

Updated 11/14/23

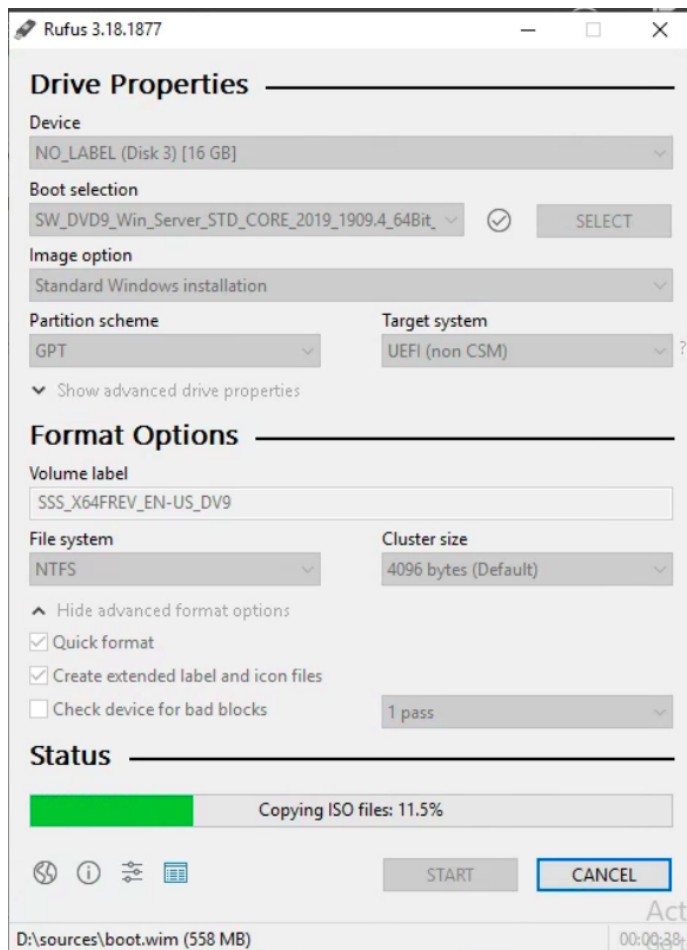
SYS-350 Milestone 11: Hyper-V

Administrator
snow

💡 This week we will wipe our original ESXi Host (superX) and install Windows Server 2019 (GUI) in its place. You can run HyperV on Server Core but you still need another Windows Host to manage it. We will therefore use the Desktop Experience. One of the major challenges will be to get the enormous ISO image deployed to our superX server. A USB thumb drive makes the most sense.

Booting the ISO

Making a Windows Bootable USB Stick with Rufus using the Windows 2019 Server ISO from the X: or from 192.168.7.240/isos or 192.168.7.241/isos



Installing Server 2019

[SYS-350 Hypervisor Assignments](#)

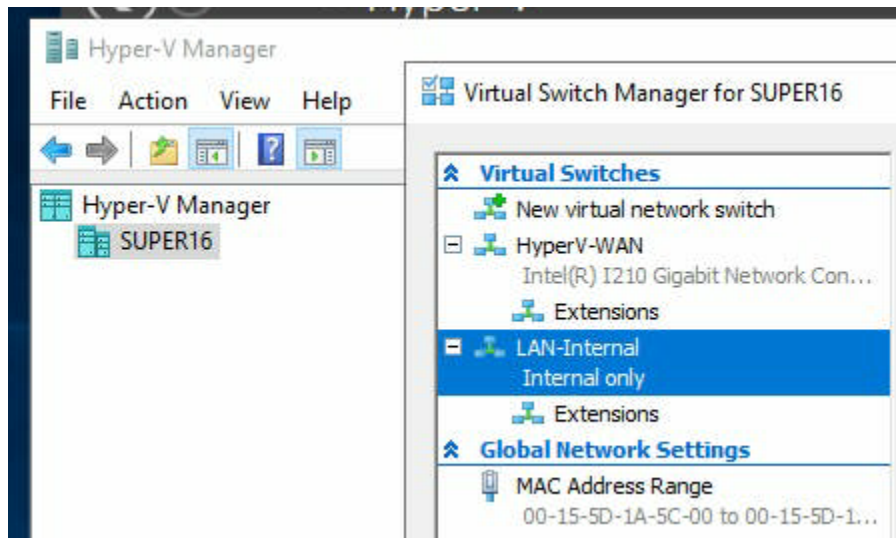
Using IPMI and iKVM, Install Server 2019 - DataCenter (Desktop Experience) using the bootable USB drive.

