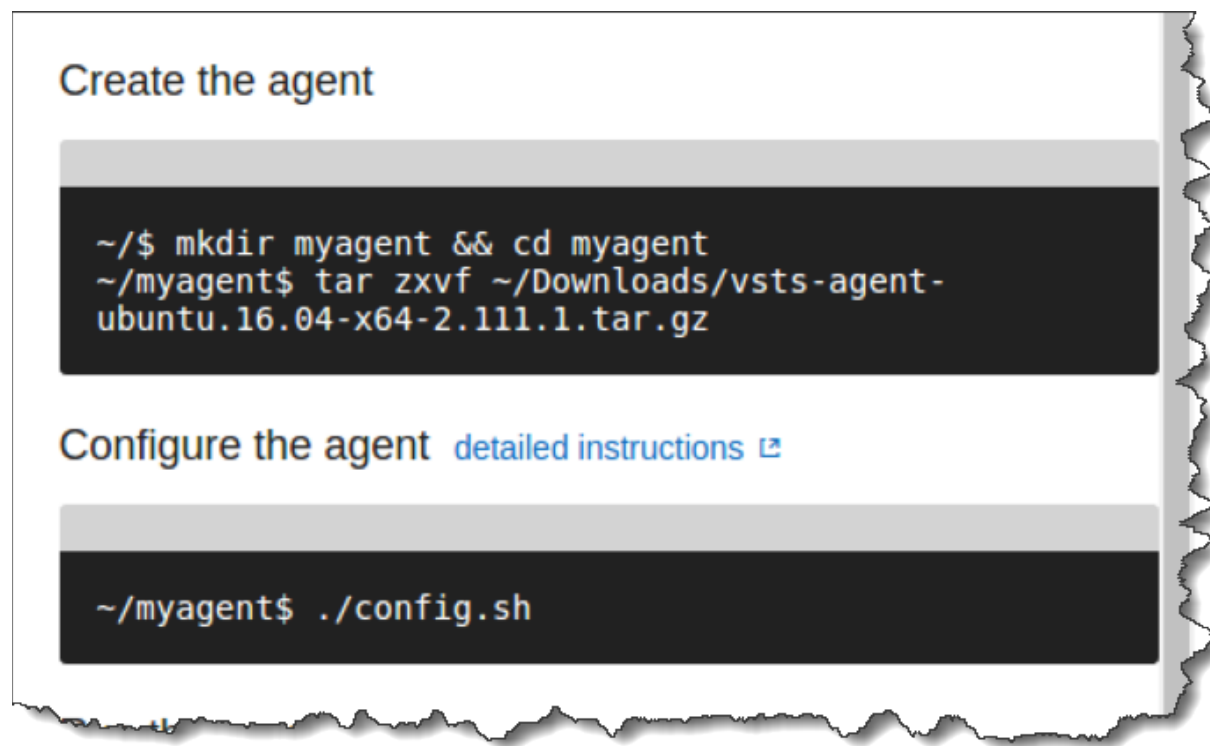
To verify that you saved this file to the expected location for this guide, open the Files explorer and navigate to your Downloads directory. You should see a tar.gz file that has a name that starts with "vsts-agent-ubuntu-16.04-x64-". The actual filename might not be the same as the image below because the agent version may have been updated.



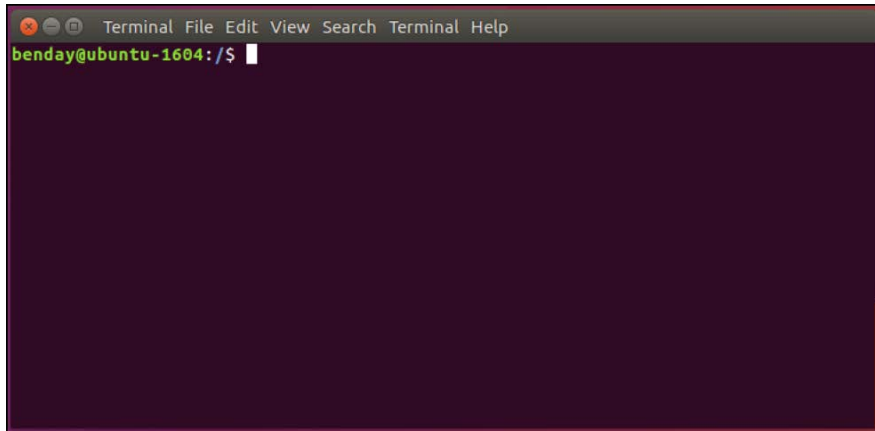
Extract the Agent

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 tar.gz file. 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". I found that these commands were kind of confusing and took some adjusting and "sudo"-ing to make them work. They're basically sketches of what you'd actually like to do.

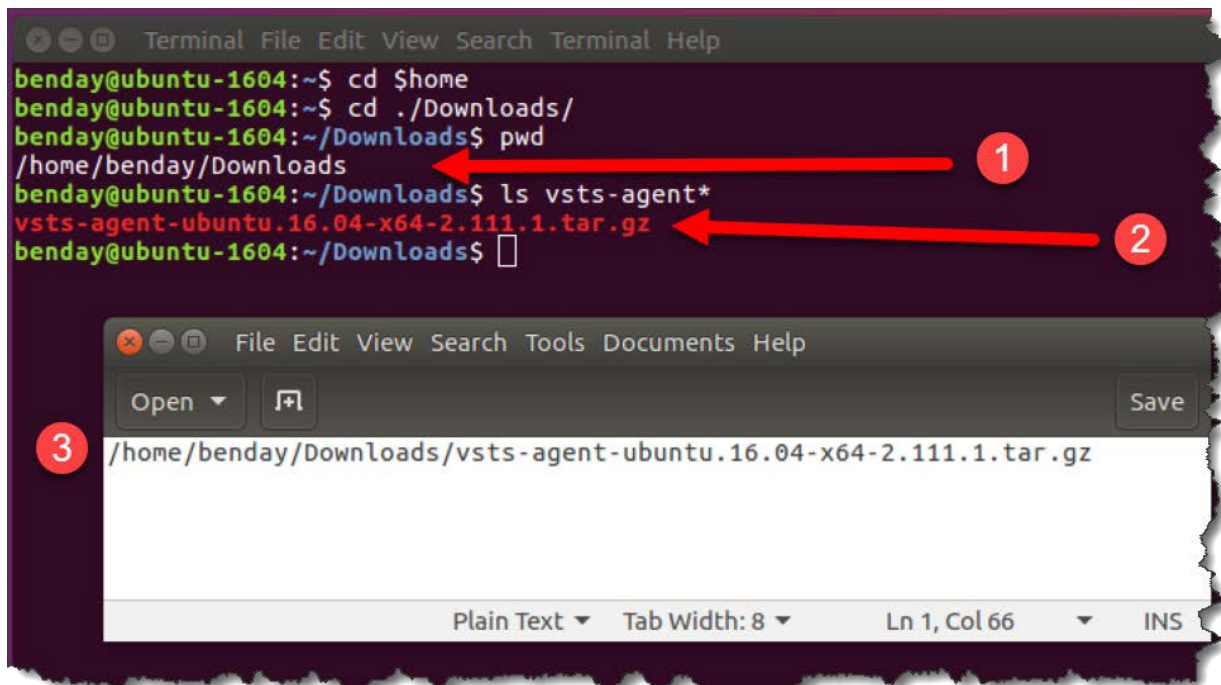


We're going to do the majority of the configuration of this build agent using a Terminal window.



- Open a **Terminal** window

The first thing that I want you to do is to get the full path to the agent tar.gz file. The way that I'm doing this is probably a little convoluted if you're a Linux ninja but I want this guide to be usable for those of us who are not so wise in the way of the Linux.



The screenshot shows a terminal window and a text editor window. The terminal window displays the following commands and output:

```
benday@ubuntu-1604:~$ cd $home
benday@ubuntu-1604:~$ cd ./Downloads/
benday@ubuntu-1604:~/Downloads$ pwd
/home/benday/Downloads
benday@ubuntu-1604:~/Downloads$ ls vsts-agent*
vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz
benday@ubuntu-1604:~/Downloads$
```

Red arrows and numbers indicate the steps: 1 points to the output of the `pwd` command, 2 points to the filename `vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz`, and 3 points to the full path in the text editor.

The text editor window shows the following path:

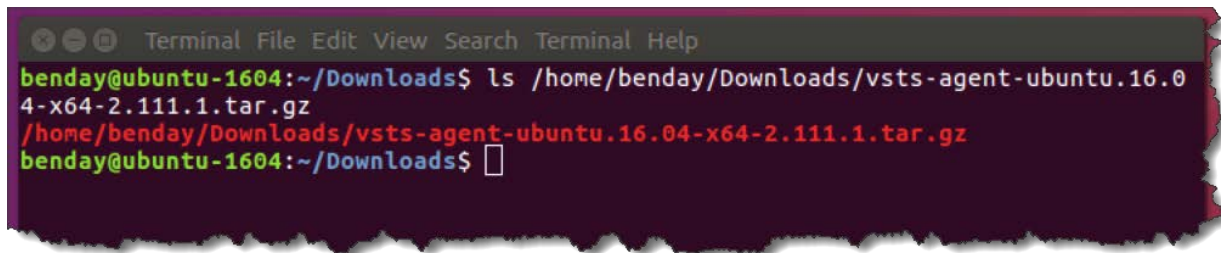
```
/home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz
```

- Type "cd \$home" and press Enter
- Type "cd ./Downloads/" and press Enter
- Type "pwd" and press Enter
- Copy the path value that was output by the `pwd` command and paste it into a text editor
- Type "ls vsts-agent*" and press Enter
- Locate the name of the agent file that you downloaded. Copy the full filename to the clipboard
- In the text editor, add a "/" to the end of the copied path. Paste in the copied file name.

At this point, you should have a path in the text editor that looks similar to the path shown above that's marked as #3.

- Copy the file path from the text editor to the clipboard

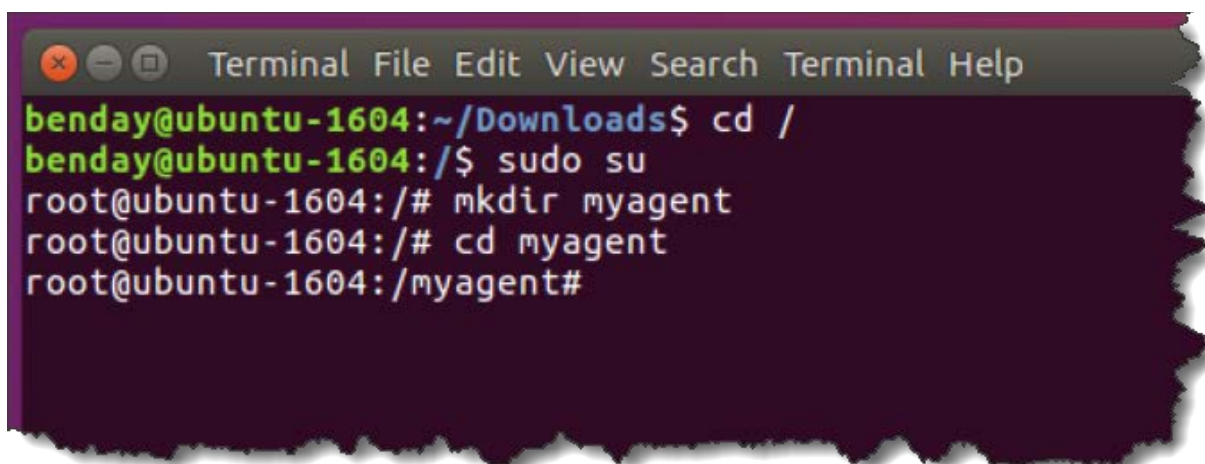
Now you'll verify that you've combined the path correctly and that it's valid. You'll do this by running an "ls" on that path in the Terminal window.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:~/Downloads\$". The command "ls /home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz" is entered. The output is "/home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz". The prompt returns to "benday@ubuntu-1604:~/Downloads\$".

```
benday@ubuntu-1604:~/Downloads$ ls /home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz
/home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz
benday@ubuntu-1604:~/Downloads$
```

- Paste the copied path into the terminal window and press Enter
- Verify that you got a result that looks similar to the one above and does not report any "No such file or directory" errors

