

Homework 3

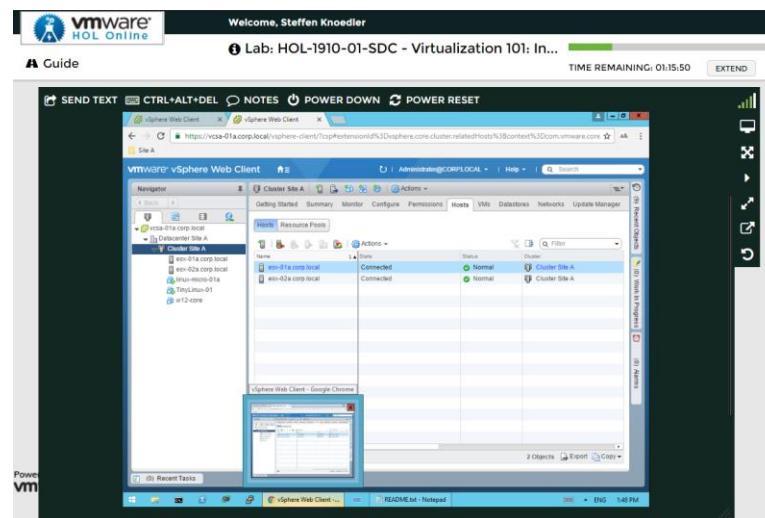
VMware

Section 2: HOL-1910-01-SDC - Virtualization 101: Introduction to vSphere

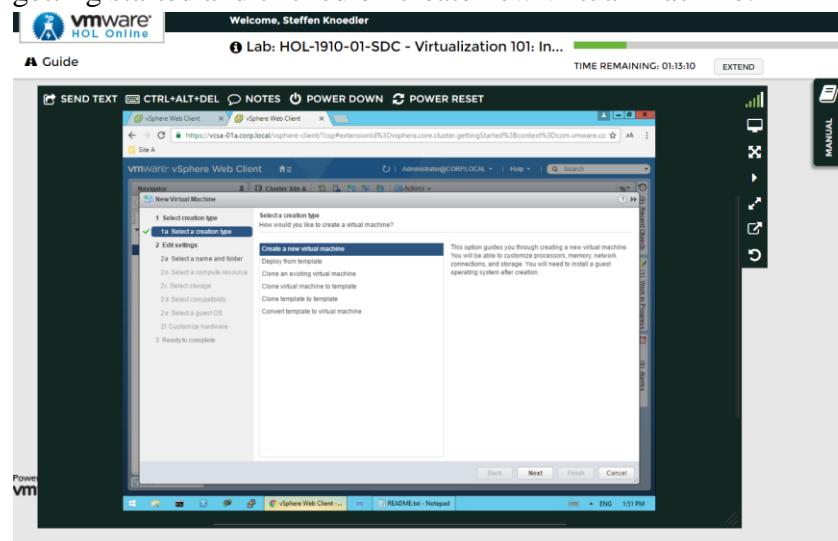
MODULE 1 - INTRODUCTION TO MANAGEMENT WITH VCENTER SERVER

1. Using the vSphere Web Client

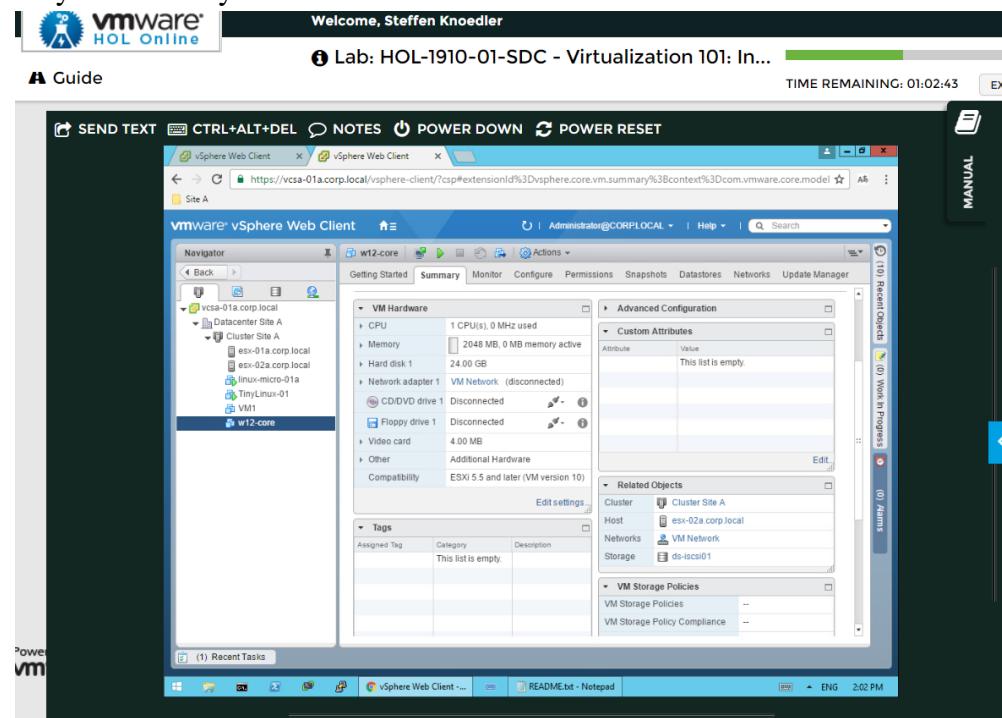
- Create a Virtual Machine



I opened chrome and logged in with the credentials that were given by VMware in the text file. I expanded the vcsa-01a.corp.local tree to expose the "DataCenter Site A" object and clicked on "DataCenter Site A". I went to getting started and clicked on create new virtual Machine:

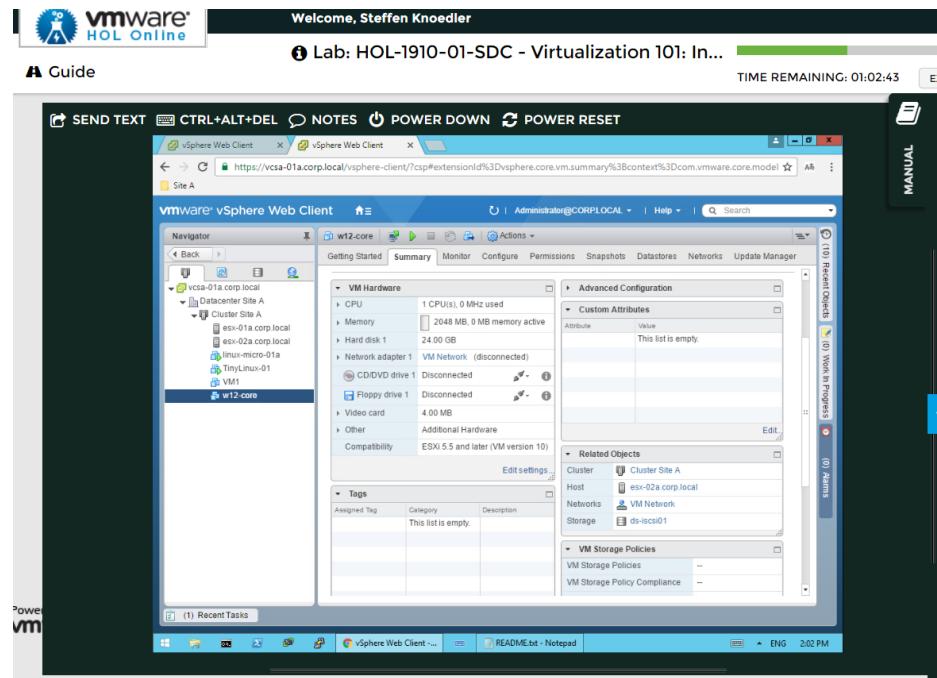


I selected the available cluster and WMware automatically determined which host to use for my VM. Next, I selected a big datastore with enough capacity and I used the latest campatability for the VM because it uses the latest available hardware. I chose Windows as an OS and continued with the disk space of only 5GB for my VM.

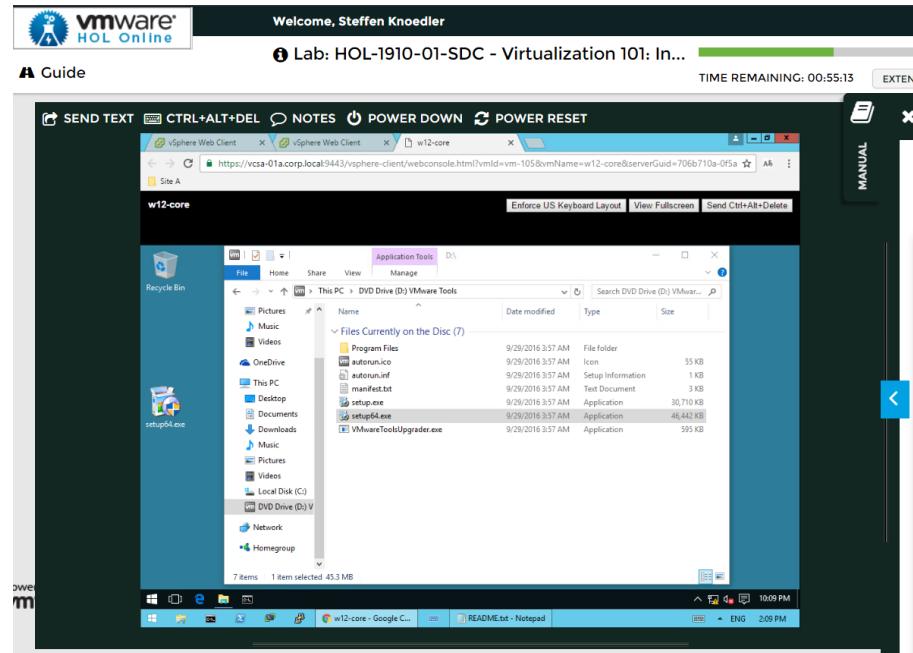


b. Attaching an ISO to a Virtual Machine

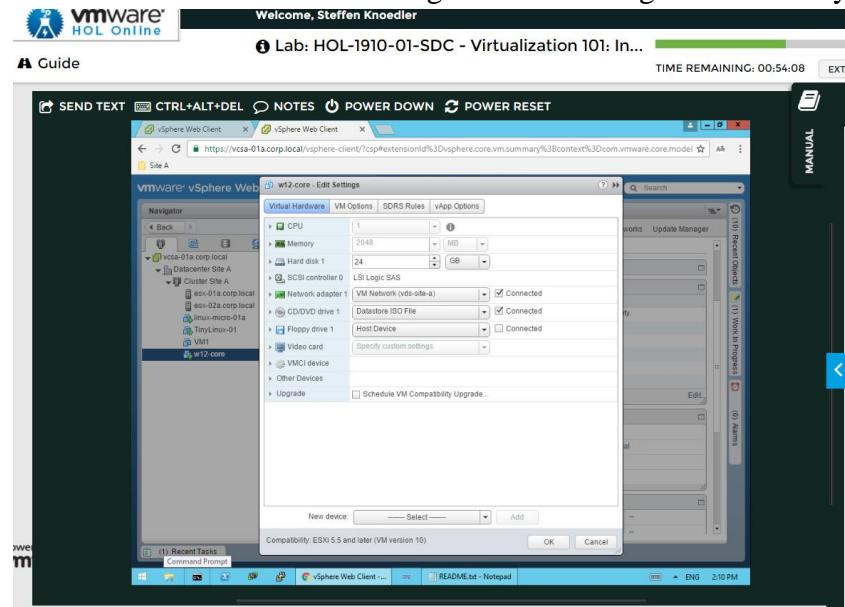
Now, I have a virtual machine but I might want to install VMware tools on that instance. This helps me to improve the management of the VM. I chose to install the VMware tools manually using an ISO image as you can see in the following:



Opened the settings of the VM and went into the virtual hardware tab, where I clicked on the CD/DVD drive. There, I selected a datastore ISO file and I chose a windows.iso started in a folder of my datastores. When chosen, I ticked the connected box to make sure I can use the iso file.



Then I unmounted it from VM again in the settings of the VM by deselecting



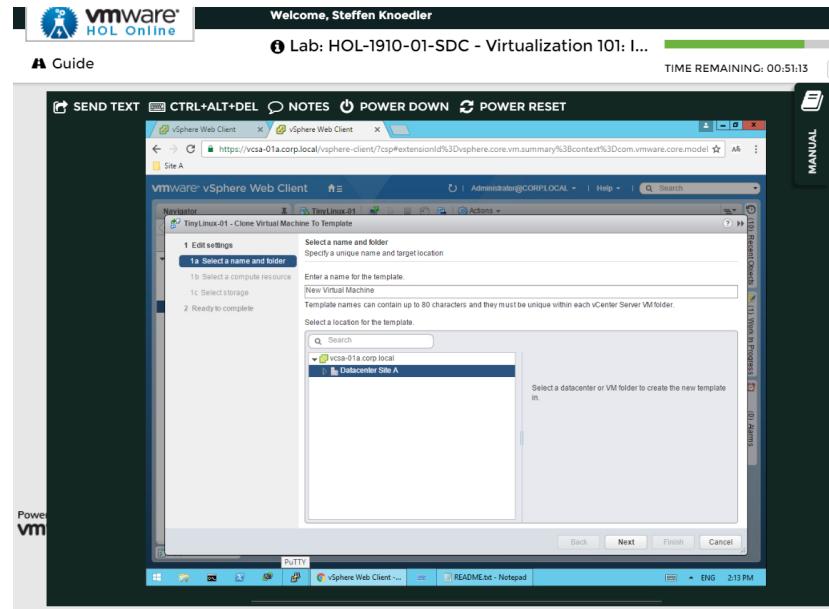
2. Cloning Virtual Machines and Using Templates

- Follow the entire process to Create Clone VM using Templates (see snap below for reference)

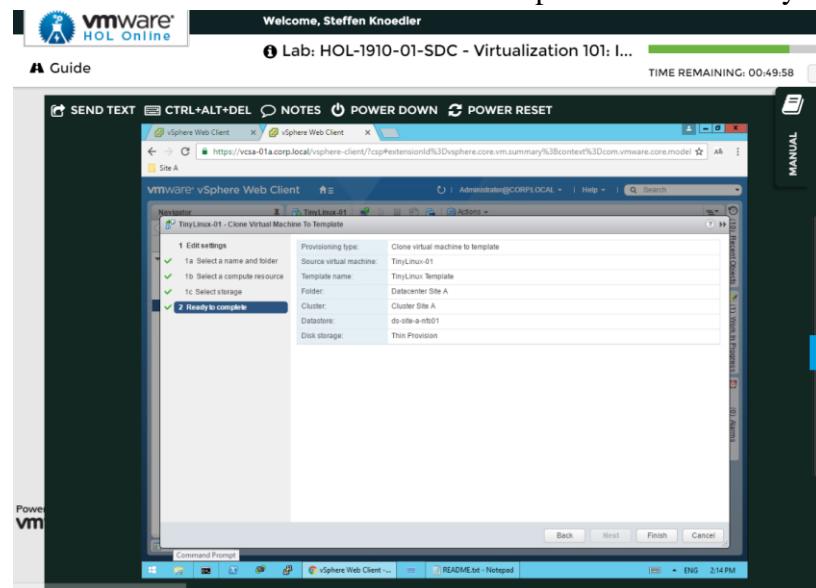
Often, I need more than one virtual machine. So, what I can do is installing the OS on the virtual machine and using this when cloning to create new ones.