- **Make sure to delete the numerous ESXi partitions from your server before installation.**
- Your IP address will be the one previously assigned to superx.cyber.local.
- Note, on the supers the physical ETH0 port on the server may show up as a different Ethernet number in Windows. This will be relabeled through Hyper-V
- If you have a second drive, configure it to use a storage drive by Windows as that is a good place for ISO file, templates, and VM storage.

After 2019 is up, **install Hyper-V on the server** (Hint: Roles and Features).

In the Hyper-V Manager- use the Virtual Switch Manager so that you have:

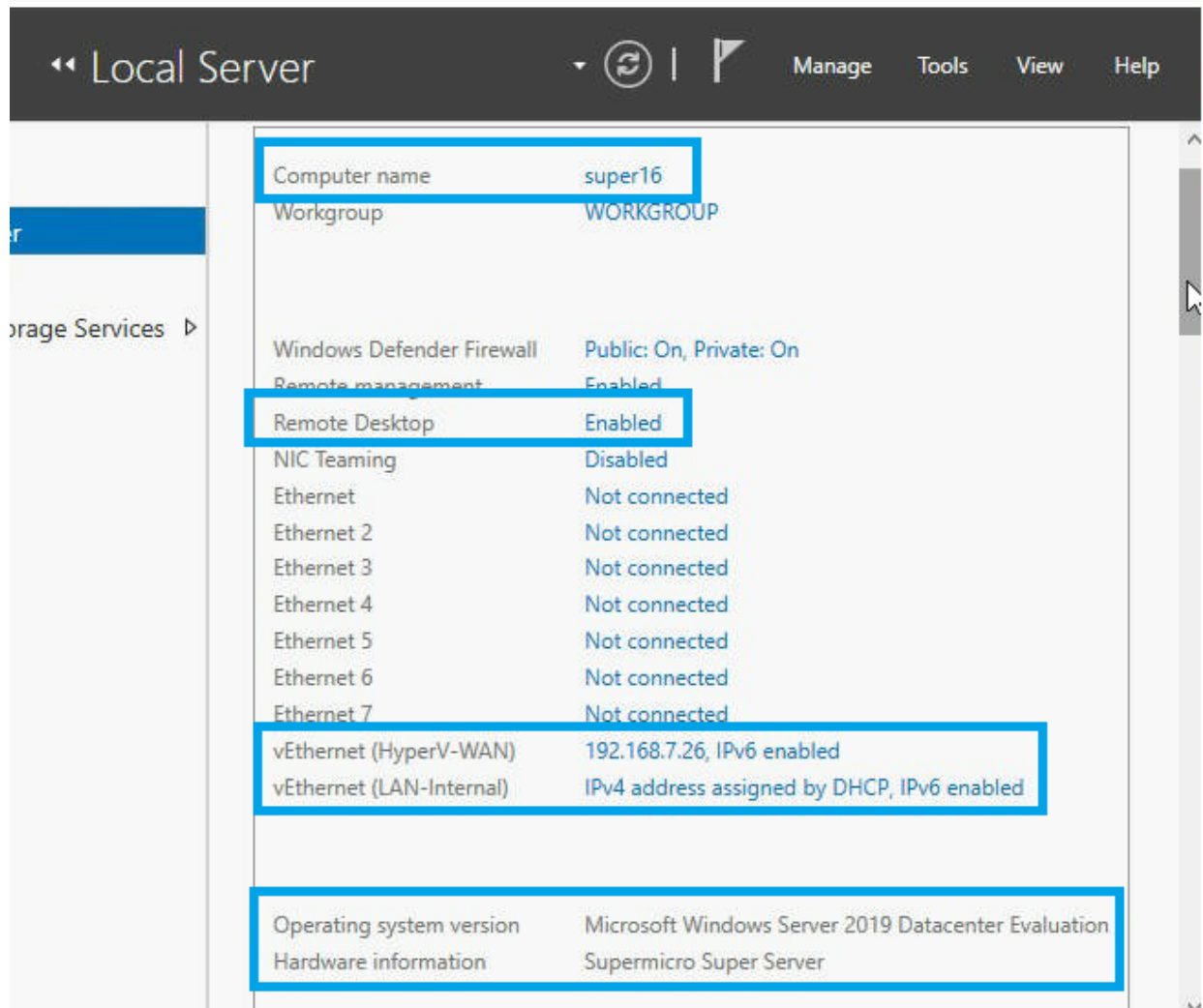
- The existing Ethernet connection (Joyce Network) renamed to Hyper-V-WAN as the “external” networks
- A new Virtual Switch called LAN-INTERNAL defined as an “internal switch