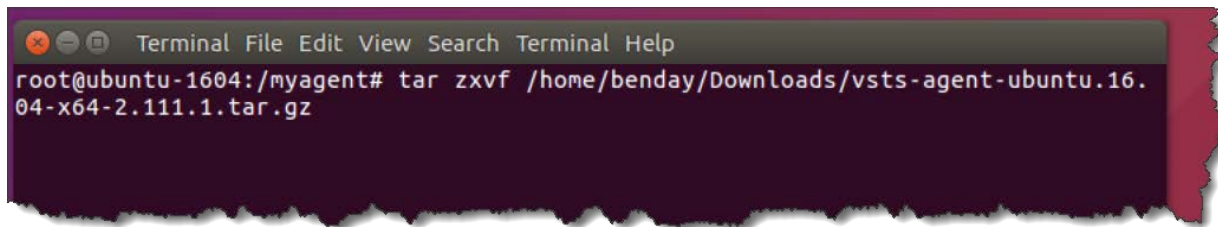
Next, you'll create the directory where you'll install the build agent bits.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:~/Downloads\$". The command "cd /" is entered. The prompt changes to "benday@ubuntu-1604:/\$". The command "sudo su" is entered. The prompt changes to "root@ubuntu-1604:/#". The command "mkdir myagent" is entered. The prompt changes to "root@ubuntu-1604:/#". The command "cd myagent" is entered. The prompt changes to "root@ubuntu-1604:/myagent#".

```
benday@ubuntu-1604:~/Downloads$ cd /
benday@ubuntu-1604:/$ sudo su
root@ubuntu-1604:/# mkdir myagent
root@ubuntu-1604:/# cd myagent
root@ubuntu-1604:/myagent#
```

- Type "cd /" and press Enter
- Type "sudo su" and press Enter
- When prompted, enter your password
- Type "mkdir myagent" and press Enter
- Type "cd myagent" and press Enter

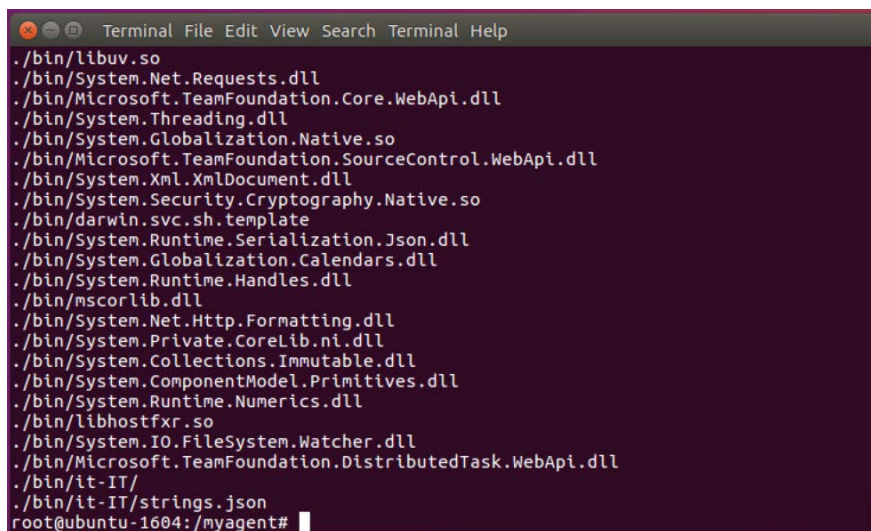
The commands you just ran should complete without errors. Now you're ready to extract the agent tar.gz to this directory. This is where that path in the text editor will come in handy.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The command entered is "tar zxvf /home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz".

```
Terminal File Edit View Search Terminal Help
root@ubuntu-1604:/myagent# tar zxvf /home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz
```

- Type "tar zxvf " followed by the copied path to the tar.gz file. In this screenshot, the value is "tar zxvf /home/benday/Downloads/vsts-agent-ubuntu.16.04-x64-2.111.1.tar.gz"
- Press Enter to run the extract command

You should have just seen a bunch of text fly by in the Terminal window. The files should have extracted without errors.

A terminal window showing the output of the tar extraction command. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The output lists various files and directories extracted from the tar archive.

```
Terminal File Edit View Search Terminal Help
./bin/libuv.so
./bin/System.Net.Requests.dll
./bin/Microsoft.TeamFoundation.Core.WebApi.dll
./bin/System.Threading.dll
./bin/System.Globalization.Native.so
./bin/Microsoft.TeamFoundation.SourceControl.WebApi.dll
./bin/System.Xml.XmlDocument.dll
./bin/System.Security.Cryptography.Native.so
./bin/darwin.svc.sh.template
./bin/System.Runtime.Serialization.Json.dll
./bin/System.Globalization.Calendars.dll
./bin/System.Runtime.Handles.dll
./bin/mscorlib.dll
./bin/System.Net.Http.Formatting.dll
./bin/System.Private.CoreLib.ni.dll
./bin/System.Collections.Immutable.dll
./bin/System.ComponentModel.Primitives.dll
./bin/System.Runtime.Numerics.dll
./bin/libhostfxr.so
./bin/System.IO.FileSystem.Watcher.dll
./bin/Microsoft.TeamFoundation.DistributedTask.WebApi.dll
./bin/it-IT/
./bin/it-IT/strings.json
root@ubuntu-1604:/myagent#
```

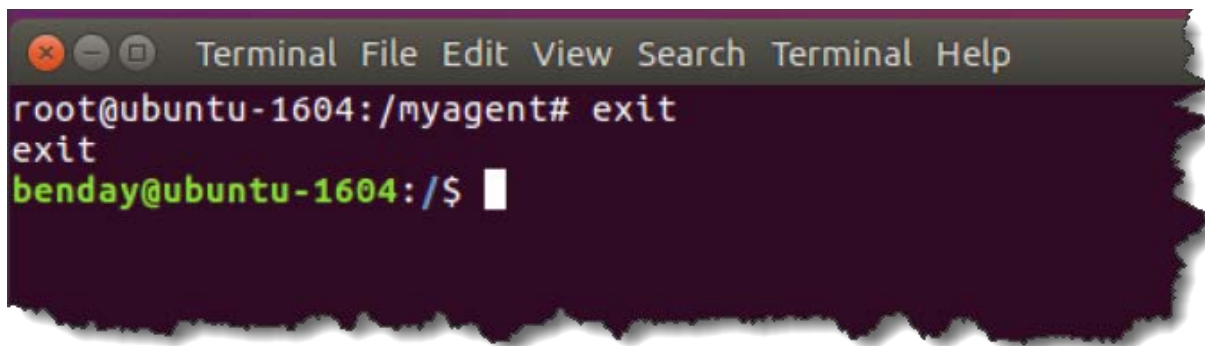
Configure the Agent

Now that the bits are deployed to disk, you can start configuring this build agent.

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

- **TFS server URL:** This is the same URL that you used to access the TFS web interface. By default this will be something like <http://servername:8080/tfs>
- **Authentication Type:** This describes how the agent will talk to TFS. Since this is a Linux machine rather than a Windows machine, we'll be using a method called "Negotiate". In order support more complex scenarios and multiple platforms, there are also several other options. This guide will show you how to do Negotiate 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 "tfsbuild". The fully qualified username for this user is "DEMO\tfsbuild".

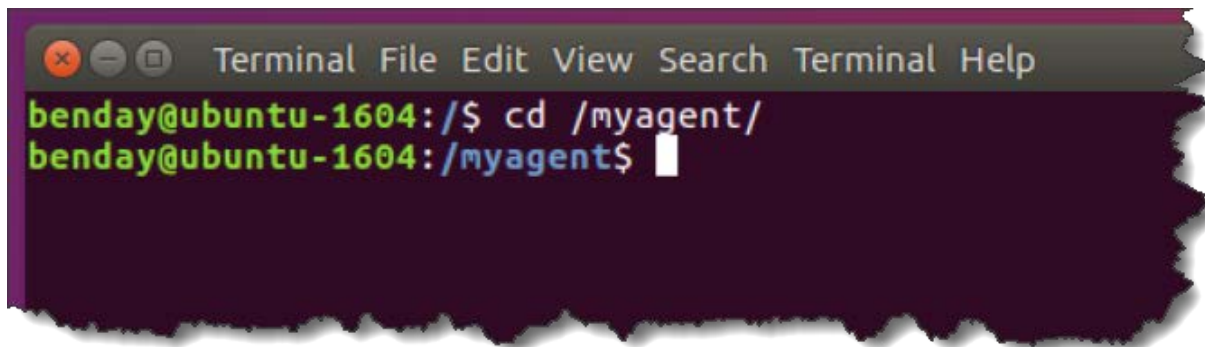
In the current directory there's a shell script named config.sh. This cannot be run as root / superuser.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The user has entered "exit" and the prompt has changed to "benday@ubuntu-1604:/\$" with a white cursor block.

- Type "exit" and press Enter

You should be back in the context of your regular user account.

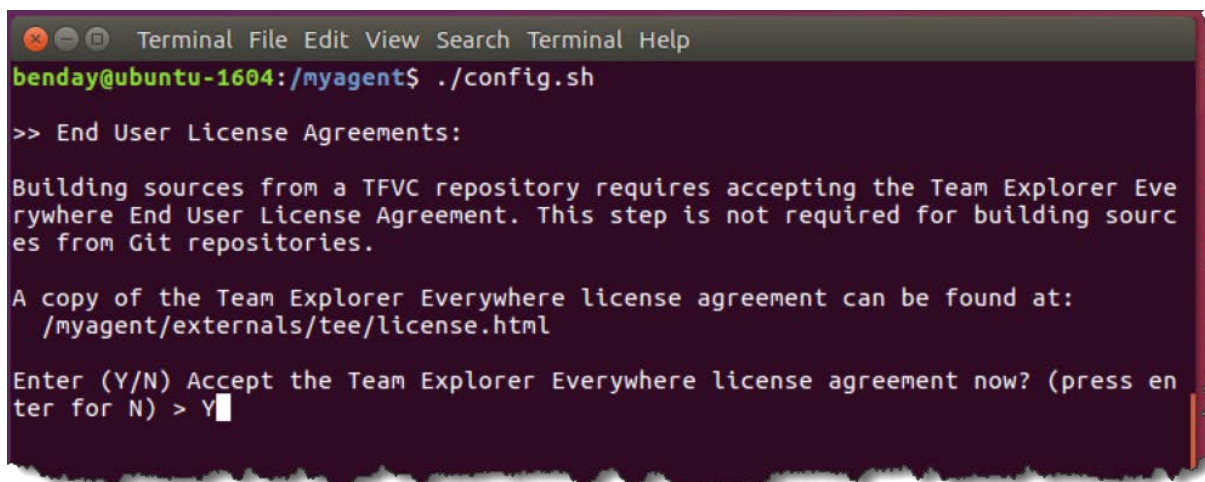
Now you'll need to "cd" to the agent directory.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:/\$". The command "cd /myagent/" is entered and executed. The prompt changes to "benday@ubuntu-1604:/myagent\$".

```
benday@ubuntu-1604:/$ cd /myagent/  
benday@ubuntu-1604:/myagent$
```

- Type "cd /myagent/" and press Enter

Now you'll run the config shell script.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:/myagent\$". The command "./config.sh" is entered and executed. The output shows "End User License Agreements:" followed by a paragraph of text about TFVC repositories and Git repositories. Below that, it says "A copy of the Team Explorer Everywhere license agreement can be found at: /myagent/externals/tee/license.html". The prompt asks "Enter (Y/N) Accept the Team Explorer Everywhere license agreement now? (press enter for N) >". The user has entered "Y".