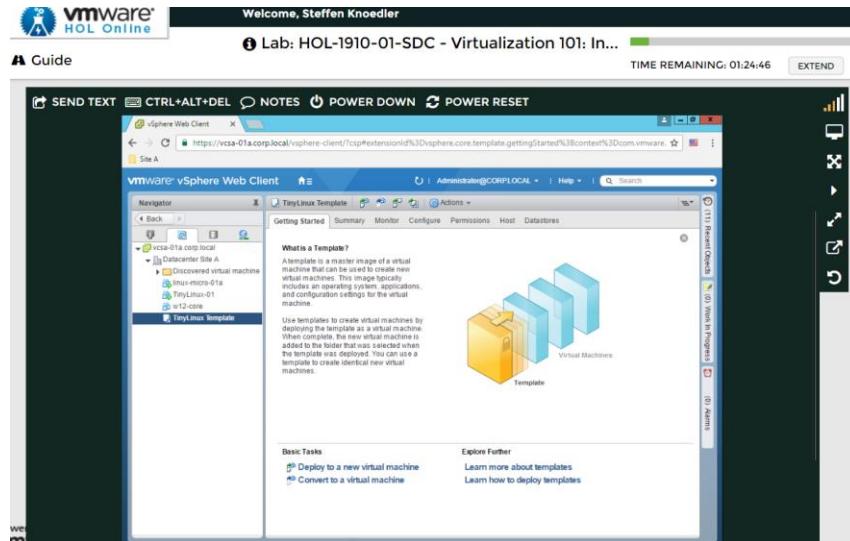
This can save a lot of time because I only need to configure one virtual machine and not all of them individually. However, I can also use a template to clone a virtual machine. This can be very useful when I want to create similar VMs but would like to customize each system independently on basis of the template.

So, I went to the VM TinyLinux-01, right clicked and selected “clone to template”

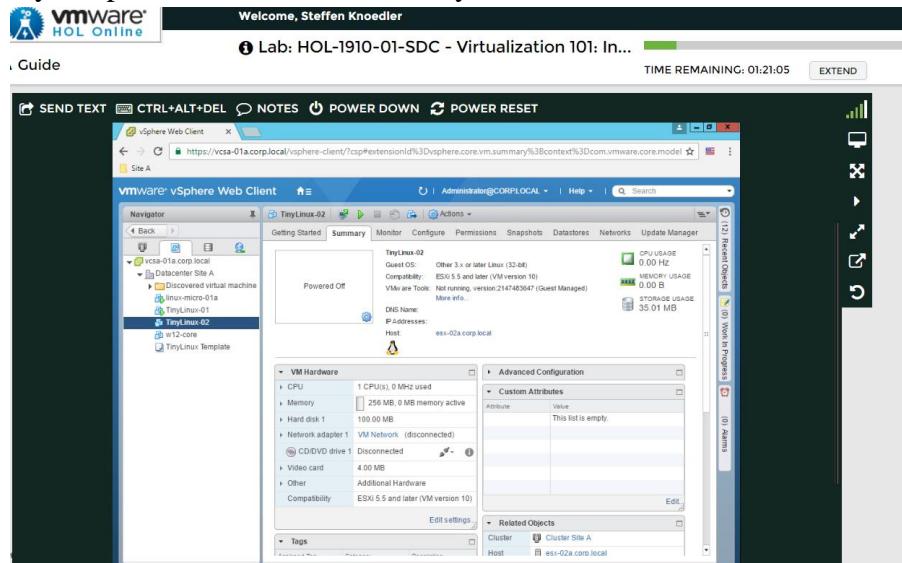


I chose the datastore with the most free space and created my template.



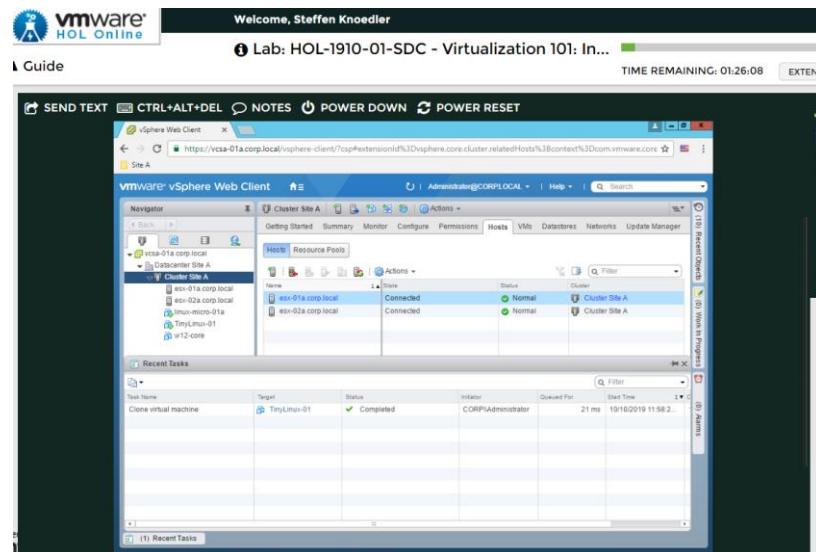


Then I selected my template and clicked on Deploy to a new VM. On basis of my template, I created the VM TinyLinux-02:

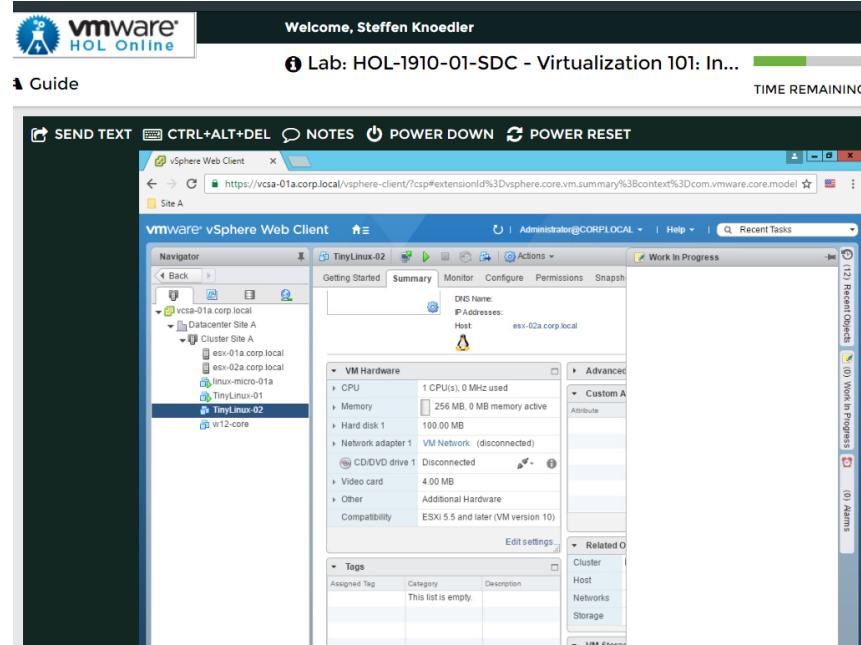


- b. Monitor task progress (before and after cloning VM using template)

So, in the lower corner I could see that my template got created:



After the deployment of my VM, I looked into the “work in Progress” section to observe whether anything is still in progress. As you can see the VM got created and the work in progress is empty:



3. Using Tagging and Search to Find Objects Quickly

a. Create a New Tag

Tags can be very useful in WMware. They allow to add metadata to objects in my inventory and attach information about my infrastructure from outside of vSphere.

So, I went into tags section and created a tag for the web tier category.

The screenshot shows the vSphere Web Client interface. The title bar reads "Welcome, Steffen Knoedler" and "Lab: HOL-1910-01-SDC - Virtualization 101: I...". The main content area is titled "Tags & Custom Attributes" with a sub-section "Getting Started". It contains a diagram illustrating how tags and custom attributes are applied to various vSphere objects like hosts, clusters, and datastores. Below the diagram, there's a "Basic Tasks" section with links to "New tag", "New Category", and "Convert Custom Attributes". The left sidebar has a "Tags & Custom Attributes" section under the "Administration" category.

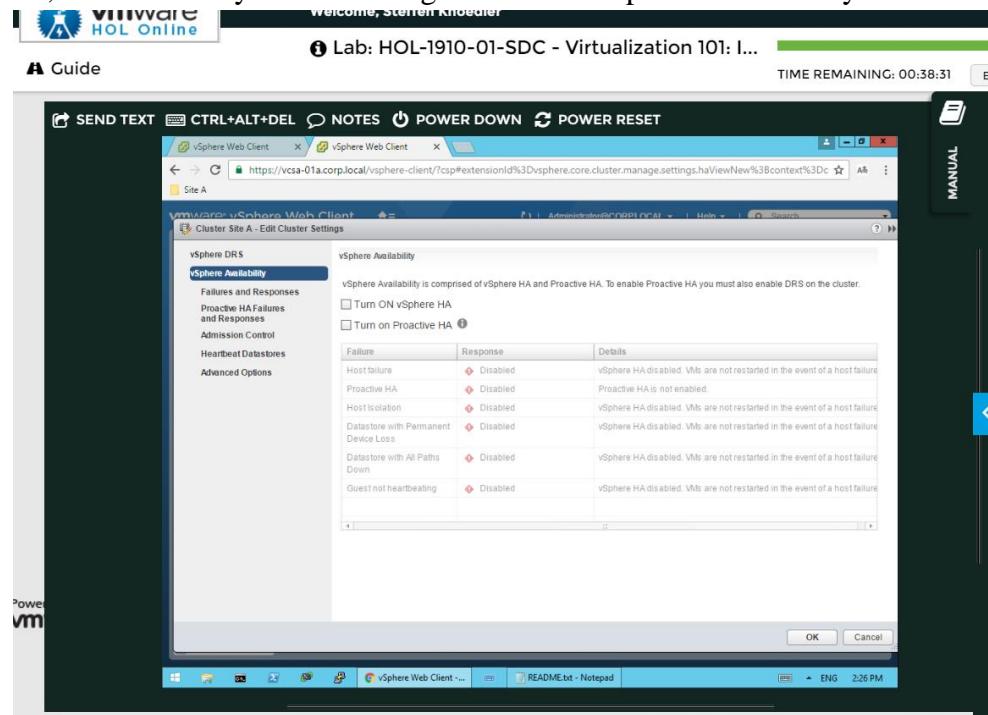
This screenshot shows the same vSphere Web Client interface after creating a tag. The "Tags & Custom Attributes" page now displays a table with one item: "tag1" under the "Category" "web tier". The rest of the interface is identical to the previous screenshot, including the title bar and sidebar.

4. Understanding vSphere Availability and Distributed Resource Scheduler (DRS)

a. Enable vSphere HA

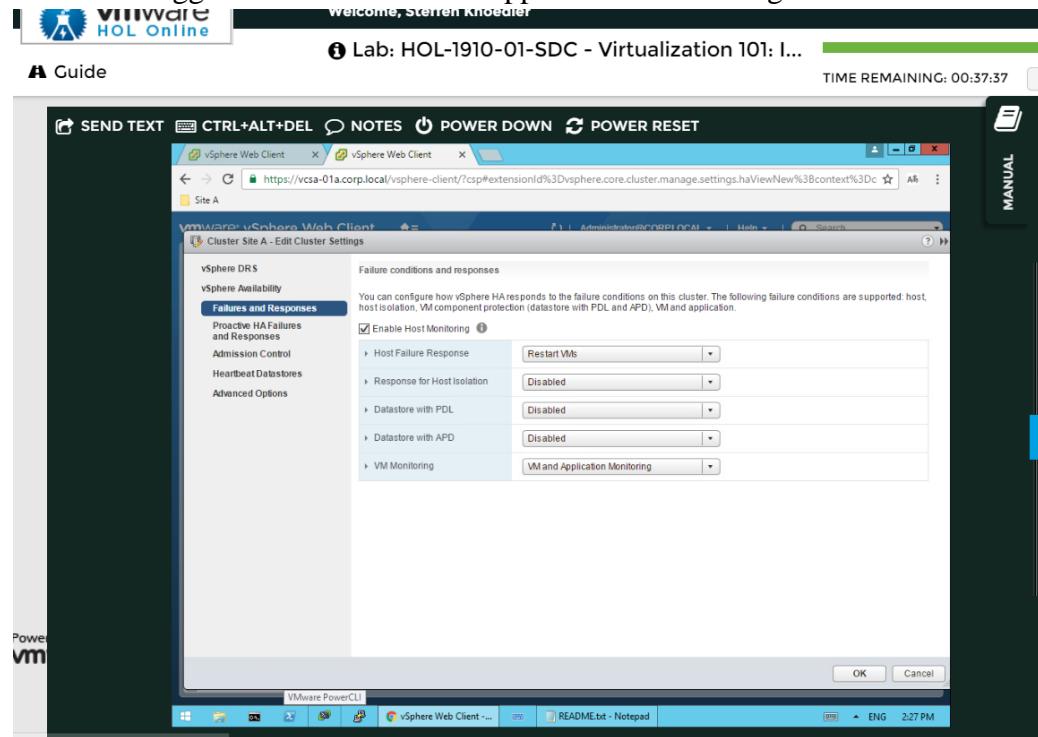
vSphere HA protects my VMs from downtime by automated recovery if the host fails. The distributed resource scheduler ensures performance by balancing the VM workloads across the hosts cluster.