Make other changes to the server so it is consistent with the screenshot below.

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Deliverable 1. Provide a screenshot similar to the one below.



Installing WAC

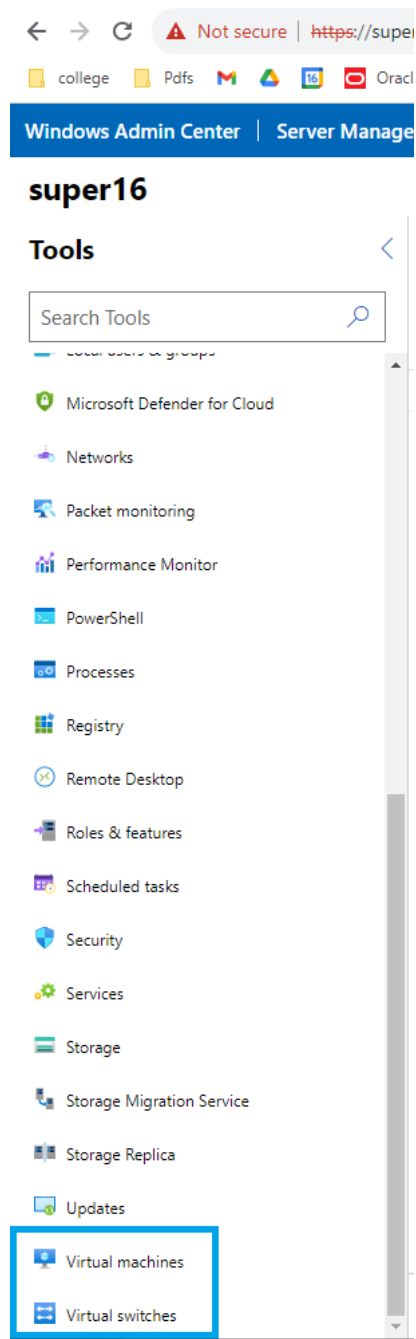
Install Windows Admin Center (WAC) on your HyperV server.

- Can use browser on server to download installer from: <https://aka.ms/WACDownload> OR
- Use Powershell to do it from terminal
- WAC should be accessible via browser on your workstation

Figure out how to install the **Virtual Machines and Switches Extension** in WAC

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Deliverable 2. Provide a screenshot similar to the one below that illustrates that you have installed WAC and the extensions.