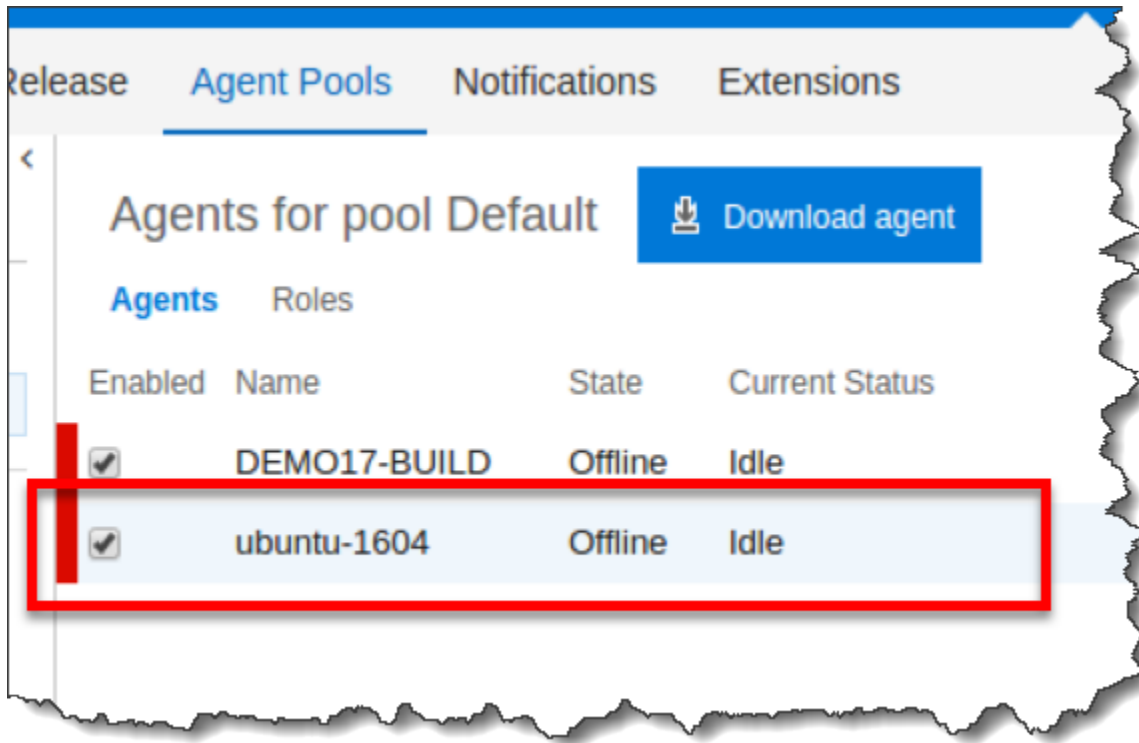
```
benday@ubuntu-1604:/myagent$ ./config.sh  
  
>> End User License Agreements:  
  
Building sources from a TFVC repository requires accepting the Team Explorer Everywhere End User License Agreement. This step is not required for building sources from Git repositories.  
  
A copy of the Team Explorer Everywhere license agreement can be found at:  
  /myagent/externals/tee/license.html  
  
Enter (Y/N) Accept the Team Explorer Everywhere license agreement now? (press enter for N) > Y
```

- Type "./config.sh" and press Enter
- When prompted for the EULA, read it thoroughly, (and if you agree) type 'Y' and press Enter to accept the EULA.

```
Terminal File Edit View Search Terminal Help
/myagent/externals/tee/license.html
Enter (Y/N) Accept the Team Explorer Everywhere license agreement now? (press enter for N) > Y
>> Connect:
Enter server URL > http://demo17-tfs:8080/tfs
Enter authentication type (press enter for Negotiate) >
Enter user name > demo\tfsbuild
Enter password > *****
Connecting to server ...
>> Register Agent:
Enter agent pool (press enter for default) >
Enter agent name (press enter for ubuntu-1604) >
Scanning for tool capabilities.
Connecting to the server.
Successfully added the agent
Testing agent connection.
Enter work folder (press enter for _work) >
2017-02-27 19:21:07Z: Settings Saved.
benday@ubuntu-1604:/myagent$
```

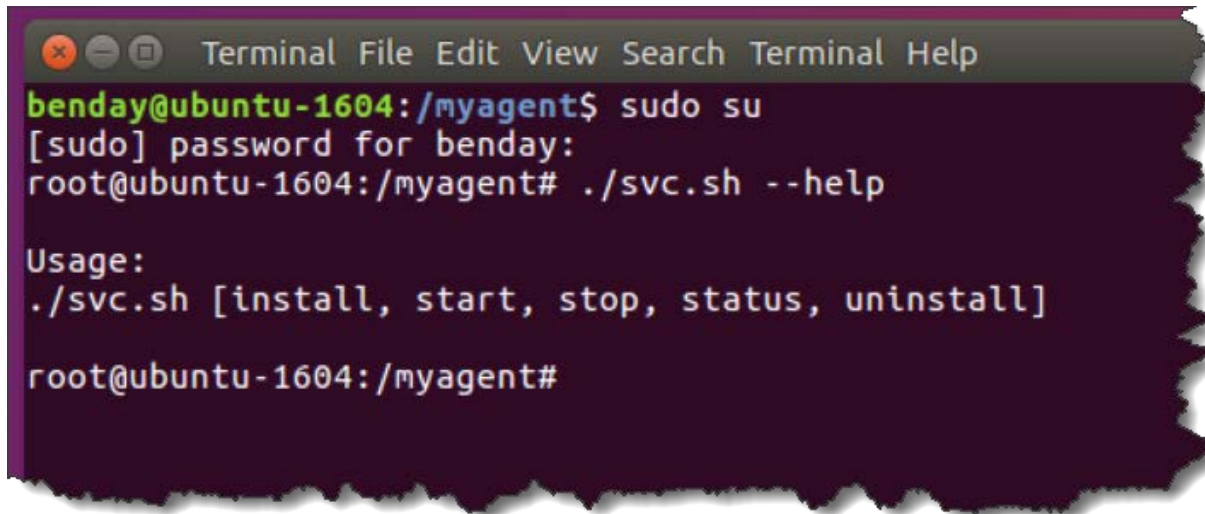
- "Enter server URL >":
Type the **URL for your TFS instance** and click **Enter**
(Example: `http://servername:8080/tfs`)
- "Enter authentication type (press enter for Negotiate)":
Press **Enter**
- "Enter user name":
Type the fully qualified user name for the agent service and press **Enter**
(Example: `demo\tfsbuild`)
- "Enter password":
Type the password for the agent service user and press **Enter**
- "Enter agent pool (press enter for default)":
Press **Enter**
- "Enter agent name (press enter for [local server name])":
Press **Enter**
- "Enter work folder (press enter for _work)":
Press **Enter**

If you go back to your browser and look at the Agent Pools page, you should now see your new build agent in the list. But it will probably have the State value of Offline and this is because the service isn't running yet.



Configure the Agent to Run as a Service

One of the files in the MyAgent directory is "svc.sh". This script controls the setup, start, and shutdown of the build agent when it is run as a service. This script must be run as su or via sudo.

A terminal window with a dark background and light text. The window title bar shows "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:/myagent\$". The user enters "sudo su". The prompt changes to "[sudo] password for benday:". The user enters a password (not visible). The prompt changes to "root@ubuntu-1604:/myagent#". The user enters "./svc.sh --help". The output shows "Usage:" followed by ". /svc.sh [install, start, stop, status, uninstall]". The prompt returns to "root@ubuntu-1604:/myagent#".

```
Terminal File Edit View Search Terminal Help
benday@ubuntu-1604:/myagent$ sudo su
[sudo] password for benday:
root@ubuntu-1604:/myagent# ./svc.sh --help

Usage:
./svc.sh [install, start, stop, status, uninstall]

root@ubuntu-1604:/myagent#
```

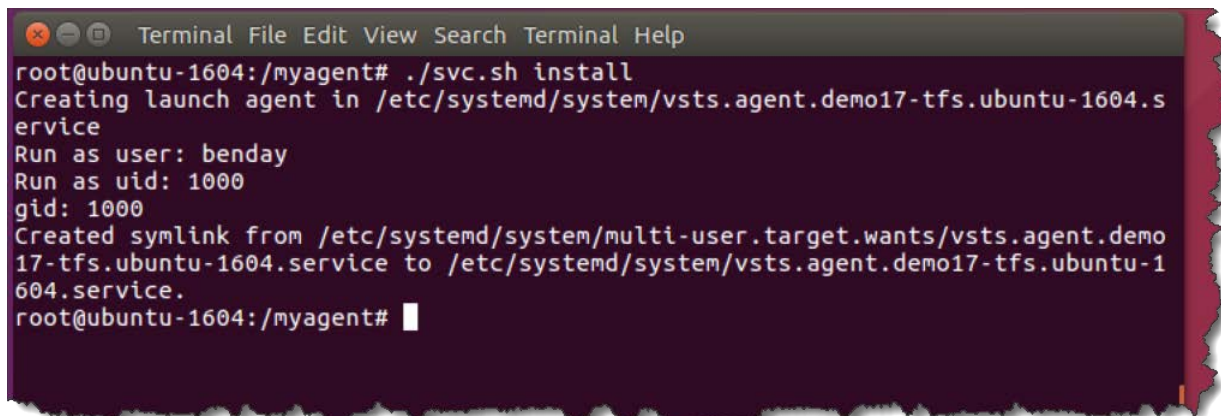
- Type "sudo su" and press Enter

Next, view the list of available commands in svc.sh.

- Type "./svc.sh --help" and press Enter

This shows you the commands that are available to run. To register this agent as a service, you'll run the install command. Start is used to start the service. Stop is used to stop it. Status is used to show the current state of the service. Uninstall deregisters the agent service.

Let's run the install command.

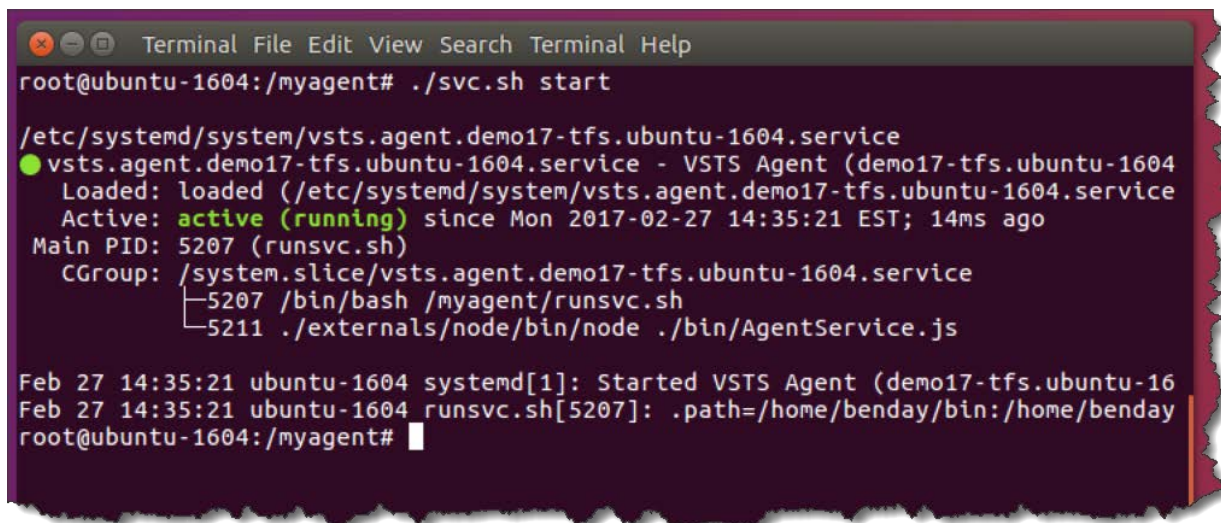
A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The command entered is "./svc.sh install". The output shows the creation of a launch agent in /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service, with run as user: benday, run as uid: 1000, and gid: 1000. It also shows a symlink created from /etc/systemd/system/multi-user.target.wants/vsts.agent.demo17-tfs.ubuntu-1604.service to /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service. The prompt returns to "root@ubuntu-1604:/myagent#".

```
root@ubuntu-1604:/myagent# ./svc.sh install
Creating launch agent in /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.s
ervice
Run as user: benday
Run as uid: 1000
gid: 1000
Created symlink from /etc/systemd/system/multi-user.target.wants/vsts.agent.demo
17-tfs.ubuntu-1604.service to /etc/systemd/system/vsts.agent.demo17-tfs.ubunt
u-1604.service.
root@ubuntu-1604:/myagent#
```

- Type “./svc.sh install” and press Enter

It should show you output that looks similar to the screenshot above and it should complete without error.

Now that it's registered, you can start the service.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The command entered is "./svc.sh start". The output shows the service /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service starting. It is a VSTS Agent (demo17-tfs.ubuntu-1604) loaded from /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service. It is active (running) since Mon 2017-02-27 14:35:21 EST; 14ms ago. The main PID is 5207 (runsvcs.sh). The CGroup is /system.slice/vsts.agent.demo17-tfs.ubuntu-1604.service, with child processes: 5207 /bin/bash /myagent/runsvcs.sh and 5211 ./externals/node/bin/node ./bin/AgentService.js. Log messages show "Feb 27 14:35:21 ubuntu-1604 systemd[1]: Started VSTS Agent (demo17-tfs.ubuntu-1604)" and "Feb 27 14:35:21 ubuntu-1604 runsvcs.sh[5207]: .path=/home/benday/bin:/home/benday". The prompt returns to "root@ubuntu-1604:/myagent#".