So, I went into my cluster settings and chose vSphere Availability:

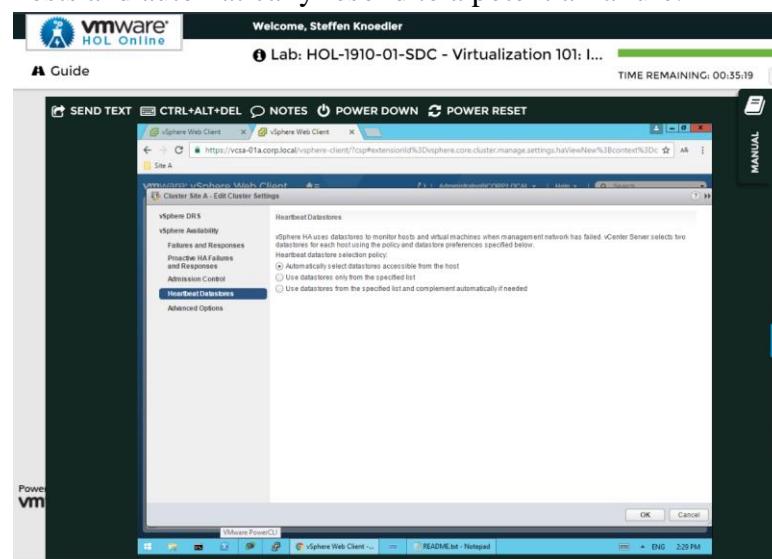


Here, I turned on the vSphere HA and chose under failures, how vSphere

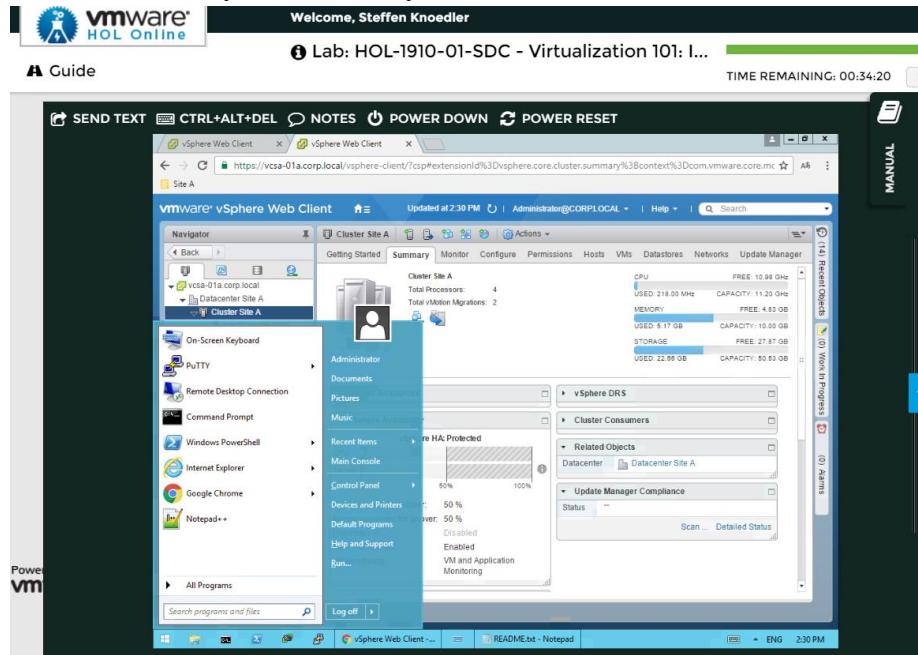
should be triggered: I chose VM and application monitoring.



Next, I went to the admission control where I selected in “define host failover capacity by cluster resource percentage. So, I set aside 25% of CPU and memory resources to be used for a failover. Next, I went into the Heartbeat datastores, where I chose the automatically selection of datastores. This is another layer of protection that I can use. It allows vSphere HA to monitor hosts and automatically respond to a potential failure.



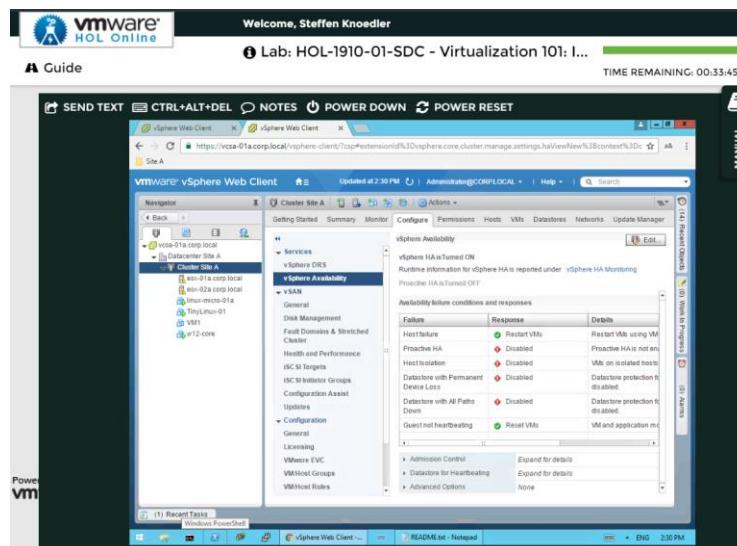
b. Use the Summary Tab to Verify that HA Is Enabled

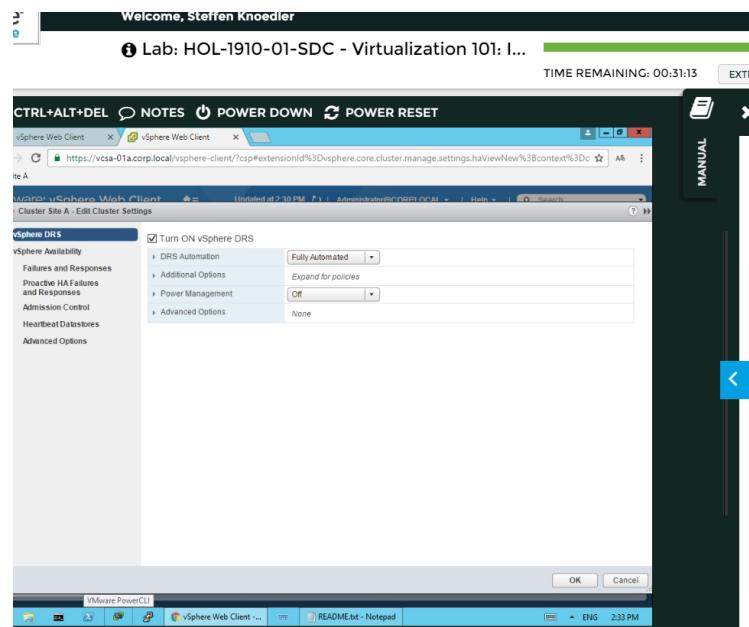


Sorry for the opened menu. I did not realize I opened it on the Menu when taking the screenshot. However, you can still see that it is indeed enabled!

c. Enable Distributed Resource Scheduler (DRS)

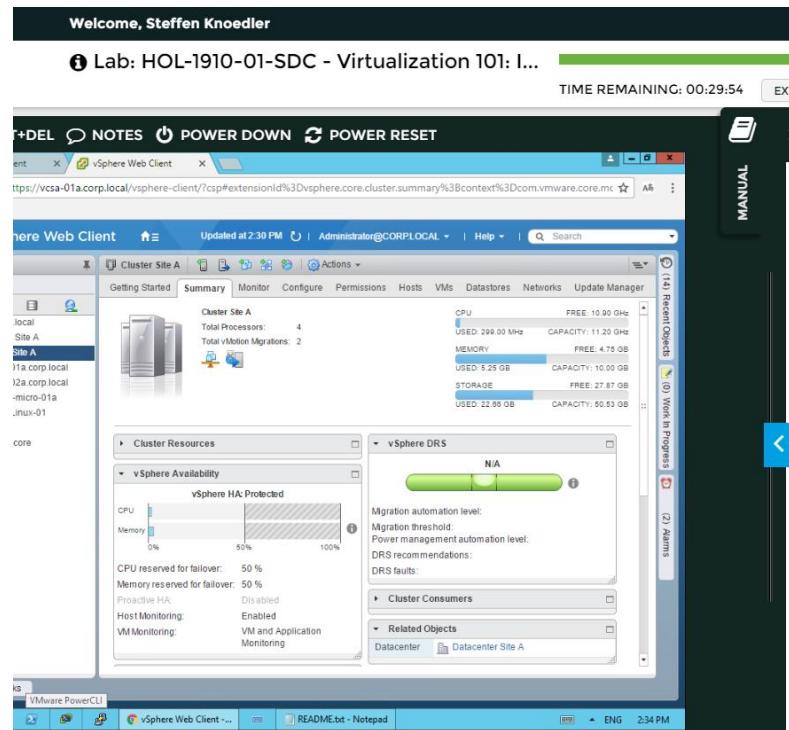
Here, I went into the configure tab and chose the vSphere DRS, which I turned on in the edit section.





- d. Use the Cluster's Summary Tab to Check Cluster Balance

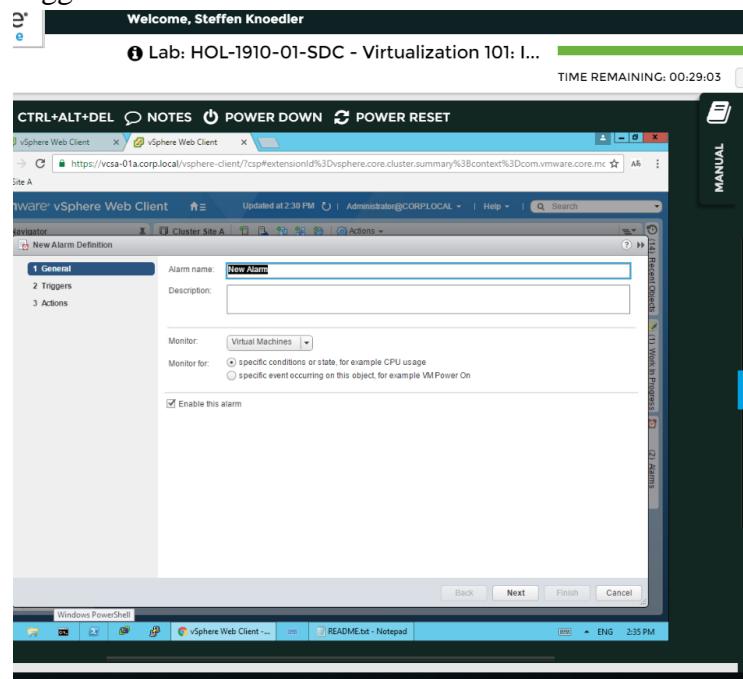
This overview shows the current balance of the cluster. As you can see the cluster is balanced now,



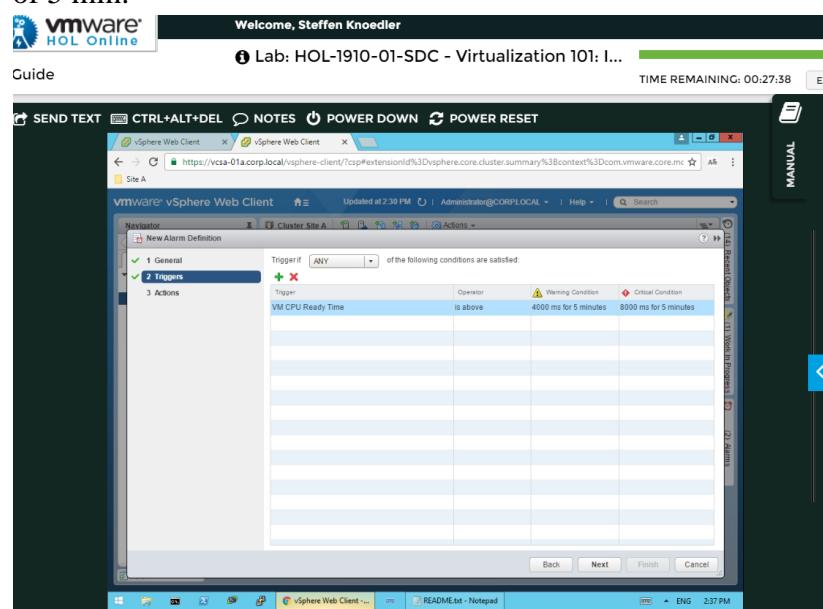
5. Monitoring Events and Creating Alarms

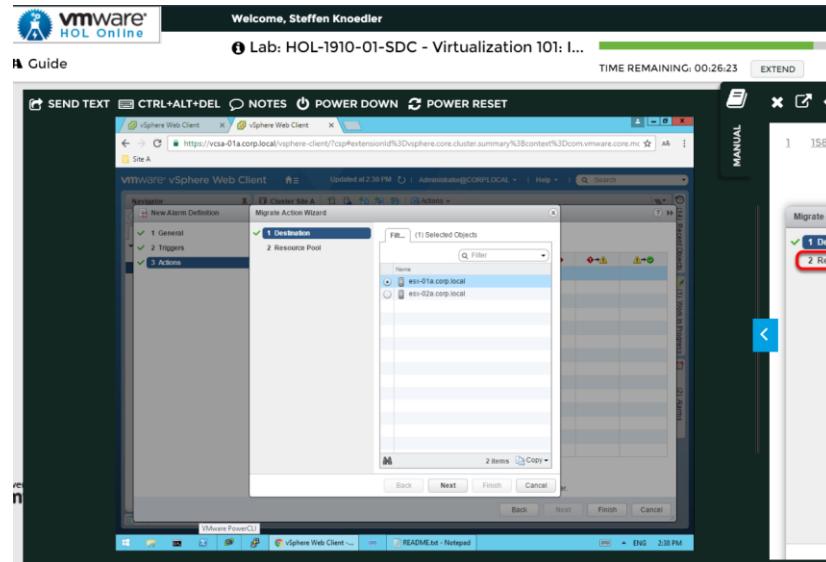
a. Create New Alarm

Alarms are a very important feature of VMWare as it helps to automatically supervise the environment. It tracks events that happen in vSphere and stores them in a log file. I can modify the conditions under which the alarm should be triggered:

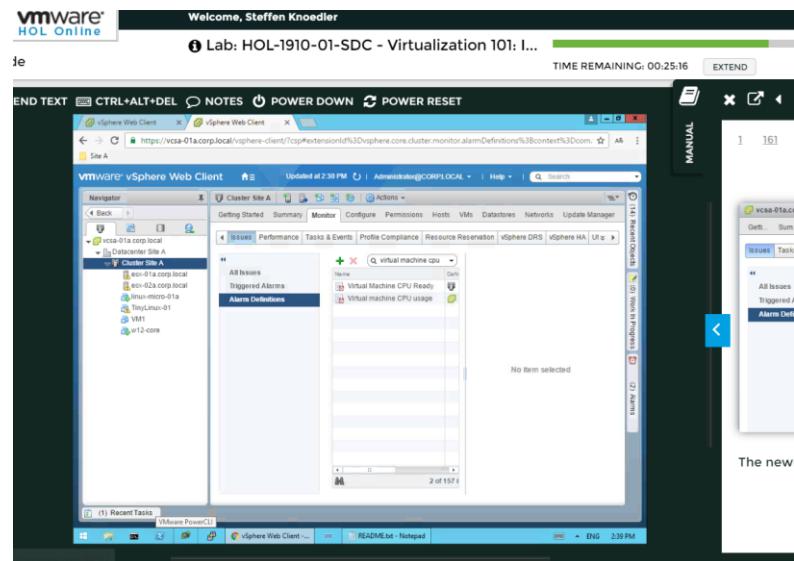


So I created a new alarm that should supervise the VM CPU ready time. It will migrate a VM if the CPU ready exceeds an average of 8000ms over the period of 5 min.