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HyperV VMs

VM1- pFSense

Create a HyperV pfsense VM:

- ISO from 192.168.7.240/isos or 192.168.7.241/isos
- with 2 interfaces
 - One on your WAN
 - and another on the Internal network.
 - Disable secure boot on non windows systems like pfsense

```
*** Welcome to pfSense 2.7.0-RELEASE (amd64) on pfSense ***

WAN (wan)      -> hn0      -> v4: 192.168.7.86/24
LAN (lan)      -> hn1      -> v4: 10.0.16.1/24

0) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults    13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

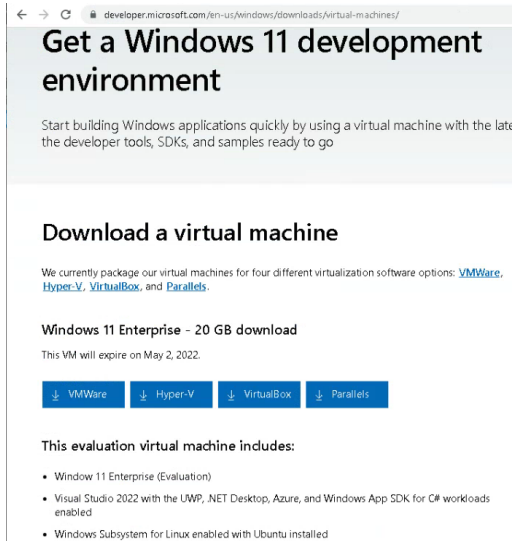
Enter an option: █
```

VM2- Windows 11

Download a Windows 11 Hyper-V Virtual Machine from this site:

<https://developer.microsoft.com/en-us/windows/downloads/virtual-machines/>

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The screenshot shows a web browser window with the URL `developer.microsoft.com/en-us/windows/downloads/virtual-machines/`. The main heading is "Get a Windows 11 development environment". Below it, a subheading reads "Download a virtual machine". The text states: "We currently package our virtual machines for four different virtualization software options: [VMWare](#), [Hyper-V](#), [VirtualBox](#), and [Parallels](#)." A section titled "Windows 11 Enterprise - 20 GB download" includes a note: "This VM will expire on May 2, 2022." Below this are four buttons with download icons and labels: "VMWare", "Hyper-V", "VirtualBox", and "Parallels". A section titled "This evaluation virtual machine includes:" lists the following items:

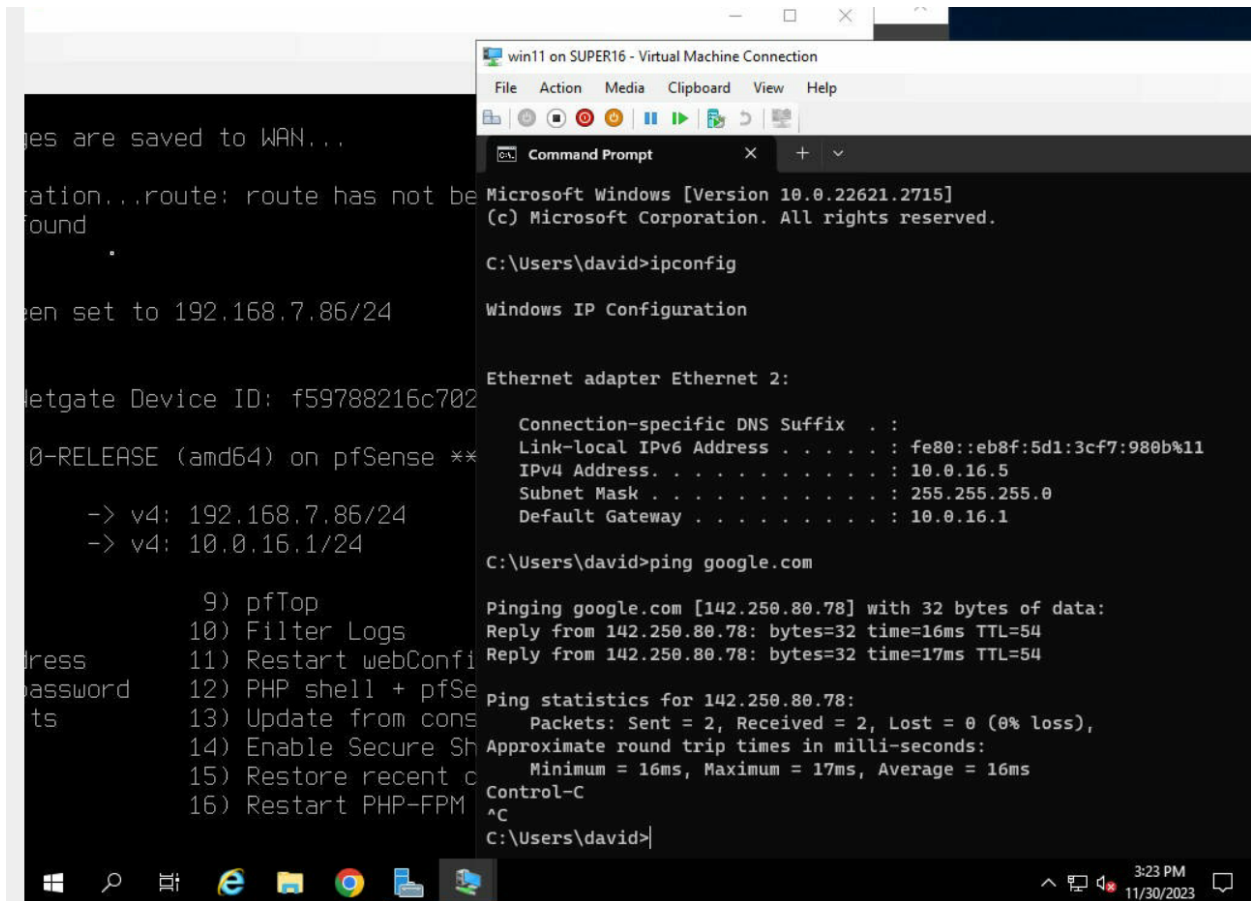
- Windows 11 Enterprise (Evaluation)
- Visual Studio 2022 with the UWP, .NET Desktop, Azure, and Windows App SDK for C# workloads enabled
- Windows Subsystem for Linux enabled with Ubuntu installed