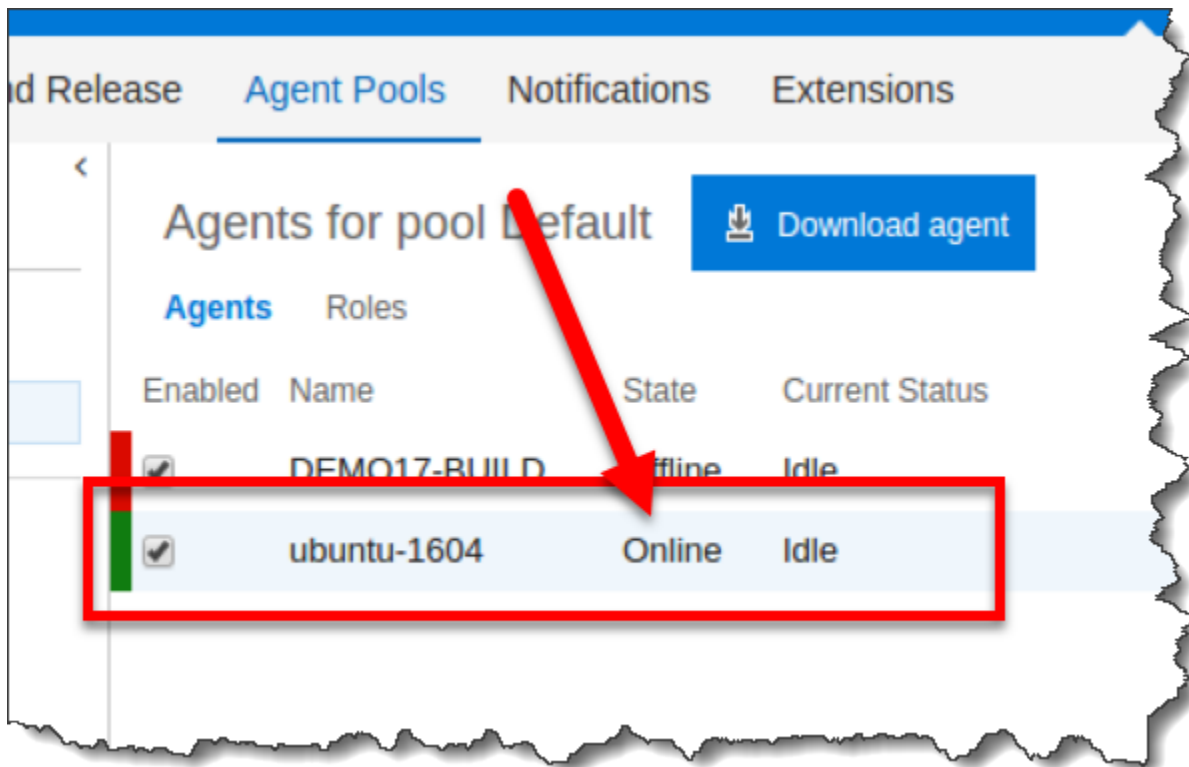
```
root@ubuntu-1604:/myagent# ./svc.sh start

/etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service
● vsts.agent.demo17-tfs.ubuntu-1604.service - VSTS Agent (demo17-tfs.ubuntu-1604)
   Loaded: loaded (/etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service)
   Active: active (running) since Mon 2017-02-27 14:35:21 EST; 14ms ago
     Main PID: 5207 (runsvcs.sh)
      CGroup: /system.slice/vsts.agent.demo17-tfs.ubuntu-1604.service
              └─5207 /bin/bash /myagent/runsvcs.sh
                  └─5211 ./externals/node/bin/node ./bin/AgentService.js

Feb 27 14:35:21 ubuntu-1604 systemd[1]: Started VSTS Agent (demo17-tfs.ubuntu-1604)
Feb 27 14:35:21 ubuntu-1604 runsvcs.sh[5207]: .path=/home/benday/bin:/home/benday
root@ubuntu-1604:/myagent#
```

- Type “./svc.sh start” and press Enter
- Press ‘Q’ to exit the command

The service should be started now and TFS should think that it's online.



- Open your browser
- Navigate to the agent pools page

You should see your build agent and the state should be Online.

You've successfully created a Team Foundation Server build agent on Ubuntu 16.04.

Chapter 7: Install TFS2018 / VSTS Build Agent on Windows Server Core

This chapter will walk you through the process of creating a build server on Windows Server Core. If you're not already familiar with Windows Server Core, here's a quick overview. Think of it as Windows Server 2016 with all the extra, unnecessary stuff pulled out. This means that it uses a lot less disk space and a whole lot less memory.

The minor downside is that you don't get the pretty and helpful graphical user interface (GUI) that you're used to. You get a command line window (cmd and PowerShell) and that's about it.

Another way of thinking of this chapter is that it will walk you through how to install the TFS2018 / VSTS build agent using only the command line.

Since the command line is available on the full version of Windows, you can use these same steps to install the build agent on pretty much any version of Windows.

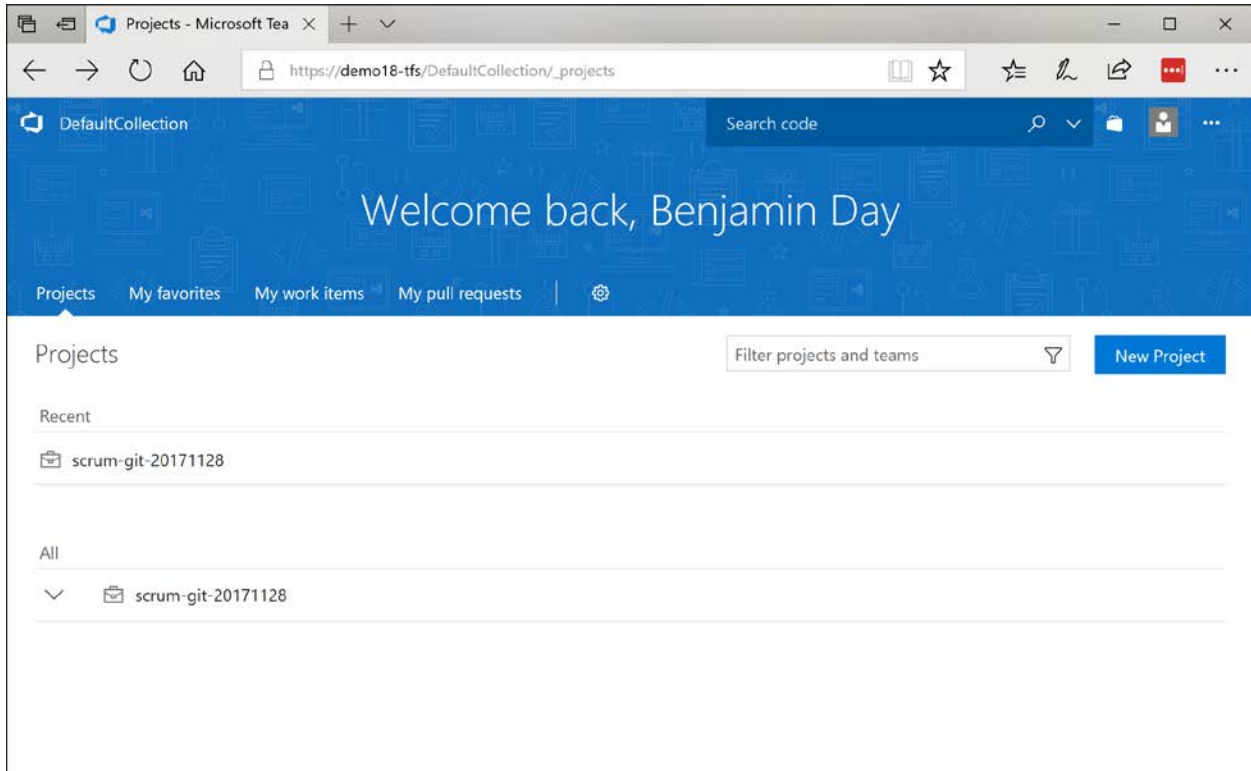
Verify the Download URL for the Build Agent Installer

You'll need to do this step from a machine with a web browser. *If you're planning to install the Agent on Windows Core, then you'll have to do this chunk of steps from a different machine.*

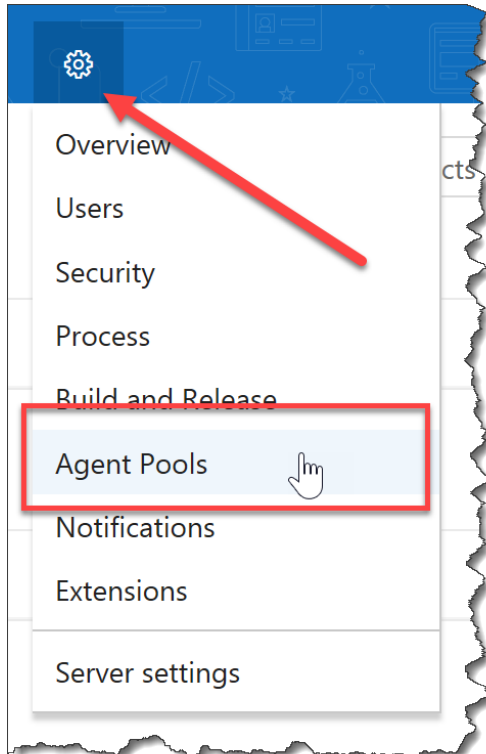
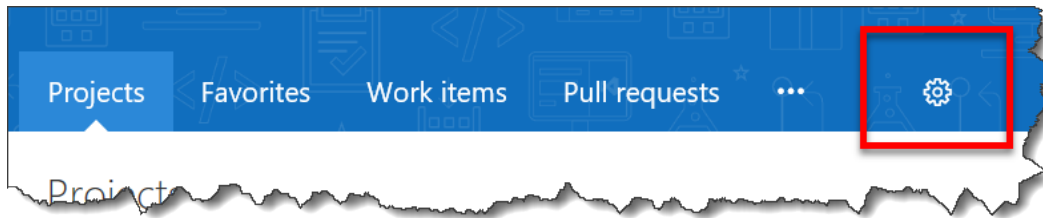
Just to keep people guessing, Microsoft sometimes changes the URL for downloading the build agent bits. In order to make sure that you're installing the latest version of the build agent, I'm going to walk you through how to get the URL for the latest version.

- Open a web browser
- Navigate to your TFS web interface. Depending on what security settings you chose, this is probably one of the following:
 - <https://servername>
 - <http://servername:8080/tfs>
 - <http://servername>

You should see a screen that looks like this.

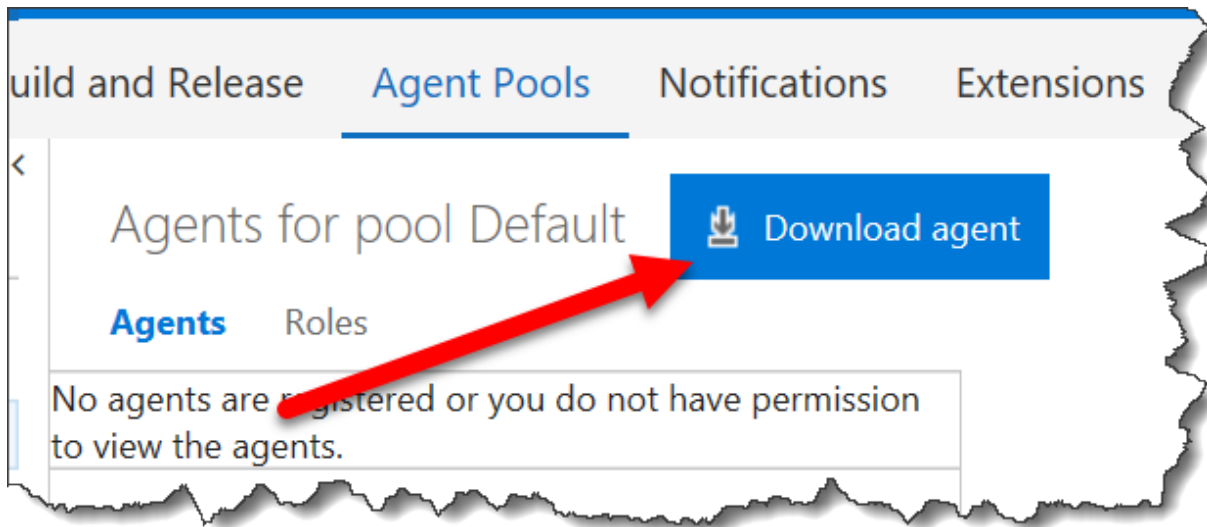


On the right side of the menu bar, there is a gear icon.