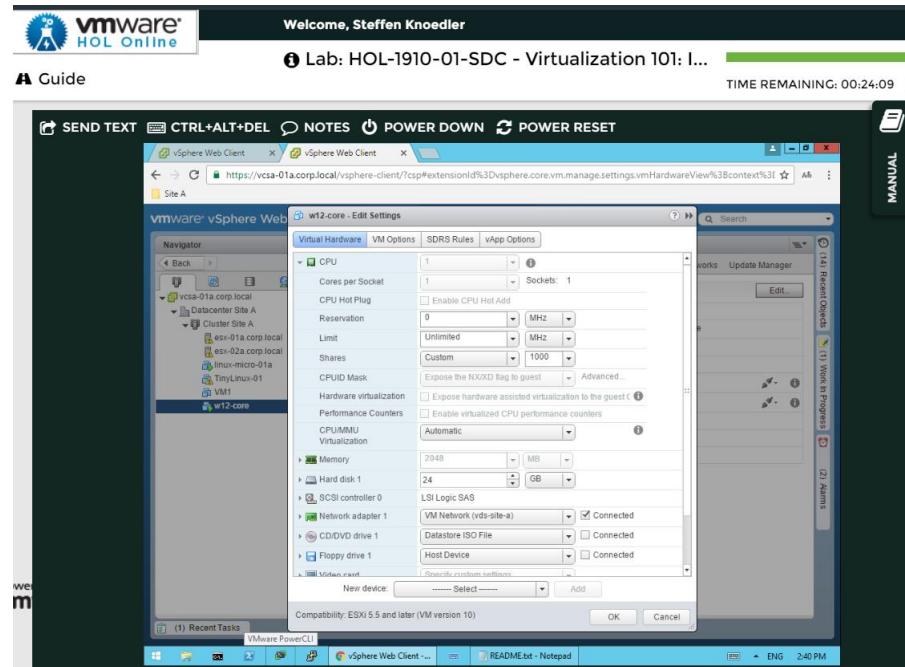
b. New Alarm Created



6. Configure Shares and Resources

a. Changing Resource Allocation of CPU shares

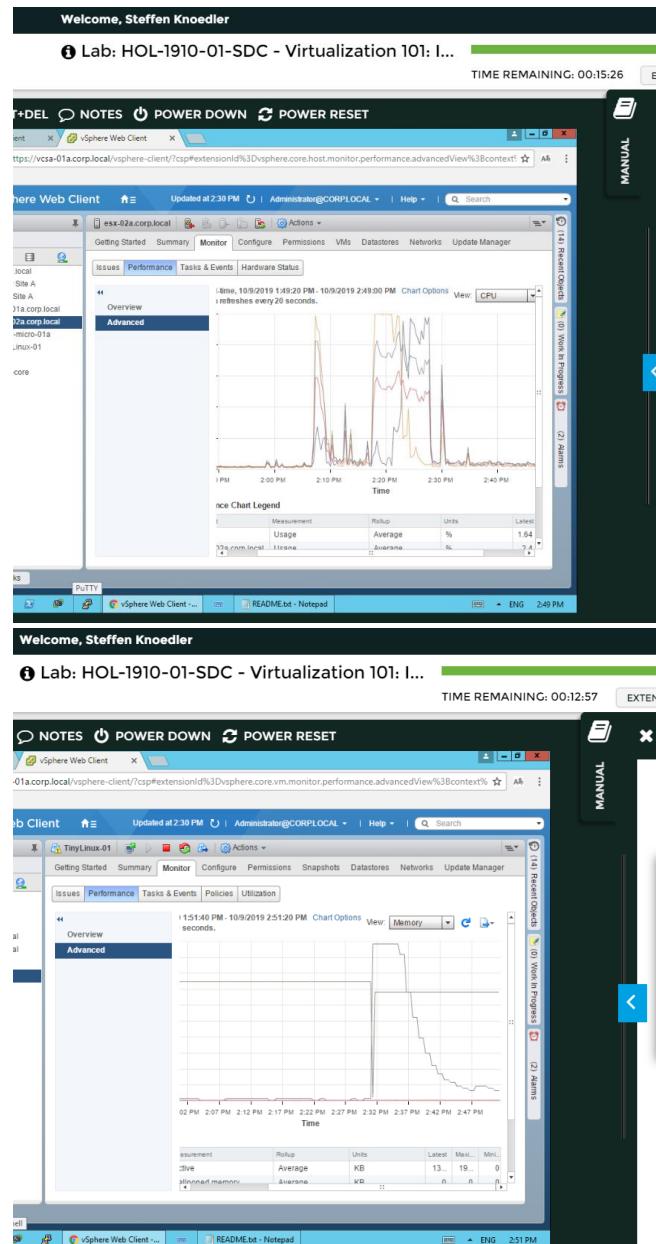
For each VM, I can change the cpu shares. When we want to make sure that the VM gets the majority of the CPU resources when contention takes place for these resources. Therefore, I increase the number of shares so that the CPU shares are not equal anymore.



7. vSphere Monitoring and Performance

a. Perform all the steps to check and explain how enabling DRS affects memory and performance

The distributed resource scheduler ensures performance by balancing the VM workloads across the hosts cluster. As you can see in the two following screenshots this has a positive affect on memory and performance of the VM.

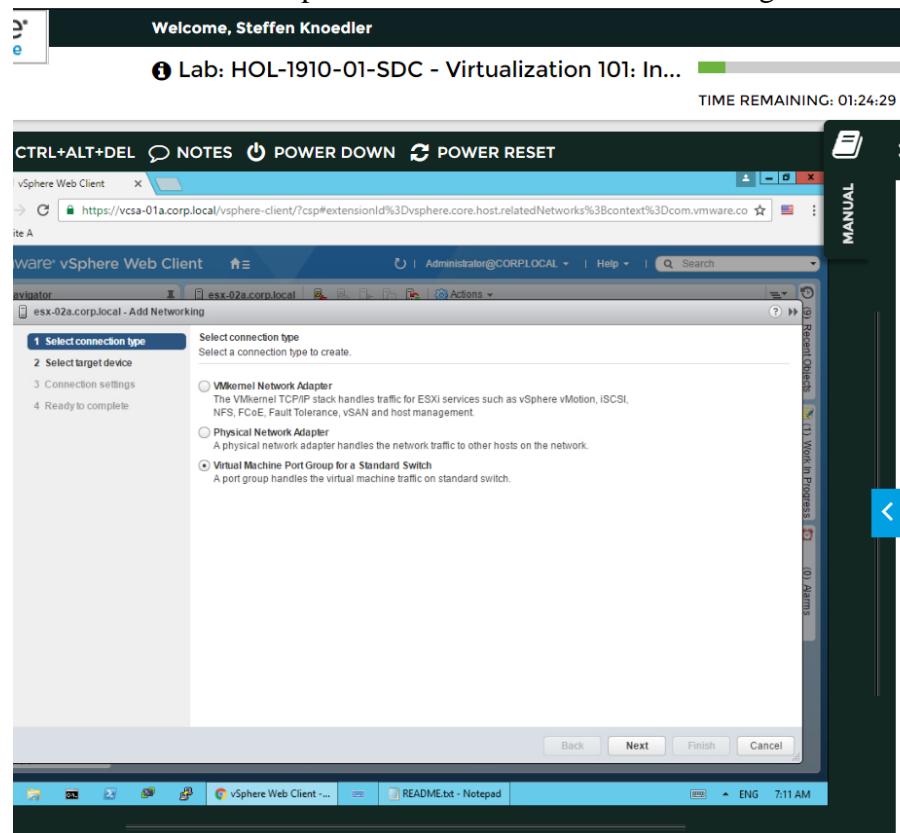


MODULE 2 - INTRODUCTION TO VSPHERE NETWORKING AND SECURITY

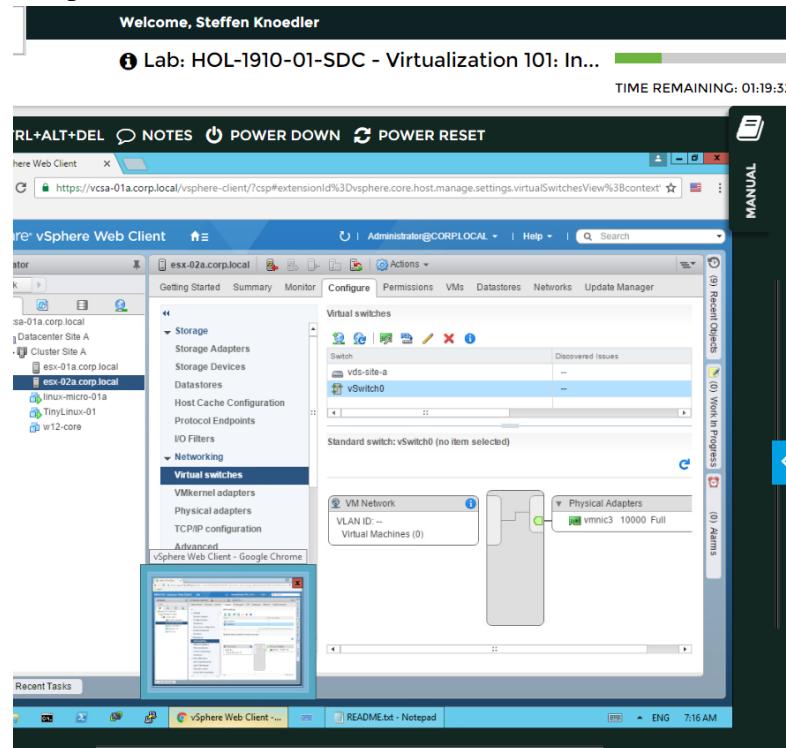
1. Configuring vSphere Standard Switch

- Complete the Wizard (follow the steps to configure and manage standard switches)

I can configure the vSphere Standard switch in vSphere. Therefore, I right clicked on esx-02a.corp.local and selected “add networking”.



Selected new standard switch, chose vmnic3 under active adapters and completed the switch.

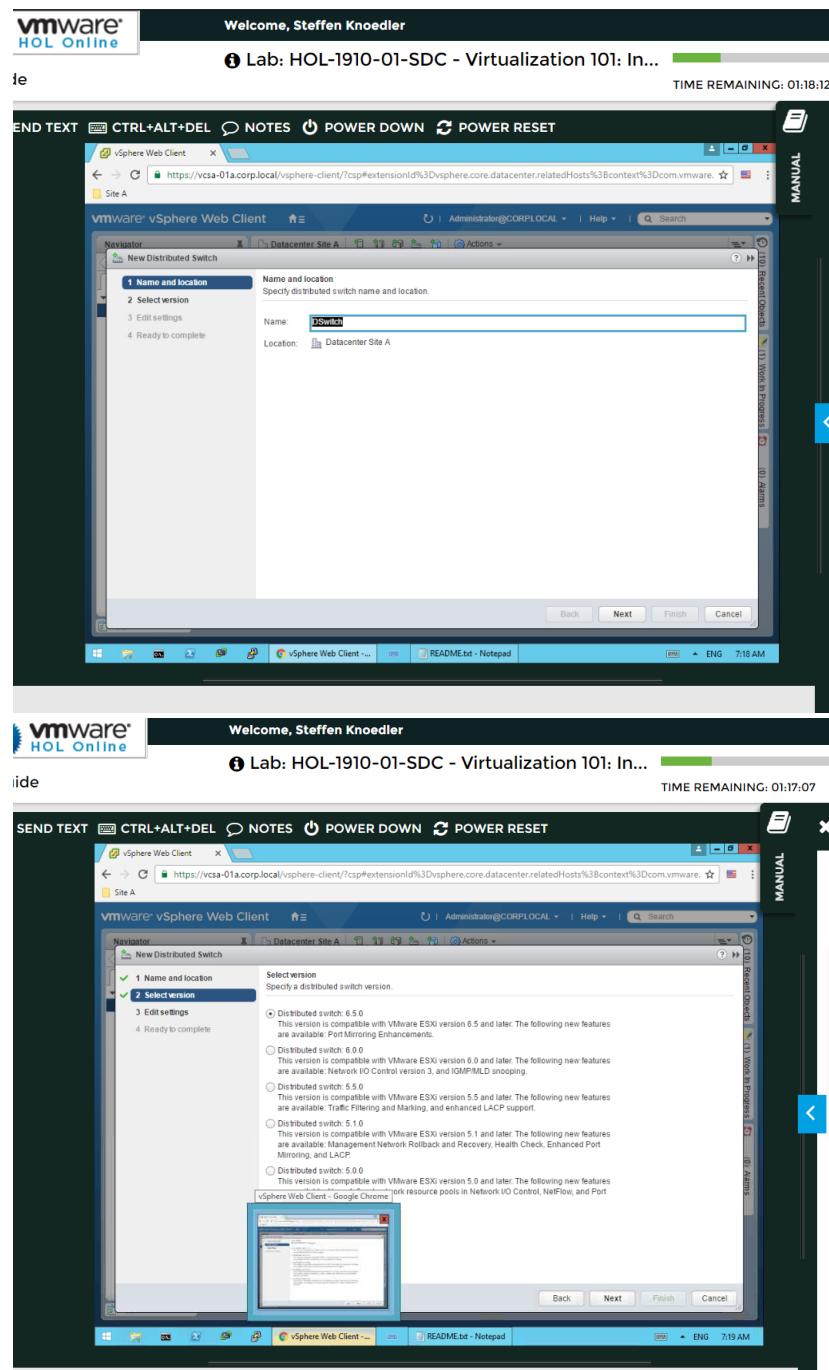


2. Adding and Configuring a vSphere Distributed Switch (follow related steps to complete the below listed tasks)

- Add a vSphere Distributed Switch using the vSphere Web Client

When I want to handle network traffic from all related hosts and datacenter, it makes sense to configure a vSphere distributed switch. This makes administration easier if I deal with many hosts and port groups.

So, I created a new distributed switch v6.5 and included four uplink ports.