Configure this Windows 11 Virtual Machine on your Internal Network.

Deliverable 3. Provide a screenshot that shows your Windows 11 Host pinging google.com via the gateway (The Internal network interface for your firewall). Note the 10.0.5.x address of the Windows 11 host. In the example, the pfSense system is providing dhcp to the internal network but you can also configure static settings on Windows 11 box.

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Deliverable 3. Provide a screenshot similar to the one below that shows connectivity from INTERNAL->WAN->GOOGLE Similar to the one below.



The screenshot displays a Windows 11 virtual machine environment. On the left, a terminal window shows the configuration of a pfSense virtual interface (v4) with IP 192.168.7.86/24 and a gateway of 10.0.16.1/24. On the right, a Command Prompt window shows the results of an 'ipconfig' command, indicating the Ethernet adapter 'Ethernet 2' has an IPv4 address of 10.0.16.5 and a default gateway of 10.0.16.1. Below this, the 'ping google.com' command is executed, showing successful connectivity with a 0% loss of packets and round-trip times between 16ms and 17ms. The taskbar at the bottom shows the system clock as 3:23 PM on 11/30/2023.

```
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

C:\Users\david>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

    Connection-specific DNS Suffix  . : 
    Link-Local IPv6 Address . . . . . : fe80::eb8f:5d1:3cf7:980b%11
    IPv4 Address. . . . . : 10.0.16.5
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.16.1

C:\Users\david>ping google.com

Pinging google.com [142.250.80.78] with 32 bytes of data:
Reply from 142.250.80.78: bytes=32 time=16ms TTL=54
Reply from 142.250.80.78: bytes=32 time=17ms TTL=54

Ping statistics for 142.250.80.78:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 16ms, Maximum = 17ms, Average = 16ms
Control-C
^C
C:\Users\david>
```

Deliverable 4. Tech Journal. Discuss how you

- Configured your Windows 11 Host
- Installed HyperV and Management Tools (Powershell is great for this)
- Installed WAC
- Configured Your HyperV Networks (this is not straight forward)
- How you created and configured your firewall of choice
- How you imported and configured your Windows 11 host.

<https://github.com/dthomsen116/SYS-350/wiki/SYS350-%E2%80%90Milestone-11-%E2%80%90Hyper%E2%80%90>