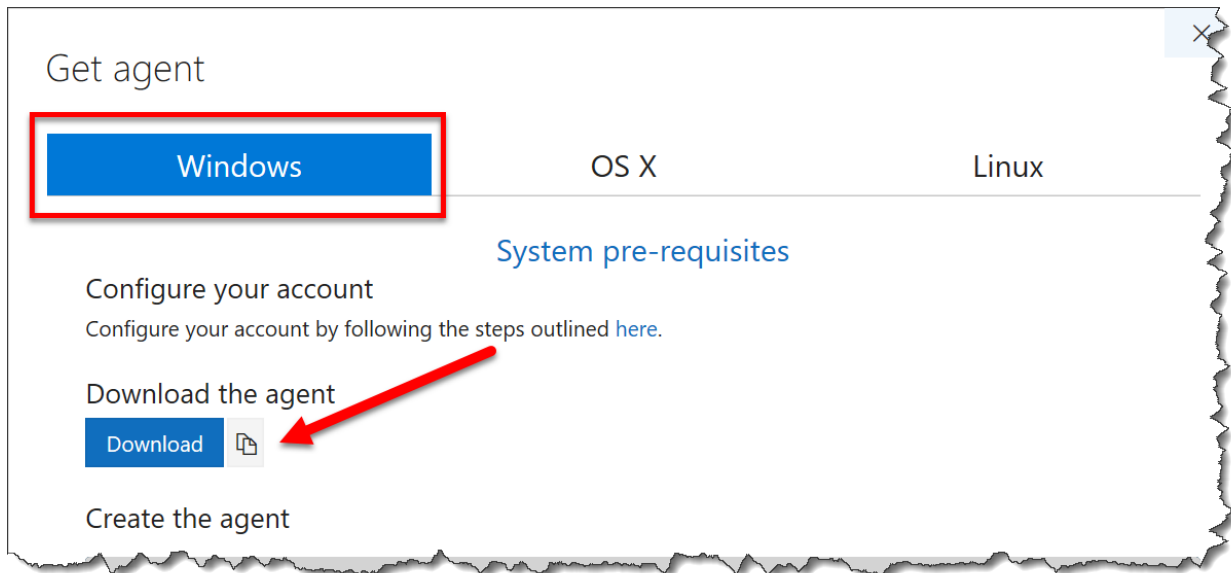
- Click the **gear icon** to bring up the **Settings menu**
- Choose **Agent Pools**

You should now see the admin screen for you team project collection and you should be looking at the Agent Pools tab. There should be a button that says "Download agent".



- Click the **Download agent** button

A dialog should pop up that shows you the download and installation info for Windows, Mac OS / OS X, and Linux.



- Make sure the **Windows tab** is selected
- Click the "copy to clipboard" icon that is directly to the right of the **Download** button

The URL for the build agent download should now be in your clipboard. The value should look something like <https://go.microsoft.com/fwlink/?linkid=858950>. You're going to need this value in a later step. Make sure that you don't lose this value!

Create the Download & Extract Script

Next I'm going to walk you through the process of creating a PowerShell script to download the build agent zip and extract it. You might be wondering why I'm doing this. You're probably thinking "why doesn't he just simply open a browser and download the zip?" Well, the reason why is that there isn't a browser on Windows Server Core and that means that downloading the agent installer zip is kind of tricky.

- Log in to your *build server machine* as a user with administrator rights
- Open notepad.exe
- Paste in the following script

```
$url = "https://go.microsoft.com/fwlink/?linkid=858950"
$toFilename = "$PSScriptRoot\agent.zip"
Invoke-WebRequest -uri $url -outfile $toFilename
$agentDir = "c:\agent"
if ((Test-Path $agentDir) -eq $false)
{
    mkdir $agentDir
}
cd $agentDir
Add-Type -AssemblyName System.IO.Compression.FileSystem
Write-Output "Starting to extract '$toFilename' to '$agentDir'..."
[System.IO.Compression.ZipFile]::ExtractToDirectory($toFilename, "$PWD")
Write-Output "Agent has been extracted to '$agentDir'."
Write-Output ""
Write-Output "Run config.cmd to configure the agent."
```

- Verify that the url on line 1 of the script (\$url's value) is the same URL value that you copied to the clipboard
- Save the script to a file named **download-agent-and-extract.ps1**

Now that you have that script, it's time to run it from PowerShell. But chances are pretty good that you're looking at a command prompt window rather than a PowerShell window. That's easy enough to fix.

- In the command prompt window, type **powershell** and press <enter>

Your window should look something like this next image.

```
PS C:\Users\benday> .\download-agent-and-extract.ps1

Directory: C:\

Mode                LastWriteTime         Length Name
----                -
d-----          12/19/2017   9:16 AM             agent
Starting to extract 'C:\Users\benday\agent.zip' to 'c:\agent'...
Agent has been extracted to 'c:\agent'.

Run config.cmd to configure the agent.

PS C:\agent> dir

Directory: C:\agent

Mode                LastWriteTime         Length Name
----                -
d-----          12/19/2017   9:17 AM             bin
d-----          12/19/2017   9:17 AM             externals
-a----          10/18/2017   4:03 PM             2384 config.cmd
-a----          10/18/2017   4:03 PM             2344 run.cmd

PS C:\agent> █
```

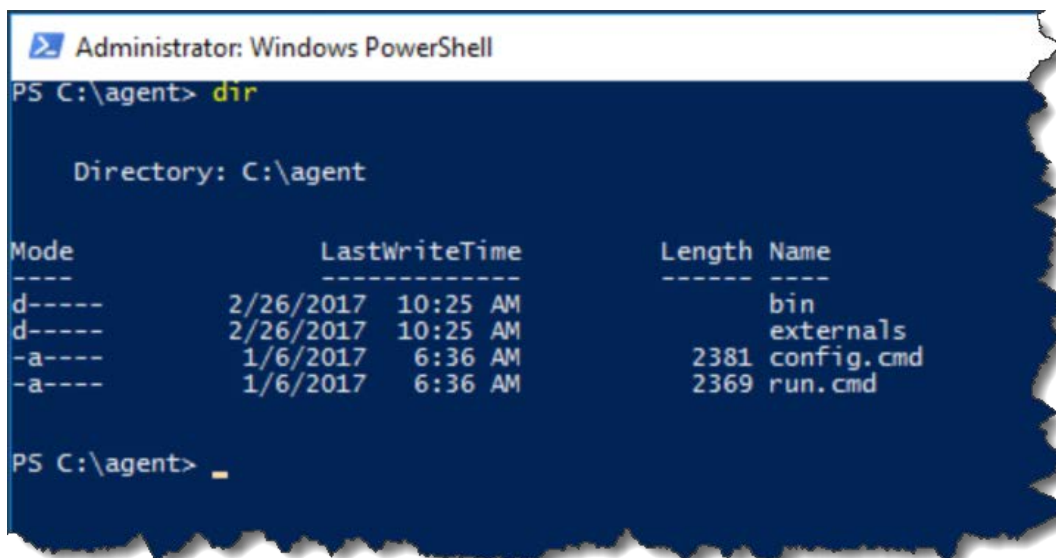
Let's run the script.

- Type **.\download-agent-and-extract.ps1** and press <enter>

NOTE: Did you get an error that says “An error occurred while sending the request”? Are you using a self-signed SSL certificate for TFS2018? If you followed the TFS install instructions and enabled SSL, you probably are using a self-signed SSL certificate. Check out this blog post for how to fix this. <https://www.benday.com/2017/12/21/tfs-build-agent-fails-to-configure-with-tfs2018-self-signed-ssl-certificate/>

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-----            2/26/2017  10:25 AM             bin
d-----            2/26/2017  10:25 AM          externals
-a----             1/6/2017   6:36 AM          2381 config.cmd
-a----             1/6/2017   6:36 AM          2369 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 TFS 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:

- **TFS server URL:** This is the same URL that you used to access the TFS web interface. By default this will be something like <https://servername> or <http://servername:8080/tfs>
- **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 "tfsbuild". The fully qualified username for this user is "DEMO\tfsbuild".

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.

```

Administrator: Windows PowerShell
PS C:\agent> Add-Type -AssemblyName System.IO.Compression.FileSystem ;
PS C:\agent> [System.IO.Compression.ZipFile]::ExtractToDirectory("$HOME\Downloads\vsts-agent-win7-x64-2.122.1.zip", "D:\agent")
PS C:\agent> dir

Directory: C:\agent

Mode                LastWriteTime         Length Name
----                -
d-----           11/28/2017   2:48 PM          bin
d-----           11/28/2017   2:48 PM        externals
-a-----           10/18/2017   4:03 PM       2384 config.cmd
-a-----           10/18/2017   4:03 PM       2344 run.cmd

PS C:\agent> .\config.cmd

>> Connect:

Enter server URL > https://demo18-tfs
Enter authentication type (press enter for Integrated) >
Connecting to server ...

>> Register Agent:

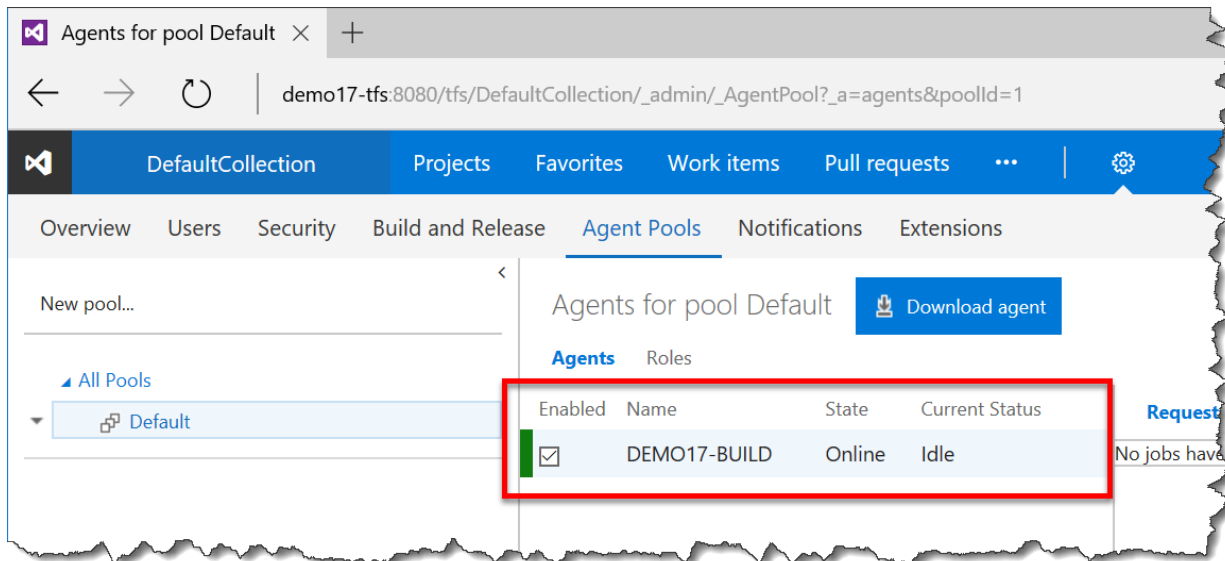
Enter agent pool (press enter for default) >
Enter agent name (press enter for DEMO18-TFS) >
Scanning for tool capabilities.
Connecting to the server.
Successfully added the agent
Testing agent connection.
Enter work folder (press enter for _work) >
2017-11-28 19:50:48Z: settings saved.
Enter run agent as service? (Y/N) (press enter for N) > Y
Enter User account to use for the service (press enter for NT AUTHORITY\NETWORK SERVICE) > demo\tfsbuild
Enter Password for the account demo\tfsbuild > *****
Granting file permissions to 'demo\tfsbuild'.
Service vstsagent.demo18-tfs.DEMO18-TFS successfully installed
Service vstsagent.demo18-tfs.DEMO18-TFS successfully set recovery option
Service vstsagent.demo18-tfs.DEMO18-TFS successfully configured
Service vstsagent.demo18-tfs.DEMO18-TFS started successfully
PS C:\agent> _

```

- "Enter server URL":
Type the **URL for your TFS 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**
- "Enter User account to use for the service":
Type the **fully qualified name of the service account** (example: demo\tfsbuild) 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 vtsagent.demo17-tfs.DEMO17-BUILD started successfully".

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



You've successfully configured a build agent on Windows Server Core.

Chapter 8: Install TFS2018 / VSTS Build Agent on Ubuntu via Bash or SSH

This chapter will walk you through the process of installing the TFS / VSTS build agent on an Ubuntu 16.04 that doesn't have a graphical user interface (GUI). Put another way, if you only access your Ubuntu Linux machine over SSH or Bash, then you'll care about this. If your Ubuntu build agents are running in Microsoft Azure as Azure Virtual Machines, then you'll definitely care about this because this guide will walk you through how to install the TFS / VSTS build agent on a Linux VM in Azure.