The screenshot displays the VMware vSphere Web Client interface within a browser window. The title bar reads "Welcome, Steffen Knoedler" and "Lab: HOL-1910-01-SDC - Virtualization 101: In...". The status bar indicates "TIME REMAINING: 01:16:44". The main content area shows a wizard titled "New Distributed Switch" with the following steps completed:

- 1 Name and location
- 2 Select version
- 3 Edit settings
- 4 Ready to complete

The "Edit settings" step is currently active, showing the configuration for a new distributed switch. The configuration includes:

- Number of uplinks: 4
- Network IO Control: Enabled
- Default port group: Create a default port group
- Port group name: DPortGroup

Below the configuration fields, a "Ready to complete" section summarizes the selected settings:

Name:	DSwitch
Version:	6.5.0
Number of uplinks:	4
Network IO Control:	Enabled
Default port group:	DPortGroup

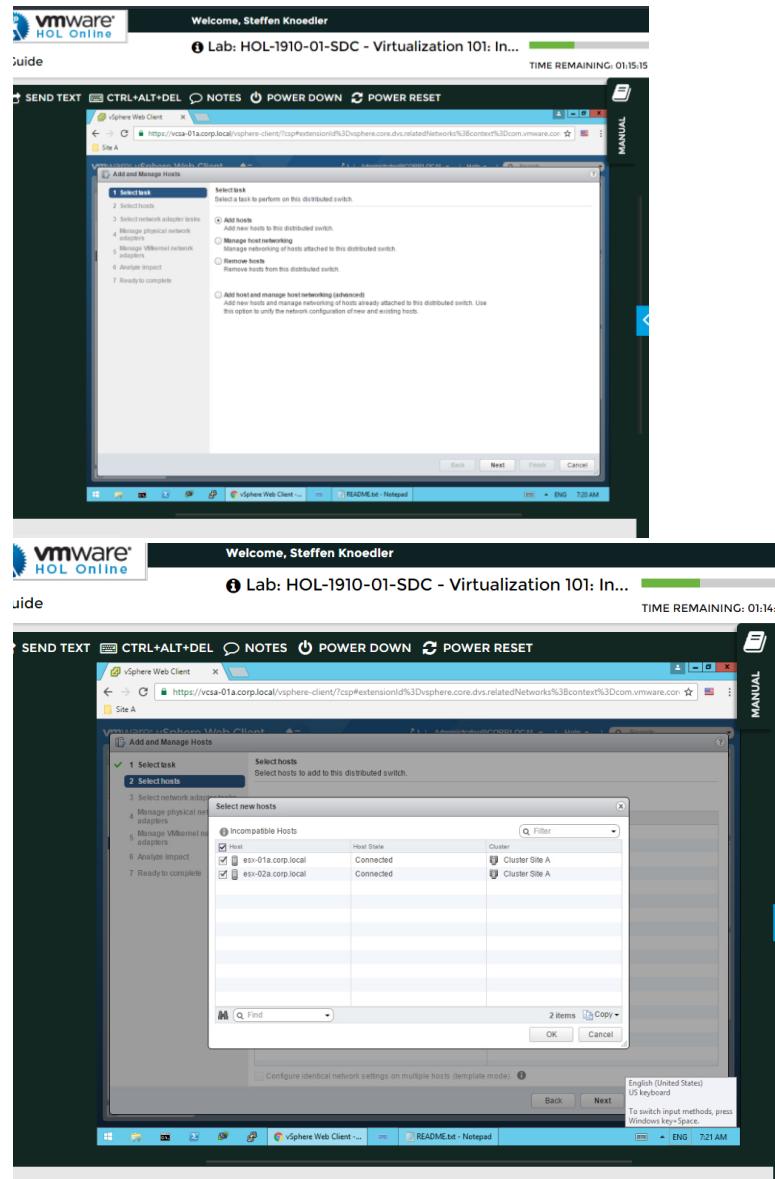
Suggested next actions:

- New Distributed Port Group
- Add and Manage Hosts

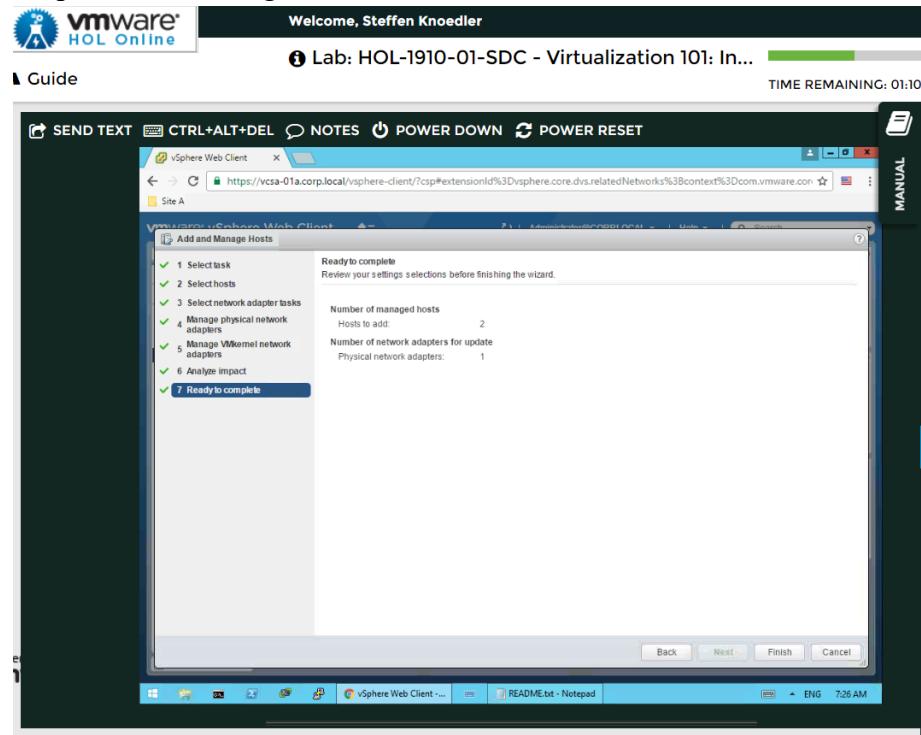
A note at the bottom states: "These actions will be available in the Actions menu of the new distributed switch."

b. Add Hosts to a vSphere Distributed Switch in the vSphere Web Client

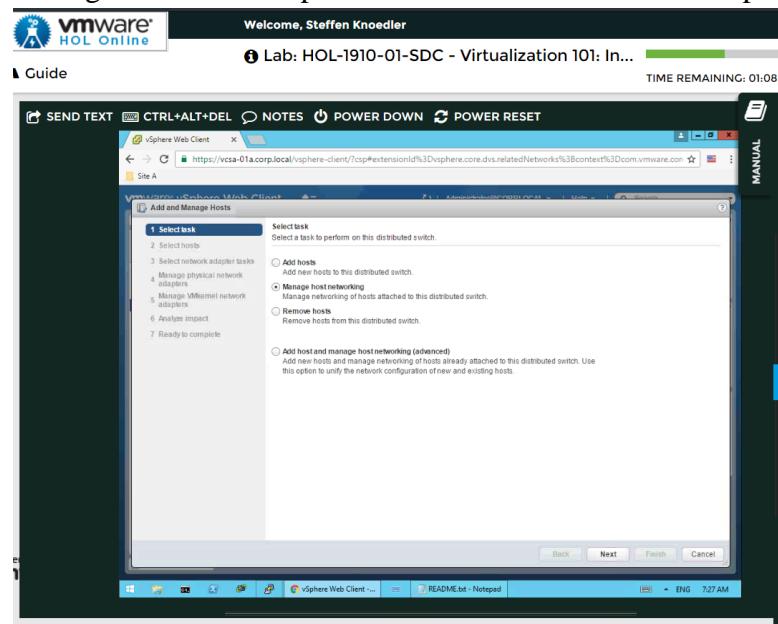
Now, I have a distributed switch but I have not added any hosts or adapters to the switch. Those are needed to create a virtual network.



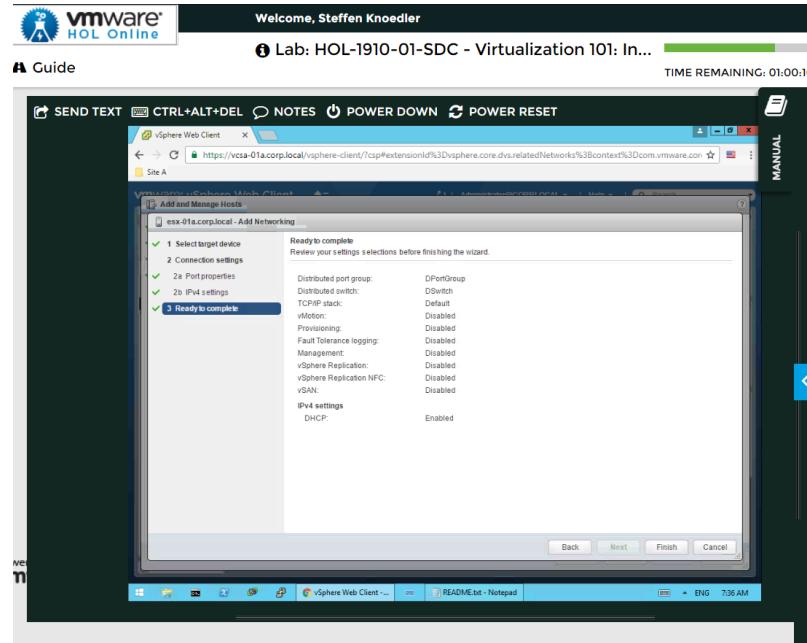
I chose the tasks “manage physical adapters” and “manage VMkernel adapters” and I assigned the vmnic3 host to the distributed switch:



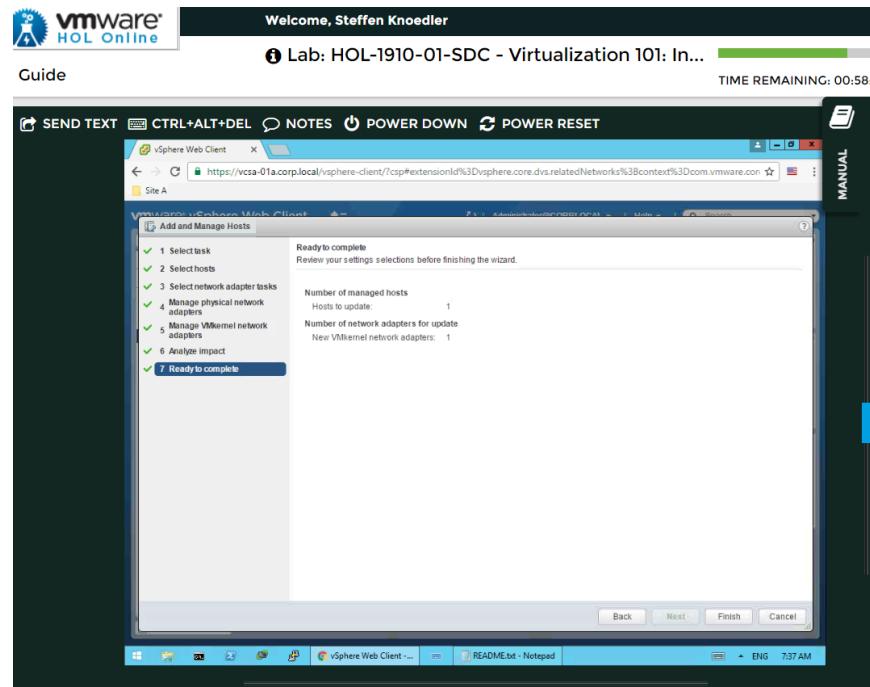
c. Manage Hosts on a vSphere Distributed Switch in the vSphere Web Client



Selected esx-01a as my member host, and I added a new adapter on this switch and on my existing network.



Then, the wizard will check whether the changed affect other dependent networks

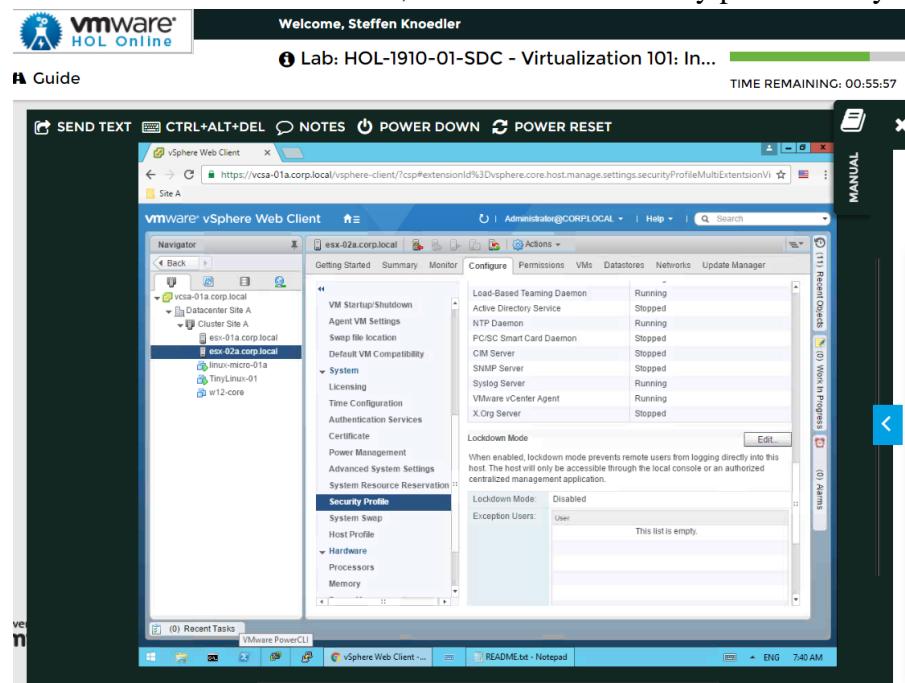


3. Using Host Lockdown Mode

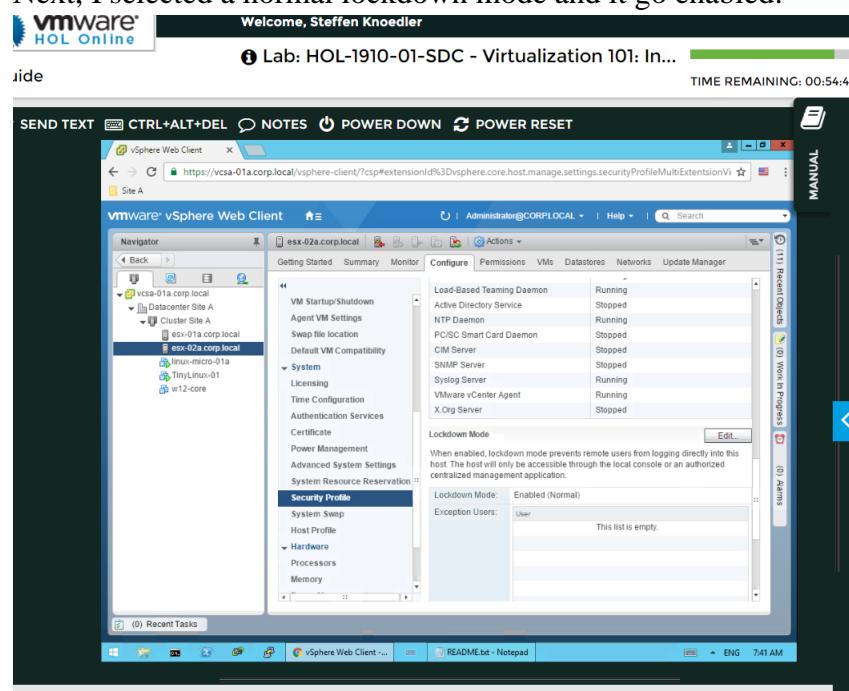
a. Lockdown Mode Enabled

The lockdown mode can increase the security of my hosts. It denies access for all users, other than the vpxuser. Moreover, it forces all operation to be performed via vCenter Server.

