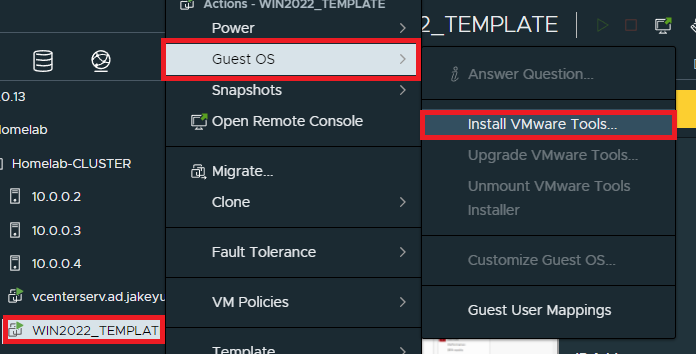
Summary

1. Select a hyper-visor of your choice. ESXi… Hyper-V…VMWare Workstation… anything!
2. Create Virtual Machine and name it **WIN2022\_TEMPLATE**
3. Install Windows Server 2022 (Follow lab 4)
4. Login when the installation is complete

Process:

1. Follow lab 4 to create and install a new Windows Server 2022 virtual machine. However, name the virtual machine **WIN2022\_TEMPLATE**
2. When lab 4 is completed, the first thing you will do is install VMWare tools. To do this, log into vCenter Server and right-click on the Virtual Machine. Hover over **Guest OS** and then a secondary menu will appear. Click on **Install VMWare Tools…** (for those using a different hypervisor this process is relatively the same. Install the Guest OS tools for the hyer-visor that you are using. Hyper-V calls this *Guest Services*, VMware’s version is called *VMWare Tools*).  
     
     
     
   When the window appears.. click on **Mount**.
3. After clicking on Install VMWare tools, log into your virtual machine and open up the file explorer. There should be a **DVD Drive** now appearing called **DVD Drive (D) VMWare Tools**. Double-click this “DVD” drive.  
     
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4. The installation should begin immediately and a VMWare Tools Setup install wizard should appear. Click **Next** all the way through, keeping everything default.  
     
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5. When the Installer has finished, it will ask if you wish to restart to have the changes take affect. Click **YES** on this window.  
     
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6. When your virtual machine comes back online, you should now get a better console window that resizes to fit to your screen. If not, close and re-open the console window from vCenter Server, it should re-adjust. Please keep in mind that, if VMWare tools ever gets updated, you should always run this installer again on the virtual machine template. Same with Windows Updates.
7. Log back into your server, and close the Server Manager if it automatically opens.
8. Open the File Explorer and go to your C: drive, and make a new folder called **Sysadmin Tools**.  
     
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9. Navigate into the **SysadminTools** folder.
10. Open Microsoft Edge in your virtual machine and navigate to <https://docs.microsoft.com/en-us/sysinternals/downloads/>
11. Scroll down until you see **Bginfo** and click on it’s hyperlink  
      
    Text

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12. On the next page, click **Download BgInfo**  
      
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13. This will download a file to your Downloads folder. Navigate to your Downloads folder, and move it to C:\SysadminTools
14. Once **BgInfo** is in the C:\SysadminTools directory, right click **Bginfo.zip** and click **Extract All**.
15. Click **Extract** when the window opens. It should extract to **C:\SysadminTools\BGInfo**Graphical user interface, text, application, email

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16. Close the new Windows Explorer window that opens. Do not do anything else with BGInfo, this is just to place it here ahead of time so that when you do deploy a new VM template, it is easily accessible and ready to install.
17. Close all other Windows Explorer windows.
18. Next, at the bottom left hand corner of the screen, click the Start Button and then **Right click** on Windows Powershell, hover over **More** and then click on **Run As Administrator**.  
      
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19. A new Powershell window should now be open. In this window, type the following command: **Set-ExecutePolicy -ExecutionPolicy ByPass** and then hit Enter.
20. A warning will appear, type **A** to select *Yes to All* and then hit ENTER again.  
      
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21. The command should complete with no output.
22. Close the Powershell Window.
23. Next you will click the **Start Button**, then click on **Settings**.  
      
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24. The Windows Settings will open, click on **Update & Security**Text

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25. This will open the *Windows Update* section. Click on **Check For Updates**.  
      
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26. It should begin downloading and installing the latest updates automatically. Depending on your hardware, CPU, RAM, Local Area Network and Internet Service Provider, this can take time. Allow this to run… go grab some coffee.  
      
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27. Allow all the updates to finish installing. Skip the optional quality updates as those are typically previews. If your virtual machine requires a reboot to commit an update, please do so now. To check and see if a Windows Server is pending a reboot, click on **View Update History**.  
      
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28. This page will list whether an update is installed or **pending a reboot**, since we recently downloaded the Windows Server 2022 Evaluation ISO, I did not have any new Cumulative updates for the Operating System. These Cumulative updates include security updates for the operating system that should be installed monthly.  
      