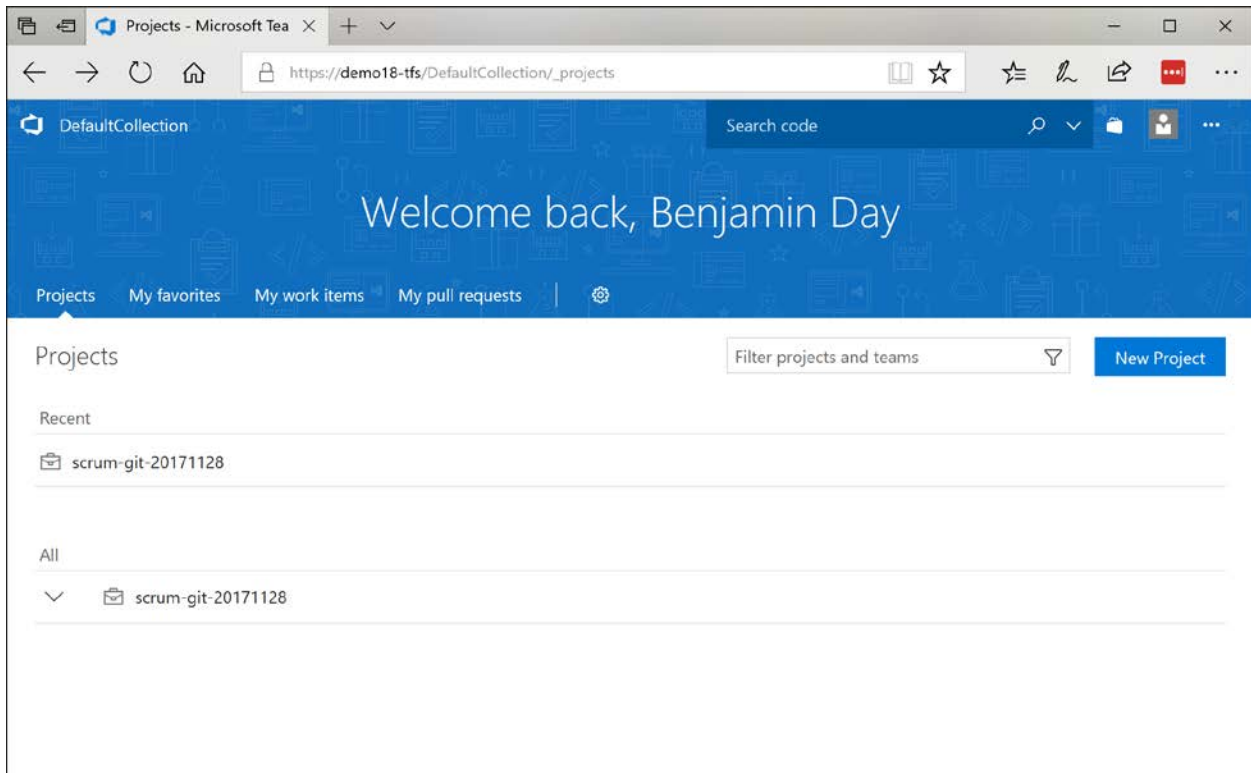
Verify the Download URL for the Build Agent Installer

You'll need to do this step from a machine with a web browser. *If you're planning to install the Agent on shell-only Linux, then you'll have to do this chunk of steps from a different machine.*

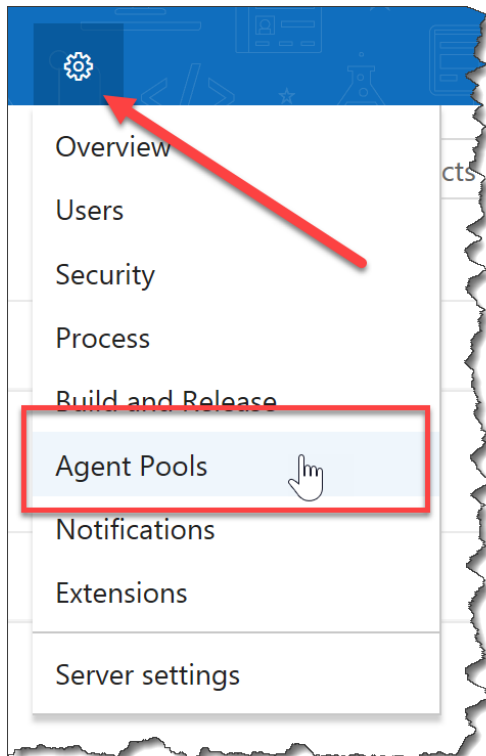
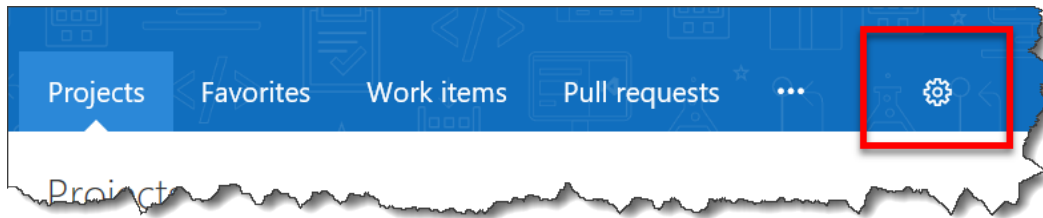
Just to keep people guessing, Microsoft sometimes changes the URL for downloading the build agent bits. In order to make sure that you're installing the latest version of the build agent, I'm going to walk you through how to get the URL for the latest version.

- Open a web browser
- Navigate to your TFS web interface. Depending on what security settings you chose, this is probably one of the following:
 - <https://servername>
 - <http://servername:8080/tfs>
 - <http://servername>

You should see a screen that looks like this.

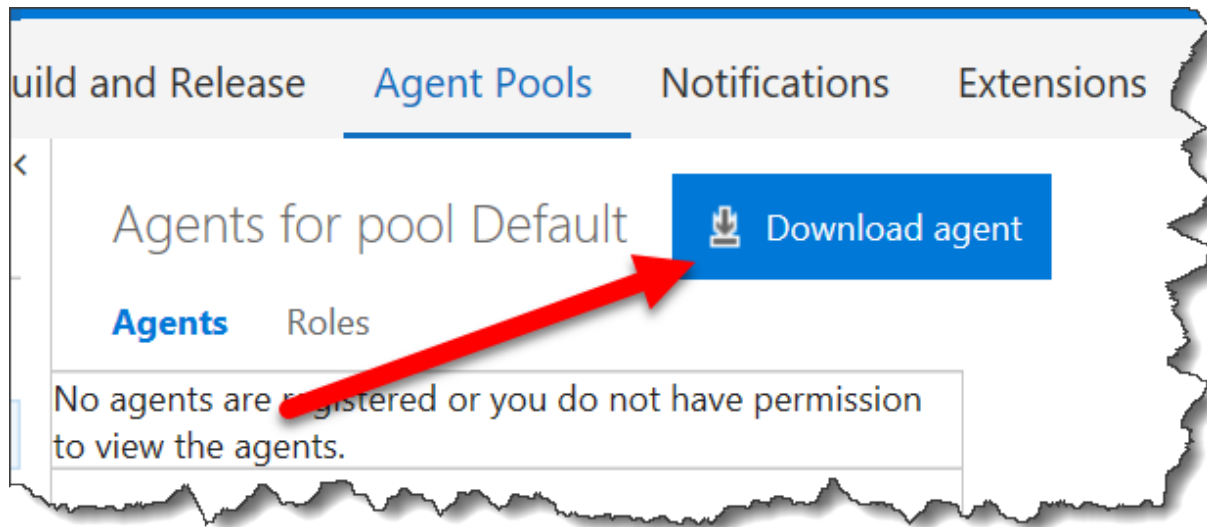


On the right side of the menu bar, there is a gear icon.



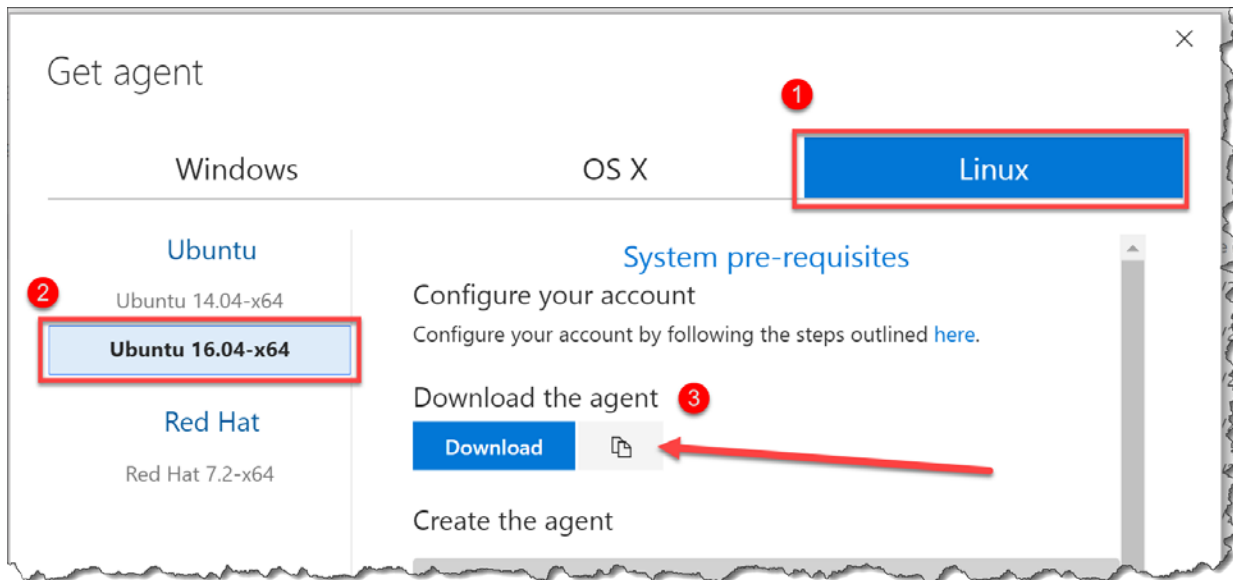
- Click the **gear icon** to bring up the **Settings menu**
- Choose **Agent Pools**

You should now see the admin screen for you team project collection and you should be looking at the Agent Pools tab. There should be a button that says "Download agent".



- Click the **Download agent** button

A dialog should pop up that shows you the download and installation info for Windows, Mac OS / OS X, and Linux.



- Make sure the **Linux tab** is selected
- Choose **Ubuntu 16.04-x64** from the left tab menu
- Click the "copy to clipboard" icon that is directly to the right of the **Download** button

The URL for the build agent download should now be in your clipboard. The value should look something like <https://go.microsoft.com/fwlink/?linkid=858949>. You're going to need this value in a later step. Make sure that you don't lose this value!

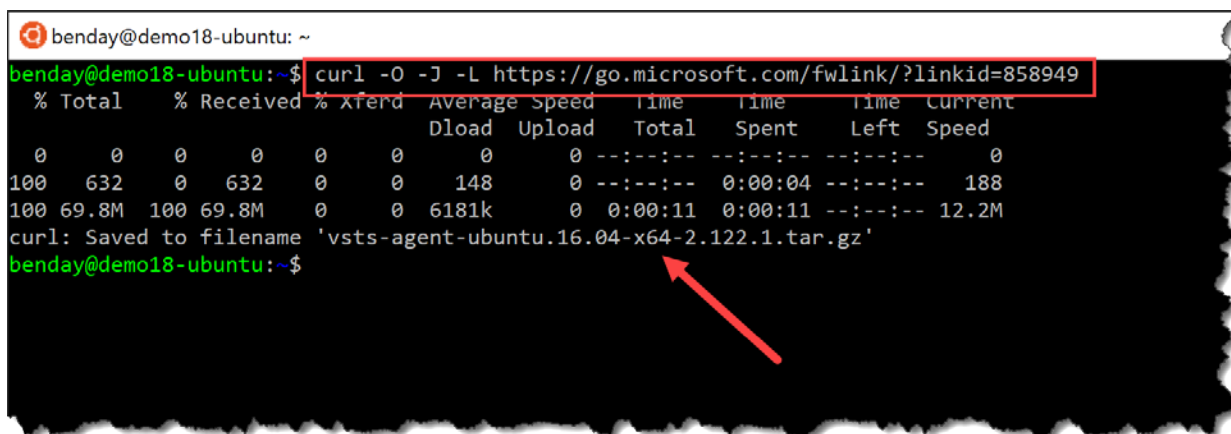
Log in to Ubuntu and Download the Installer

Next you're going to need to log in to your Ubuntu Linux machine. You can either log in on the console or log in via SSH. Whichever way you choose to log in, you'll need to log in with a user that has "sudo" permissions.

First thing you're going to do is to make sure that you're in your home directory.