To enable the lockdown mode, I went into the security profile of my host:

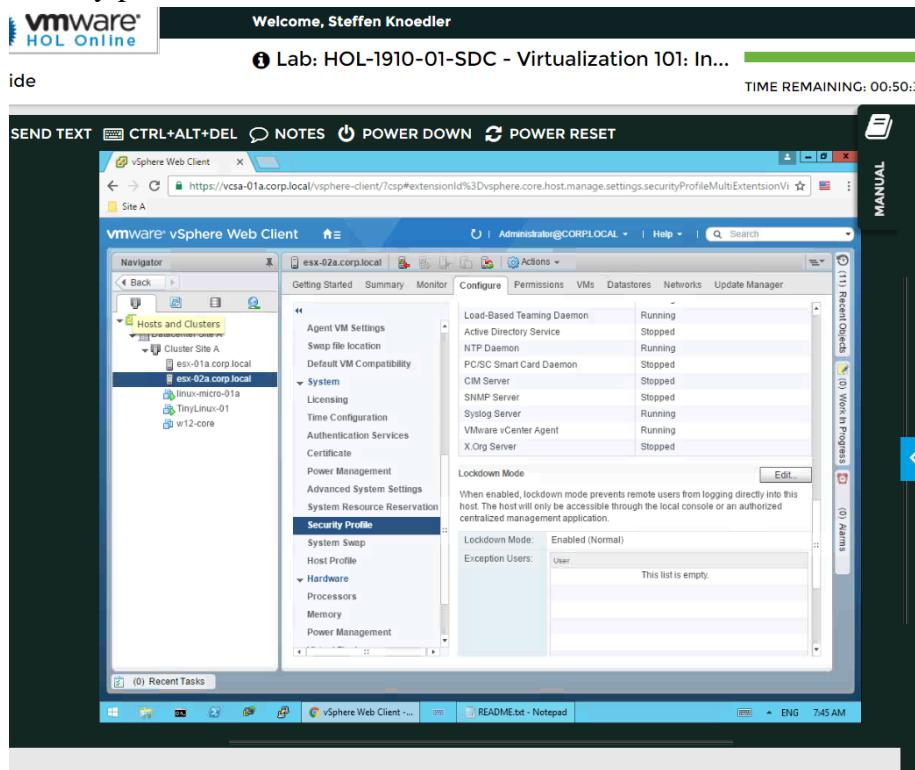


Next, I selected a normal lockdown mode and it goes enabled:

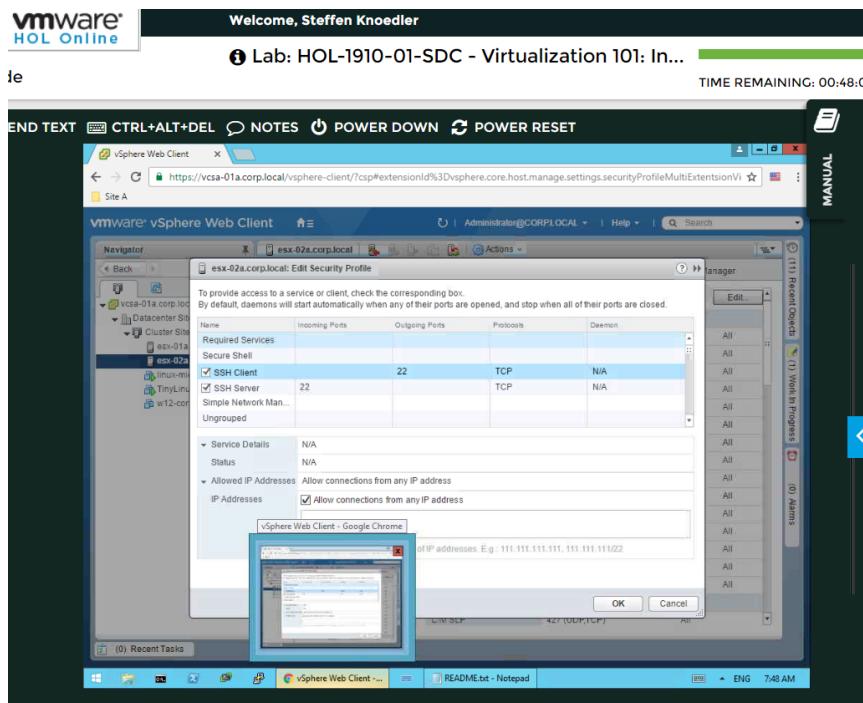


4. Configuring the Host Services and Firewall

It is important to be aware of the firewall settings. The firewall should block unwanted access from and to the resource. Therefore, I went to my host page and got into the security profile:



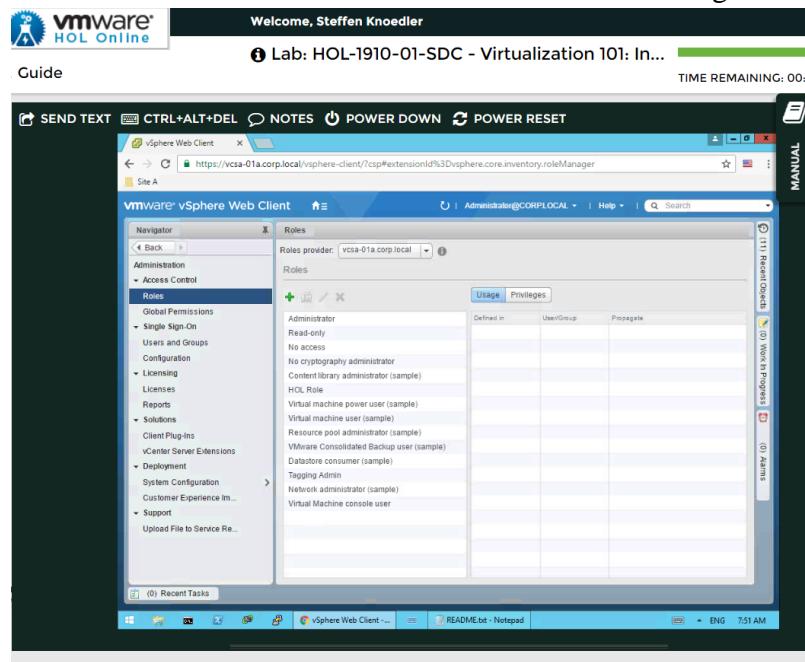
And I enabled the SSH client and therefore, allowed outgoing TCP communication through port 22.



5. User Access and Authentication Roles

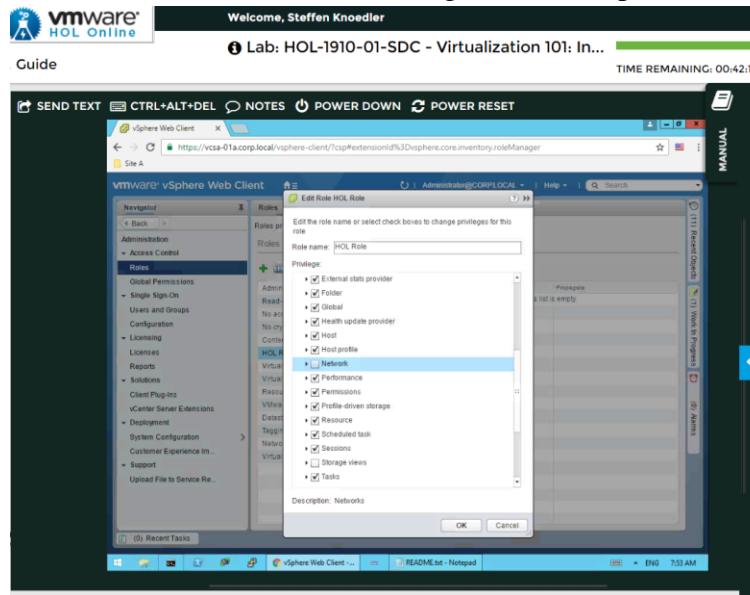
a. Create a Role

To control the access, roles can be defined. Therefore, I went into the administration tab and added the “HOL Role” which I granted all access rights.



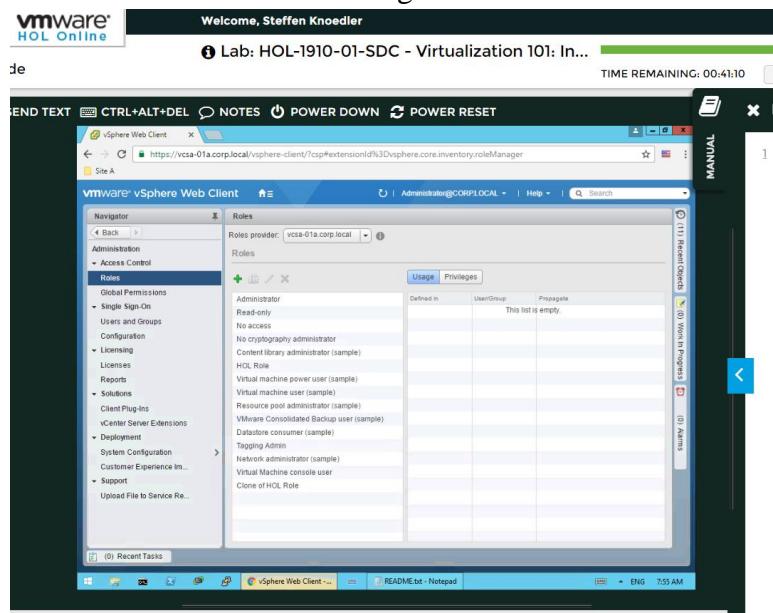
b. Edit HOL Role

You can also edit a role, and change the access permission for the user:

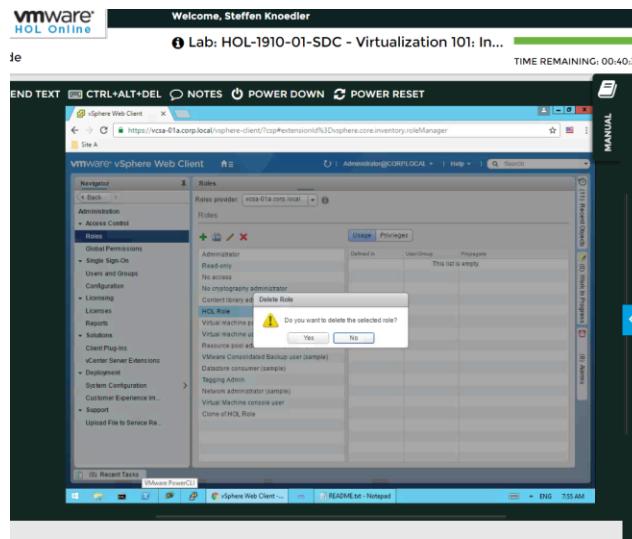


c. Clone a Role in the vSphere Web Client

To save time, I can also clone a role and assign the role to other users. I clicked on the clone symbol and as you can see in the following screen shot the role “clone of HOL Role” got created.



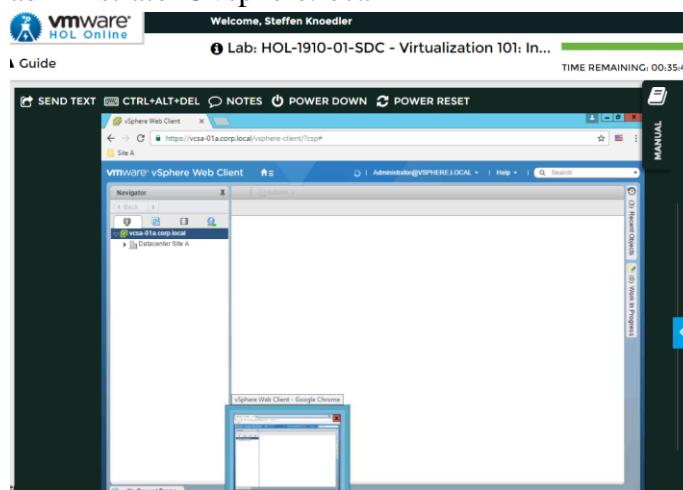
d. Delete Role



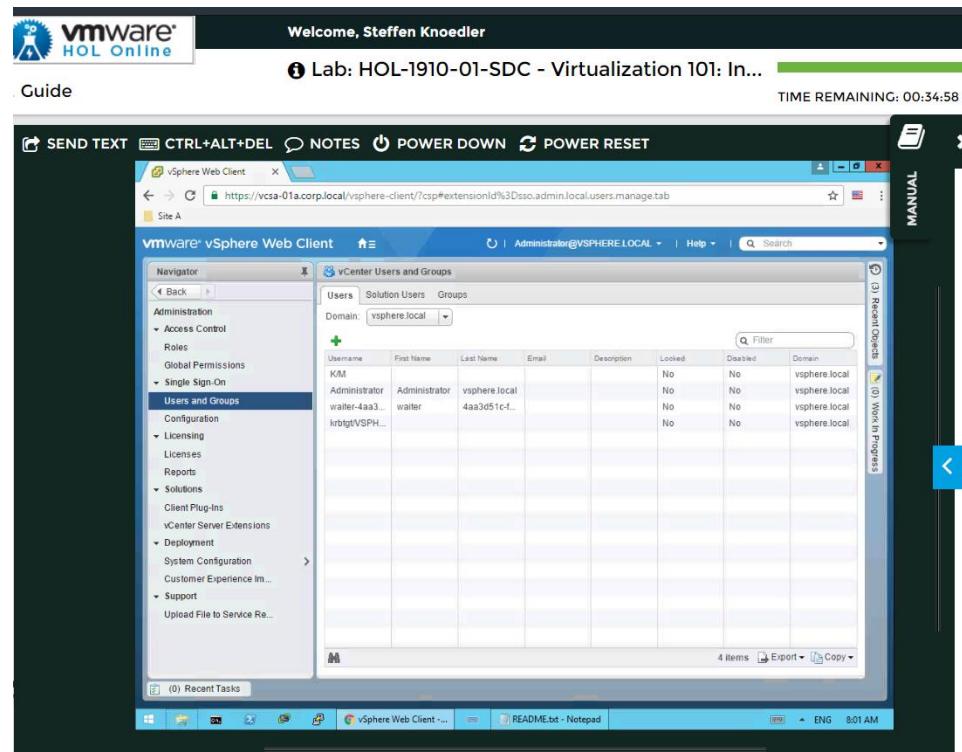
6. Understanding Single Sign On

The Single Sign On feature is useful to authenticate and manage vCenter Server users. Therefore, I need to be logged in as the SSO admin:

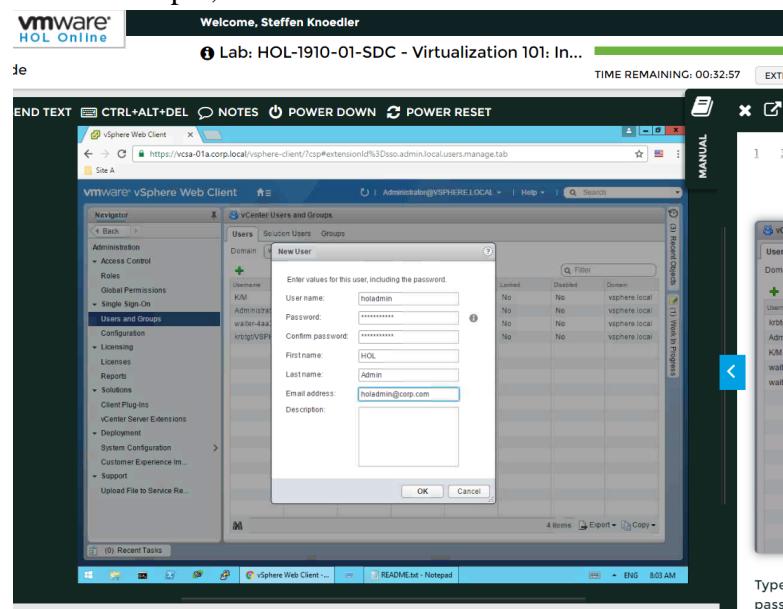
- Log into vSphere Web Client as SSO Admin
As you can see, I logged into with the admin account:
administrator@vsphere.local

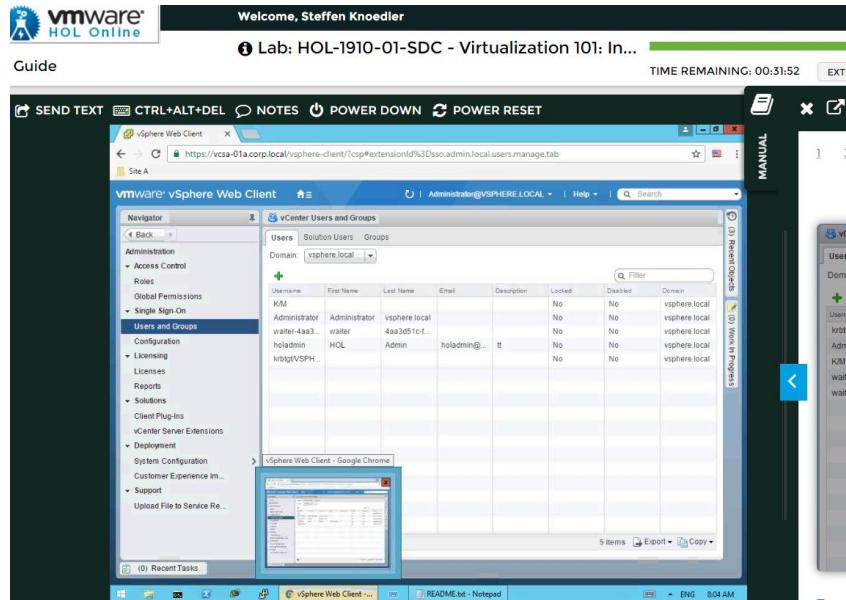


- Add a vCenter Single Sign On User with the vSphere Web Client
Now, I can go into administration settings and add a user for the login.

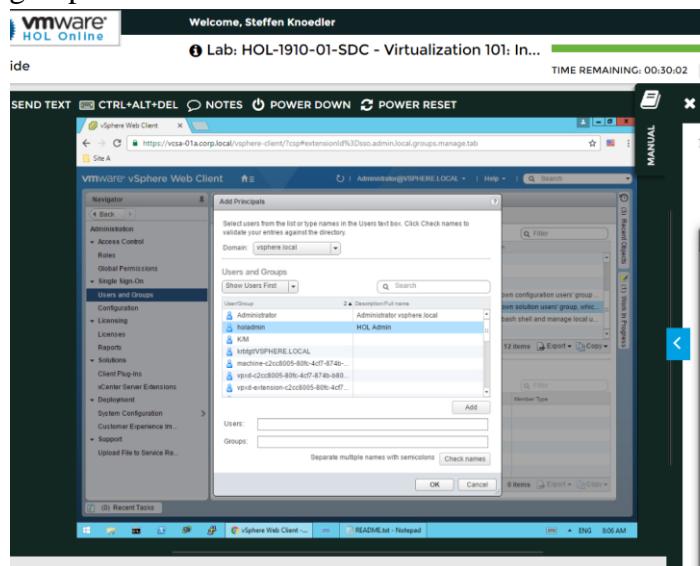


In this example, I create the user name holadmin:





- c. Add Members to a vCenter Single Sign On Group in the vSphere Web Client
I can also use a group that should be granted access. This can save a lot of time
and I can add multiple users. I created a new group and added users to the group.



d. Verify the change

The screenshot shows the vSphere Web Client interface. The main window displays the 'vCenter Users and Groups' section. Under the 'Groups' tab, a table lists several groups, including 'Administrators', 'DCClients', 'CAAdmins', 'SystemConfiguration.Administrators', 'SolutionUsers' (which is selected), 'SystemConfiguration.BashShellAdministrators', and 'Users'. Below the table, a 'Group Members' section shows a single entry: 'User/Group: holadmin', 'Description/Full name: HOL Admin', 'Domain: vsphere.local', and 'Member Type: User'. The status bar at the bottom indicates '12 items' in the main table and '1 items' in the members table.

As you can see here, a new member “holadmin” has been added to the group

7. Adding an ESXi Host to Active Directory

a. Configure a Host to Use Active Directory in the vSphere Web Client

In this task, I configure one of my hosts to allow the use of active directory. So, I had to go into the TCP/IP configuration of my host and add a new DNS configuration.

The screenshot shows the vSphere Web Client interface. The left sidebar lists hosts under Datacenter Site A: esx-01a.corp.local, esx-02a.corp.local, linux-micro-01a, TinyLinux-01, and wr12-core. The main pane shows the 'TCP/IP Stacks' configuration for host esx-01a.corp.local. The 'System stacks' table contains three entries: Default (IP 192.168.110.1), Provisioning (IP -), and vMotion (IP 10.10.30.1). A modal dialog is open for the 'Default' stack, specifically the 'DNS' tab. It shows the configuration method as 'Use manual settings' and lists the host name as 'esx-01a' and domain as 'corp.local'. The IP address is listed as '192.168.110.10'. The bottom status bar indicates the date and time as '8:09 AM'.

vSphere Web Client | Welcome, Steffen Knoedler | Lab: HOL-1910-01-SDC - Virtualization 101: In... | TIME REMAINING: 00:26:4

vmware vSphere Web Client | Administrator@VSPHERE LOCAL | Configuration | TCP/IP Stacks

TCP/IP Stack	VMkernel Adapters	IPv4 Gateway Ad
Default	3	192.168.110.1
Provisioning	0	-
vMotion	1	10.10.30.1

TCP/IP Stack: Default

DNS Routing IPv4 Routing Table IPv6 Routing Table Advanced

Configuration method: Use manual settings
Host name: esx-01a
Domain: corp.local
IP address: 192.168.110.10

vSphere Web Client | Welcome, Steffen Knoedler | Lab: HOL-1910-01-SDC - Virtualization 101: In... | TIME REMAINING: 00:25:47

vmware vSphere Web Client | Administrator@VSPHERE LOCAL | Configuration | esx-01a.corp.local - Edit TCP/IP Stack Configuration

Name: esx-01a.corp.local

Obtain settings automatically from a VMkernel network adapter
VMkernel network adapter:

Enter settings manually

Host name: esx-01a
Domain: corp.local
Preferred DNS server: 192.168.110.10
Alternate DNS server:
Search domains: corp.local.corp.local

Example: site.com.site.org.site.net

OK Cancel

- b. Add a Host to a Directory Service Domain in the vSphere Web Client

Now, I am able to add the just edited host to a Directory Service Domain by going into the manage tab of the host and choosing “Join Domain”. Then I could add the domain CORP.LOCAL.

The screenshot shows two windows of the vSphere Web Client. The top window displays the 'Join Domain' dialog, which is used to add the host to a domain. The 'Domain' field is set to 'corp.local'. The bottom window shows the 'Authentication Services' configuration page under the 'Configure' tab. The 'Directory Services Configuration' section is visible, showing 'Active Directory' selected as the 'Directory Services Type' and 'CORP.LOCAL' as the 'Domain'. The 'Certificates' table is empty, indicating no certificates have been imported.

Success

Section 3: HOL-1901-03-CMP - Optimize vSphere Capacity and Cost Savings with vRealize Operations Manager

MODULE 1 - ASSESS CAPACITY OF YOUR VSPHERE DATACENTERS WITH VREALIZE OPERATIONS

1. Capacity Allocation Dashboard (follow all the steps)

I can take advantage of the capacity allocation dashboard to assess the capacity. When selecting capacity allocation overview, I could see a list of inventory. IN this overview, vRealize calculates a vCPU/pCPU as well as a vMem/PMem ratio to determine the amount of oversubscription. The table below helps to make sense of the ratio.

The screenshot shows the vRealize Operations Manager interface. The top navigation bar includes 'Dashboard', 'Alerts', 'Environment', and 'Administration'. The main content area is titled 'Capacity Allocation Overview'. It displays an 'Allocation Summary' table:

vCenter Server(s)	Datacenter(s)	Cluster(s)	Host(s)	VM(s)	VMs per Host
1	1	2	4	9	2.3 : 1

Below the table, there's a section titled 'Allocation Percent Based on Overcommit Ratios' with a table:

CPU Allocation	Memory Allocation	Suitable for *
Tier 1 (Critical) 1 : 1	1 : 1	Applications that demand performance guarantees from IaaS and can pay for it.
Tier 2 4 : 1	1 : 1	Applications that can tolerate some contention but need good performance.
Tier 3 (Least Critical) 6 : 1	1.25 : 1	Applications that need low cost IaaS, hence can tolerate contention.

* Overcommit ratios are just a guideline for tracking allocation. For optimal performance one should use demand based capacity planning.

MODULE 2 - IDENTIFY COST SAVINGS AND AUTOMATE RECLAMATION OF RESOURCES WITH VREALIZE OPERATIONS

1. Assess Cost Overview

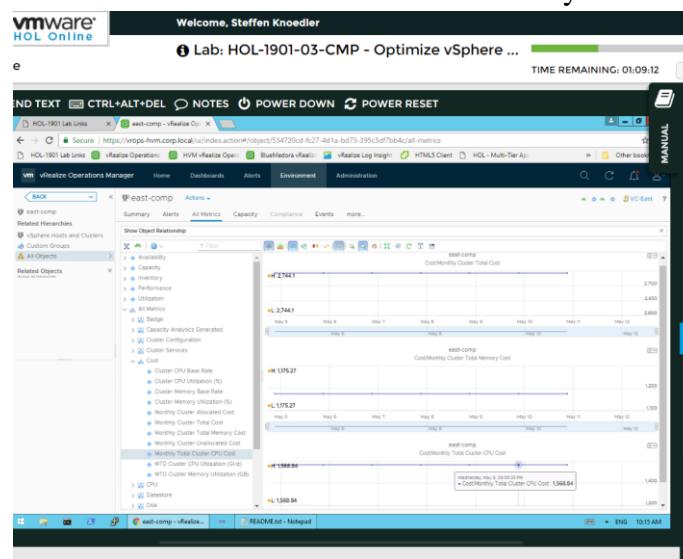
a. TOTAL COST OF EACH DATACENTER

In this table, you can see a break down of each data center with its configuration:

Datacenter	Hosts	Clusters	CPU Sockets	Total Cost of Ownership	Potential Cost Savings
CHBU DC	9	2	430	5,420.35	0
SDDC Datacenter	4	1	207	1,017.24	0
SDC-01	4	1	208	1,033.22	29
sdv-demo	10	3	584	1,981.23	33
sdv-test	6	2	473	2,071.29	26
sdv-test	3	2	183	1,081.05	22
sdv-test	3	2	183	1,081.05	22

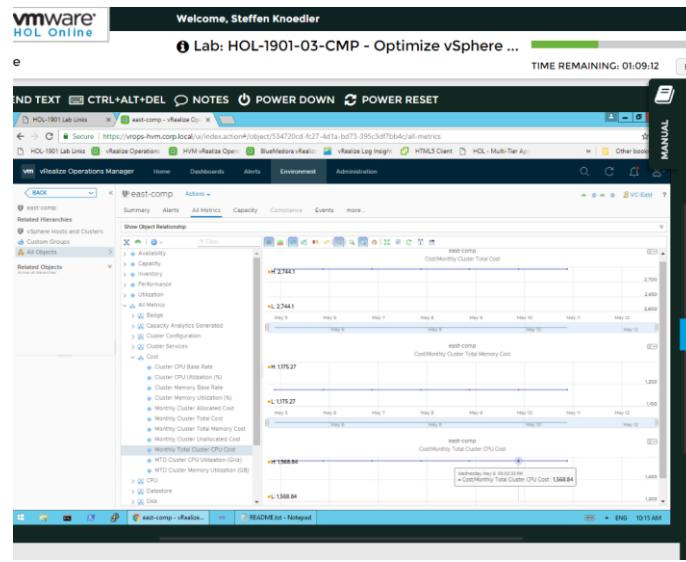
b. Monthly Cluster Cost

We can select the most expensive cluster (east-comp) to get more details. I selected “All Metrics” and relevant monthly costs:



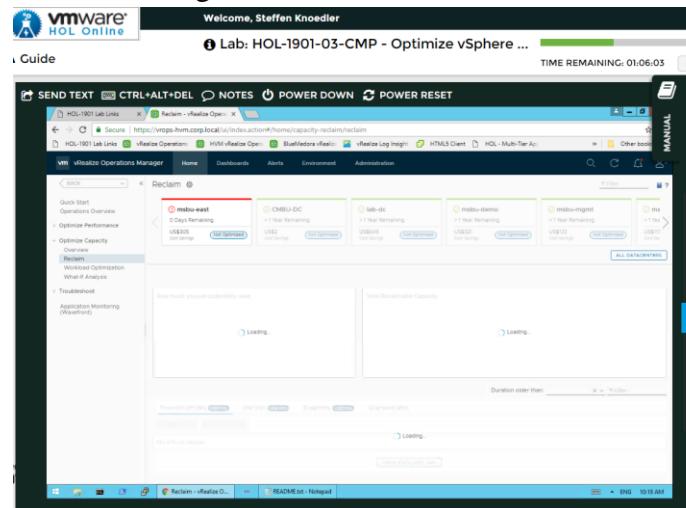
c. Cost Breakdown

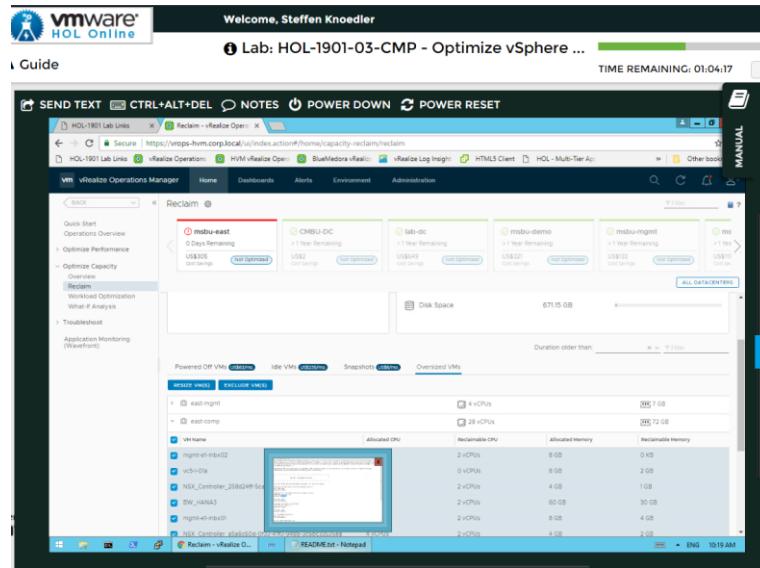
When selected, you can see the costs in detail and over a period of time. In this example, it becomes clear that the CPU costs are higher than the memory costs for instance.