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29. The final step we will perform in the operating system is enable remote desktop connections to be allowed to remotely connect to the Windows Server. To do this, go back to the **Windows Settings** page. (Start Button -> Settings Cogwheel)
30. At the top of the Windows Settings page, you will see *Find A Setting* with a text box. Type **Remote Desktop** in that text box. Results should preview below the textbox as you begin typing, click on **Allow remote connections to this computer**.  
      
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31. Scroll down until you see **Remote Desktop** as a heading. There will be a blue checkbox showing *Change settings to allow remote connections to this computer*. Click on **Show Settings**.  
      
    A screenshot of a computer

    Description automatically generated with medium confidence
32. A dialog box will appear, within the **Remote Desktop** section of this dialog box, click the radio button that says **Allow remote connections to this computer**. This will prompt a warning window stating that you are opening up the remote desktop protocol for all network types… just click **Ok** for now.  
      
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33. Click **Apply** and then **OK**.
34. Close the **Windows Settings** window.
35. If you know how to use RDP/Remote Desktop Protocol, you may test it at this time to make sure you can connect. At this time, you may now gracefully shut down the virtual machine as we will convert this virtual machine into a template next.  
      
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36. Once the Virtual Machine is completely shut down, log into the vCenter Server / vSphere Console.
37. Optional: Click on the **WINDOWS2022\_TEMPLATE** virtual machine you just shut down and you may modify the **CPU** and **RAM** only. Set it to your personal preference. If there is no preference, keep it at **2 CPU** and **4GB of RAM** as those are the bare minimum requirements for Windows Server 2022 (Desktop Experience). Make sure to disconnect the DVD/CD Drive Windows Installation Media!!!
38. Right-Click on **WIN2022\_TEMPLATE**, click on **Template** and then click on **Convert To Template**.  
      
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39. When the warning window appears, click **Yes**, stating that you wish to convert the virtual machine **WIN2022\_TEMPLATE** to a template.  
      
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40. The virtual machine should now disappear from your virtual machine inventory.
41. If you click on the “file” looking icon at the top left of the vSphere console, you will see a folder structure. It should be sitting under the **Templates** directory now.  
      
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42. Ok… so great. Now how do we use it? Great question.
43. Right-Click on your Cluster or Host and create a new virtual machine.  
      
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44. This time… you want to select **Deploy From Template** and then click next.  
      
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45. Now you can select it from your Content Library or Data Center hosts (VMWare). Your experience may vary in other hyper-visors such as Oracle VirtualBox. Select the template you just created, **WIN2022\_TEMPLATE** and click next.  
      
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46. Then… configure your virtual machine as you normally would. Give it any name you want. In VMWare it will give you some clone options, I don’t select any and click next until the wizard is finished.
47. Your hypervisor will now clone from the template and create the new virtual machine.
48. **Make sure to not forget to disconnect the Windows Installation media from the Virtual Machine, I forgot to include this earlier in the process before converting the template into a Virtual Machine. Always check and make sure just in case you forgot when making the template.**A screenshot of a computer

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49. Power on your virtual machine!
50. Open the console and it should lead you straight to the CTRL+ALT+DEL screen, go ahead and log in.
51. Once you are logged in the **Server Manager** window will open, this time don’t close it!
52. Click on **Local Server** in the Server Manager.  
    Graphical user interface

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53. The very first field you should see on the left side is **Computer Name**, go ahead and change that to whatever name you gave the virtual machine. Now is also the time to join the domain if you have one present. If you don’t, then just change the computer name.
54. To change the Computer name, click on the actual name.  
      
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55. This will open a new dialog window. Click on **Change**.  
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56. Another dialog window will open, go ahead and change the **Computer Name** (and optionally the domain you wish to join as well), then click **Ok**. After you click Ok, it will think for a minute…. Then a dialog box will appear stating that you need to reboot your machine. Click **Ok**.  
      
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57. After you click ok the dialog boxes will close. Close the **System Properties** dialog box as well, along with Server Manager.
58. Reboot your Virtual Machine to apply the name change.  
      
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59. When the virtual machine comes back online, log back in and open **Powershell**.
60. In Powershell, type **hostname** and press enter. It should now reflect the name you just changed the Windows virtual machine to.  
      
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61. Close Powershell and open Windows Explorer. Navigate to **C:\Sysadmintools\BGinfo**
62. Double click on **Bginfo64**Table

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63. Click on Agree for the License Agreement  
      
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64. The application should install and immediately open, click on **Apply** and then **OK**.   
      
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65. Now minimize your window and look at your desktop. You will notice some information populating over your Desktop image background.
66. If you change your desktop background just to be black, it makes it easier to read. This is how we have it set up at my work.   
      
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67. You are complete!
68. Key Takeaways:
    1. Don’t forget to disconnect the Windows Installation Media when converting a Virtual Machine to a template.
    2. You can install other programs such as Google Chrome, Firefox, Office products etc, as many as you’d like when making a template.
    3. I for the most part followed Microsoft’s guide which is located here: <https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/manage/hybrid/server/best-practices/vmware-windows-template>