- Type `cd ~/` and press **Enter**

Next you're going to download the installer. You're going to need the installer URL that you previously copied to the clipboard.



```
benday@demo18-ubuntu: ~  
benday@demo18-ubuntu:~$ curl -O -J -L https://go.microsoft.com/fwlink/?linkid=858949  
% Total % Received % Xferd Average Speed Time Time Time Current  
 Dload Upload Total Spent Left Speed  
 0 0 0 0 0 0 0 0 --:--:-- --:--:-- --:--:-- 0  
100 632 0 632 0 0 148 0 --:--:-- 0:00:04 --:--:-- 188  
100 69.8M 100 69.8M 0 0 6181k 0 0:00:11 0:00:11 --:--:-- 12.2M  
curl: Saved to filename 'vsts-agent-ubuntu.16.04-x64-2.122.1.tar.gz'  
benday@demo18-ubuntu:~$
```

- Type
`curl -O -J -L https://go.microsoft.com/fwlink/?linkid=858949`
and press **Enter**. (NOTE: you might need to change that URL if it's not the same as what you copied to the clipboard.)

When the download is complete, you should see a message that says something like "curl: Saved to filename 'vsts-agent-ubuntu.16.04-x64-2.122.1.tar.gz'". Make a note of that downloaded file name because you're going to need it in a moment.

Extract the Installer

You're going to install the build agent in a directory named 'myagent' off the root of your filesystem. Let's make a directory for that.

- Type **sudo mkdir /myagent** and press **Enter**

Now you'll enter that directory.

- Type **cd /myagent** and press **Enter**

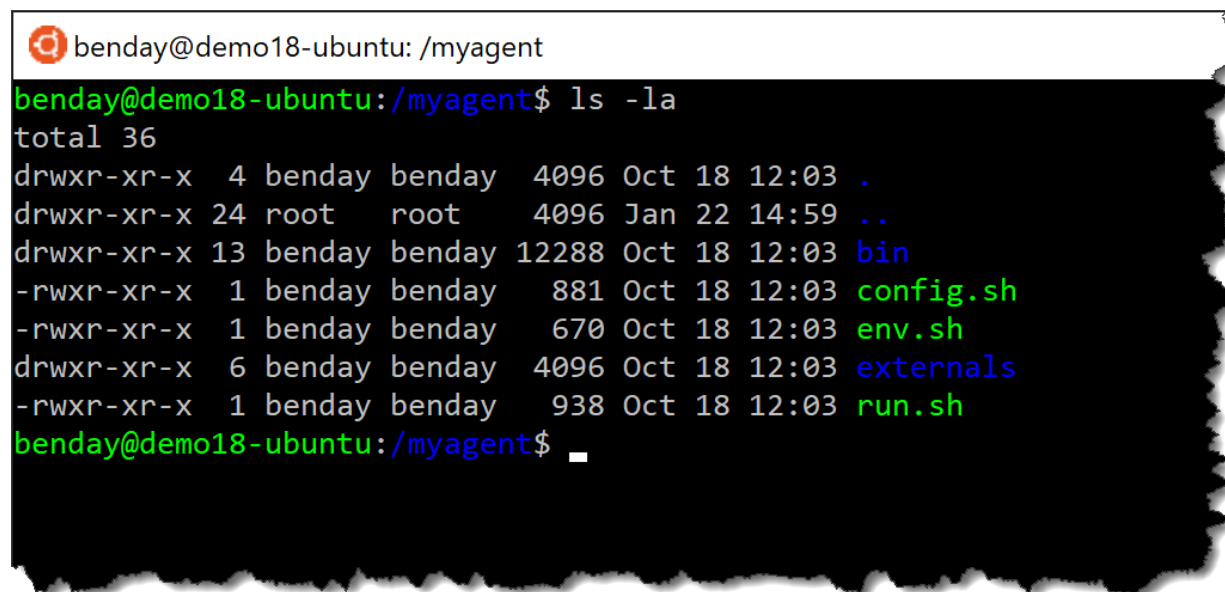
Now that you're in the install directory, you'll extract the Agent installer to this directory.

- Type **sudo tar xzvf ~/vsts-agent-ubuntu.16.04-x64-2.122.1.tar.gz** and press **Enter**. NOTE: make sure that the file name in this command is the same as the filename that got downloaded.

When you hit enter, you'll see a whole lot of text fly by on the screen. When it's done, let's see what it did.

- Type **ls -la** and press **Enter**

You should see a bunch of files and directories that look similar to the screenshot below.



```
benday@demo18-ubuntu: /myagent
benday@demo18-ubuntu:~/myagent$ ls -la
total 36
drwxr-xr-x  4 benday benday  4096 Oct 18 12:03 .
drwxr-xr-x 24 root   root   4096 Jan 22 14:59 ..
drwxr-xr-x 13 benday benday 12288 Oct 18 12:03 bin
-rwxr-xr-x  1 benday benday   881 Oct 18 12:03 config.sh
-rwxr-xr-x  1 benday benday   670 Oct 18 12:03 env.sh
drwxr-xr-x  6 benday benday  4096 Oct 18 12:03 externals
-rwxr-xr-x  1 benday benday   938 Oct 18 12:03 run.sh
benday@demo18-ubuntu:~/myagent$
```

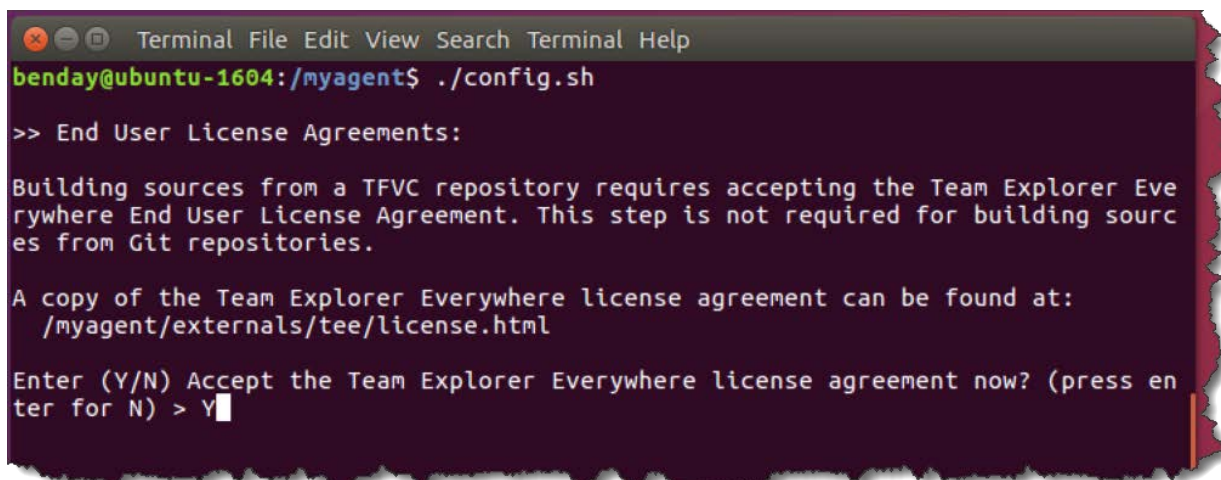
Configure the Agent

Now that the bits are deployed to disk, you can start configuring this build agent.

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

- **TFS server URL:** This is the same URL that you used to access the TFS web interface. By default this will be something like <http://servername:8080/tfs>
- **Authentication Type:** This describes how the agent will talk to TFS. Since this is a Linux machine rather than a Windows machine, we'll be using a method called "Negotiate". In order support more complex scenarios and multiple platforms, there are also several other options. This guide will show you how to do Negotiate 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 "tfsbuild". The fully qualified username for this user is "DEMO\tfsbuild".

In the current directory there's a shell script named config.sh. Let's run the config shell script.

A terminal window with a dark background and light text. The title bar reads "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:/myagent\$./config.sh". The output shows a header for "End User License Agreements:" followed by a paragraph of text about TFVC and Git repositories. Below that, it says "A copy of the Team Explorer Everywhere license agreement can be found at: /myagent/externals/tee/license.html". The final line is a prompt: "Enter (Y/N) Accept the Team Explorer Everywhere license agreement now? (press enter for N) > Y".

```
Terminal File Edit View Search Terminal Help
benday@ubuntu-1604:/myagent$ ./config.sh
>> End User License Agreements:

Building sources from a TFVC repository requires accepting the Team Explorer Everywhere End User License Agreement. This step is not required for building sources from Git repositories.

A copy of the Team Explorer Everywhere license agreement can be found at:
/myagent/externals/tee/license.html

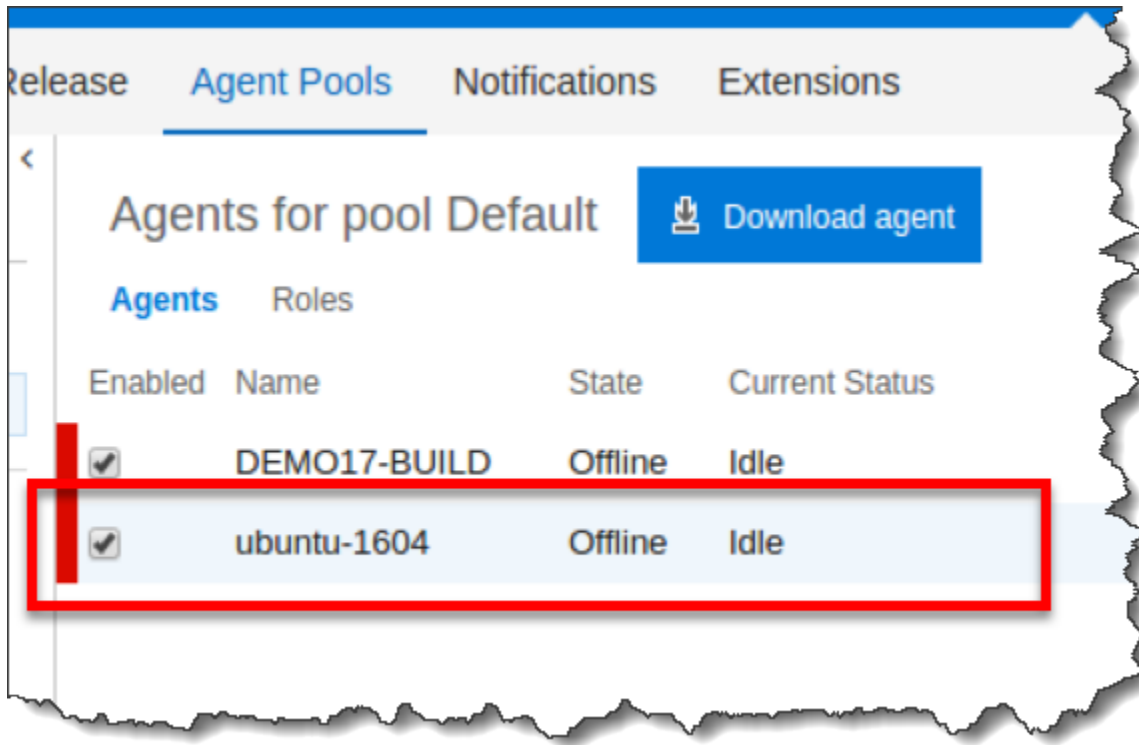
Enter (Y/N) Accept the Team Explorer Everywhere license agreement now? (press enter for N) > Y
```

- Type "./config.sh" and press Enter
- When prompted for the EULA, read it thoroughly, (and if you agree) type 'Y' and press Enter to accept the EULA.

```
Terminal File Edit View Search Terminal Help
/myagent/externals/tee/license.html
Enter (Y/N) Accept the Team Explorer Everywhere license agreement now? (press enter for N) > Y
>> Connect:
Enter server URL > http://demo17-tfs:8080/tfs
Enter authentication type (press enter for Negotiate) >
Enter user name > demo\tfsbuild
Enter password > *****
Connecting to server ...
>> Register Agent:
Enter agent pool (press enter for default) >
Enter agent name (press enter for ubuntu-1604) >
Scanning for tool capabilities.
Connecting to the server.
Successfully added the agent
Testing agent connection.
Enter work folder (press enter for _work) >
2017-02-27 19:21:07Z: Settings Saved.
benday@ubuntu-1604:/myagent$
```

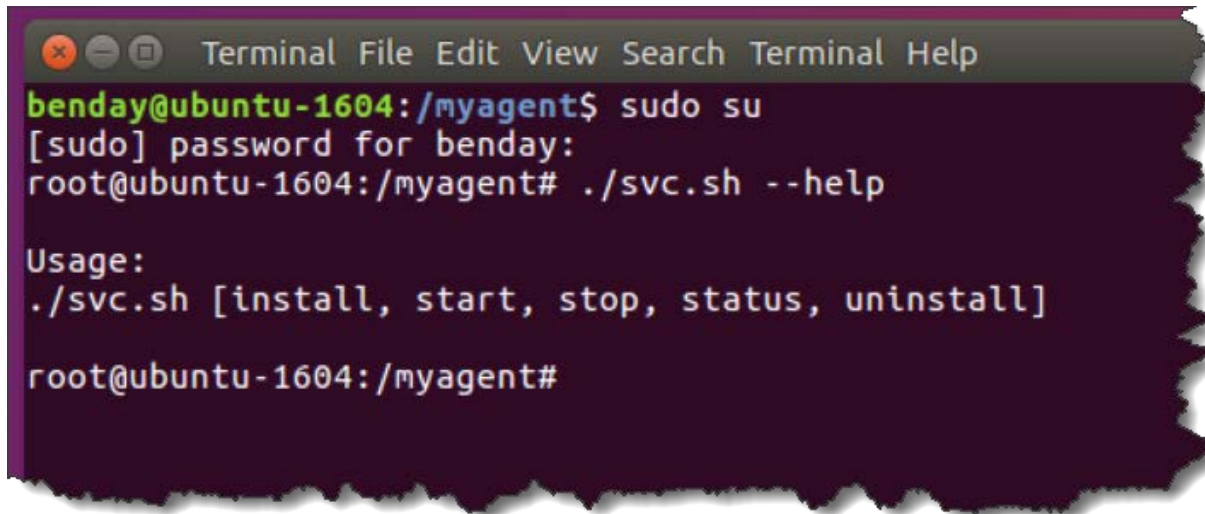
- "Enter server URL >":
Type the **URL for your TFS instance** and click **Enter**
(Example: `http://servername:8080/tfs`)
- "Enter authentication type (press enter for Negotiate)":
Press **Enter**
- "Enter user name":
Type the fully qualified user name for the agent service and press **Enter**
(Example: `demo\tfsbuild`)
- "Enter password":
Type the password for the agent service user and press **Enter**
- "Enter agent pool (press enter for default)":
Press **Enter**
- "Enter agent name (press enter for [local server name])":
Press **Enter**
- "Enter work folder (press enter for _work)":
Press **Enter**

If you go back to your browser and look at the Agent Pools page, you should now see your new build agent in the list. But it will probably have the State value of Offline and this is because the service isn't running yet.



Configure the Agent to Run as a Service

One of the files in the MyAgent directory is "svc.sh". This script controls the setup, start, and shutdown of the build agent when it is run as a service. This script must be run as su or via sudo.

A terminal window with a dark background and light text. The window title is "Terminal File Edit View Search Terminal Help". The prompt is "benday@ubuntu-1604:/myagent\$". The user enters "sudo su". The prompt changes to "[sudo] password for benday:". The user enters a password (not visible). The prompt changes to "root@ubuntu-1604:/myagent#". The user enters "./svc.sh --help". The output is "Usage: ./svc.sh [install, start, stop, status, uninstall]". The prompt returns to "root@ubuntu-1604:/myagent#".

```
Terminal File Edit View Search Terminal Help
benday@ubuntu-1604:/myagent$ sudo su
[sudo] password for benday:
root@ubuntu-1604:/myagent# ./svc.sh --help

Usage:
./svc.sh [install, start, stop, status, uninstall]

root@ubuntu-1604:/myagent#
```

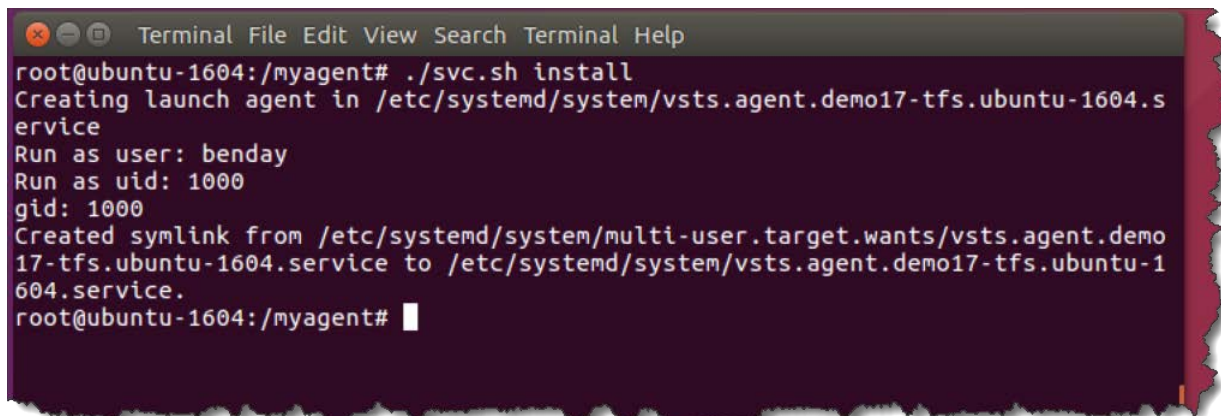
- Type "sudo su" and press Enter

Next, view the list of available commands in svc.sh.

- Type "./svc.sh --help" and press Enter

This shows you the commands that are available to run. To register this agent as a service, you'll run the install command. Start is used to start the service. Stop is used to stop it. Status is used to show the current state of the service. Uninstall deregisters the agent service.

Let's run the install command.

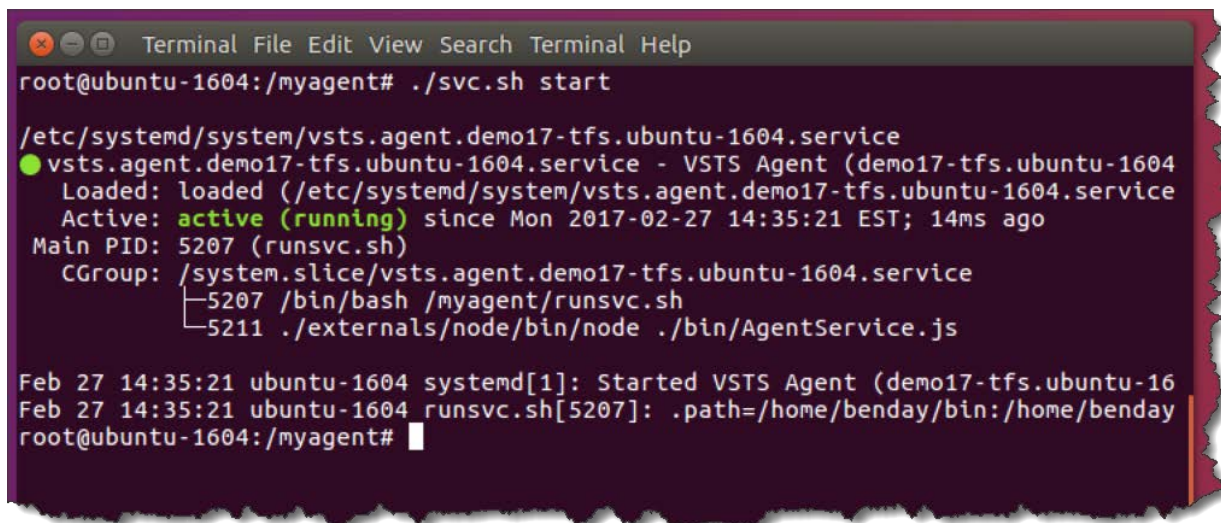
A terminal window with a dark background and light text. The window title is "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The user enters the command ". /svc.sh install". The output shows the creation of a launch agent in "/etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service", the user "benday" and uid "1000", and the creation of a symlink from "/etc/systemd/system/multi-user.target.wants/vsts.agent.demo17-tfs.ubuntu-1604.service" to the service file. The prompt returns to "root@ubuntu-1604:/myagent#".

```
root@ubuntu-1604:/myagent# ./svc.sh install
Creating launch agent in /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.s
ervice
Run as user: benday
Run as uid: 1000
gid: 1000
Created symlink from /etc/systemd/system/multi-user.target.wants/vsts.agent.demo
17-tfs.ubuntu-1604.service to /etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1
604.service.
root@ubuntu-1604:/myagent#
```

- Type ". /svc.sh install" and press Enter

It should show you output that looks similar to the screenshot above and it should complete without error.

Now that it's registered, you can start the service.

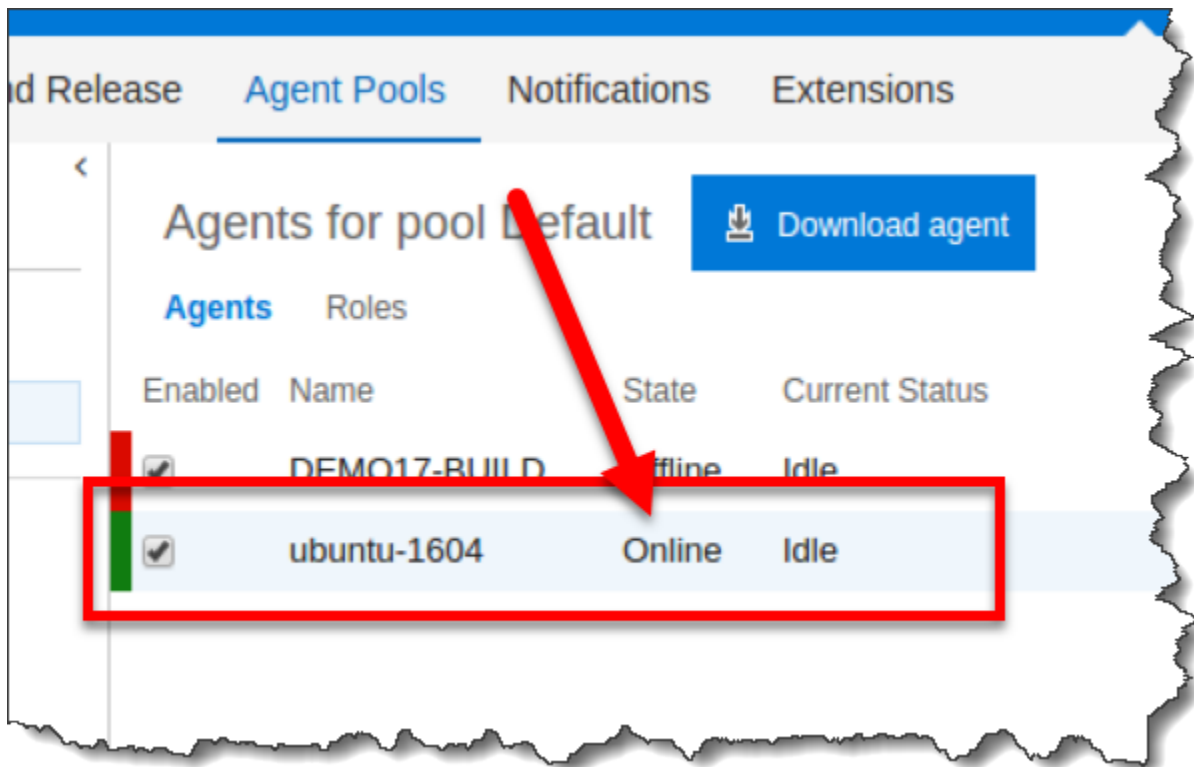
A terminal window with a dark background and light text. The window title is "Terminal File Edit View Search Terminal Help". The prompt is "root@ubuntu-1604:/myagent#". The user enters the command ". /svc.sh start". The output shows the service "vsts.agent.demo17-tfs.ubuntu-1604.service" being loaded and becoming active (running) since Mon 2017-02-27 14:35:21 EST. It lists the main PID as 5207 (runsvcl) and the CGroup as /system.slice/vsts.agent.demo17-tfs.ubuntu-1604.service, with sub-processes at PIDs 5207 and 5211. The prompt returns to "root@ubuntu-1604:/myagent#".

```
root@ubuntu-1604:/myagent# ./svc.sh start
/etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service
● vsts.agent.demo17-tfs.ubuntu-1604.service - VSTS Agent (demo17-tfs.ubuntu-1604
Loaded: loaded (/etc/systemd/system/vsts.agent.demo17-tfs.ubuntu-1604.service
Active: active (running) since Mon 2017-02-27 14:35:21 EST; 14ms ago
Main PID: 5207 (runsvcl)
CGroup: /system.slice/vsts.agent.demo17-tfs.ubuntu-1604.service
└─5207 /bin/bash /myagent/runsvcl
   └─5211 ./externals/node/bin/node ./bin/AgentService.js

Feb 27 14:35:21 ubuntu-1604 systemd[1]: Started VSTS Agent (demo17-tfs.ubuntu-16
Feb 27 14:35:21 ubuntu-1604 runsvcl[5207]: .path=/home/benday/bin:/home/benday
root@ubuntu-1604:/myagent#
```

- Type ". /svc.sh start" and press Enter
- Press 'Q' to exit the command

The service should be started now and TFS should think that it's online.



- Open your browser
- Navigate to the agent pools page

You should see your build agent and the state should be Online.

You've successfully created a Team Foundation Server build agent on Ubuntu 16.04.