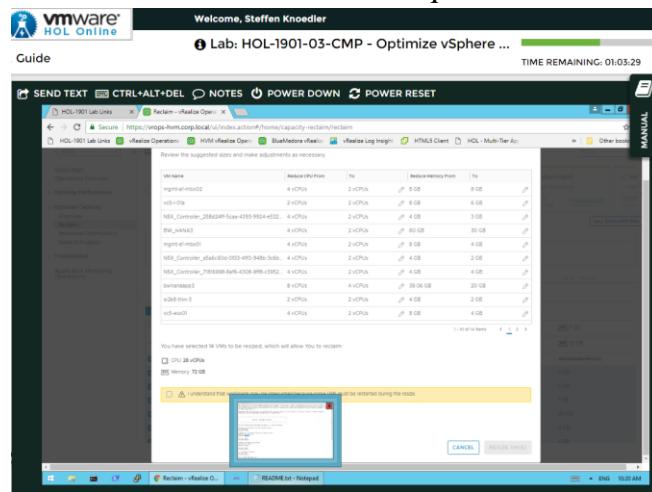
d. Perform all the steps to Reclaim Oversized VMs

We can see whether we can consolidate the cluster to save money. Therefore, I selected the big cluster and clicked on oversized VMs.





I found 28 vCPUs that can be reqzized in this cluster:



e. Assess Capacity

I can also assess the capacity. The overview shows me that 1 cluster is at a critical level and that I can save \$305 a month.

The screenshot shows the vRealize Operations Manager interface. The top navigation bar includes 'SEND TEXT', 'CTRL+ALT+DEL', 'NOTES', 'POWER DOWN', 'POWER RESET', 'Guide', 'TIME REMAINING: 01:00:47', and 'EX1'. The main title is 'Welcome, Steffen Knoedler' and 'Lab: HOL-1901-03-CMP - Optimize vSphere ...'. The left sidebar has sections like 'Quick Start', 'Operations Overview', 'Optimize Performance', 'Optimize Capacity' (selected), 'Recycle', 'Workload Optimization', 'What-If Analysis', and 'Troubleshoot'. The 'Optimize Capacity' section is expanded, showing 'Overview', 'Recycle', 'Workload Optimization', and 'What-If Analysis'. The 'Overview' tab is selected. The main content area displays a summary for the 'msbu-east' cluster: '0 Days Remaining', 'US\$305 Cost Savings', and 'Not Optimized'. It also lists other clusters: 'CMBU-DC' (1 Year Remaining, US\$449 Cost Savings, Not Optimized), 'lab-dc' (1 Year Remaining, US\$449 Cost Savings, Not Optimized), 'msbu-demo' (1 Year Remaining, US\$321 Cost Savings, Not Optimized), 'msbu-mgmt' (1 Year Remaining, US\$129 Cost Savings, Not Optimized), and 'ms' (1 Year Remaining, US\$129 Cost Savings, Not Optimized). A 'VIEW RECLAIMABLE VMs' button is present. Below this, a 'Time Remaining' section shows '1 cluster at the Critical level' and '1 cluster at the Normal level'. A circular progress bar indicates '2 total clusters'. An 'Optimization Recommendations' section suggests reclaiming unused resources to save '\$305/mo.' and move workloads across clusters. A 'VIEW OPTIMIZATION' button is available. At the bottom, there's a 'vRealize Operations Manager - Google Chrome' window showing a dashboard with CPU, Memory, and Disk Space metrics, and a note about CPU running out in 1 year. The taskbar at the bottom shows 'README.txt - Notepad' and the system status 'ENG 10:23 AM'.

f. Review CPU Demand

The screenshot shows the vRealize Operations Manager interface, similar to the previous one but with a different focus. The main content area displays a graph titled '1 year remaining usage CPU Usage (%)'. The Y-axis ranges from 0% to 100%, and the X-axis shows months from Sep '19 to Oct '19. The graph shows a single data series with a dashed horizontal line at 100%. A legend indicates 'Usage Graph'. The graph area has a note 'No data to display'. The rest of the interface is identical to the previous screenshot, including the sidebar, navigation bar, and taskbar.

2. Cost Settings in Detail

We can change how costs are calculated.

a. Modify Cost Settings

The screenshot shows the vRealize Operations Manager interface with the URL <https://vrops-hm.corp.local/vi/index.action#/administrator/cost-settings/cost-drivers>. The left sidebar has 'Cost Settings' selected under 'Cost'. The main panel displays 'Cost Drivers' with a table comparing current values against a baseline:

Private Cloud Cost Driver	Comparison with industry benchmark	Monthly Expense
Server Hardware	0.00%	US\$0.522
Storage	0.00%	US\$0.2942
Compute	0.00%	US\$0.00
Maintenance	0.00%	US\$0.00
Labor	0.00%	US\$0.00
Network	0.00%	US\$0.260
Facilities	0.00%	US\$0.00
Additional Cost	Not Applicable	US\$0
Total		US\$0.822

b. Modify Facilities Costs

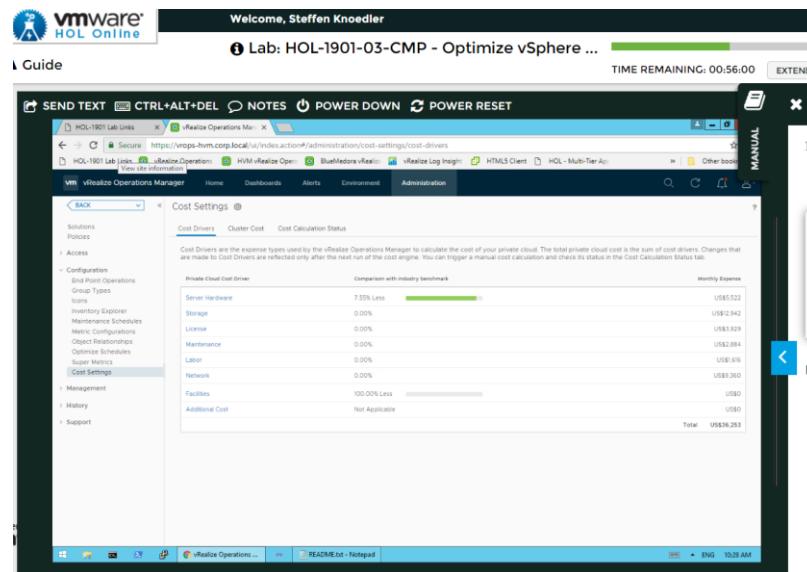
Here I change the facility costs to zero.

The screenshot shows the vRealize Operations Manager interface with the URL <https://vrops-hm.corp.local/vi/index.action#/administrator/cost-settings/cost-drivers>. The left sidebar has 'Cost Settings' selected under 'Cost'. The main panel displays 'Cluster Cost' with a summary table:

Summary	US\$0	Total monthly cost
Enter detailed cost of facilities:	Power and Cooling monthly cost per kilowatt-hours	US\$ 0 (Reference Cost: US\$0.08 kWh - 1024)
	Total Operational monthly cost per unit	US\$ 0 (Reference Cost: US\$0.00, Count: 77)

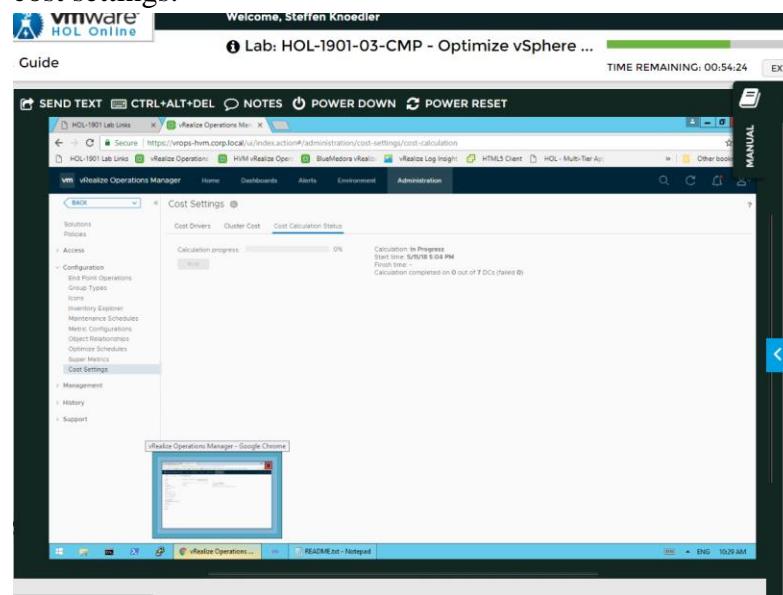
c. Total Cost

You can see in the lower right corner the total cost of \$36,253



d. Cost Calculation Status

Now we need to manually recalculate the costs as I have earlier changed the cost settings:

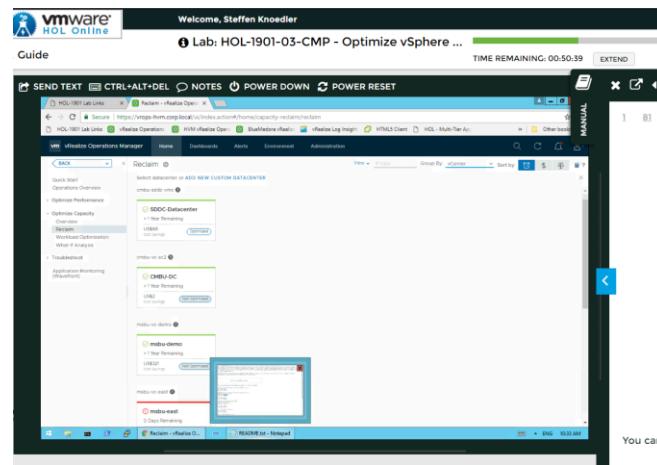


MODULE 3 - PREDICT RESOURCE DEMAND AND IDENTIFY CAPACITY SHORTFALLS WITH VREALIZE OPERATIONS

1. Reclaiming Capacity

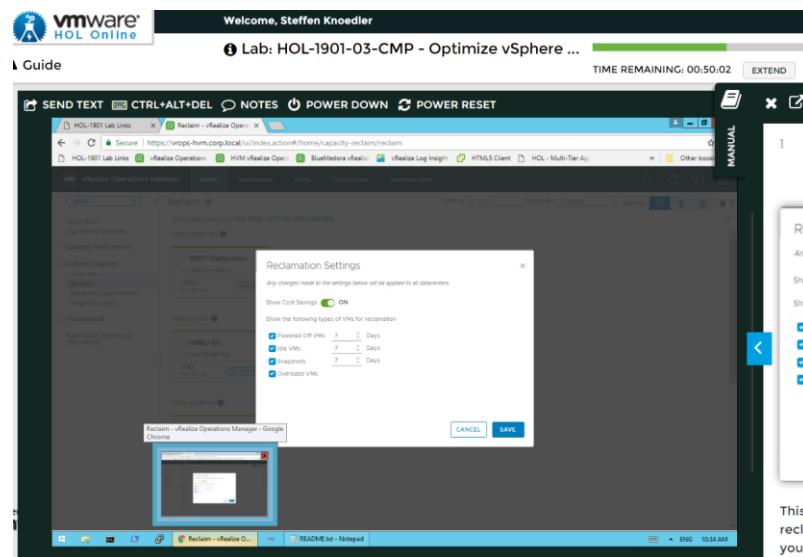
a. New Criticality View

In the reclaim windows, I can select group by “criticality” to get a break down overview:



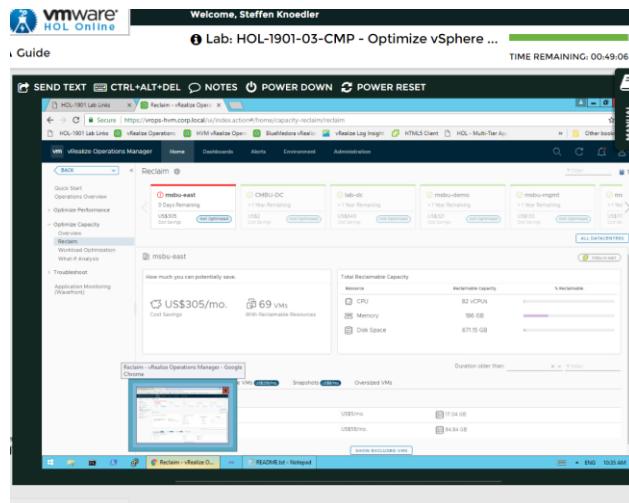
b. Reclaim Settings

When selecting the settings symbol, the reclaim settings can be adjusted. This is where I select which and when Vms are shown for reclamtion.



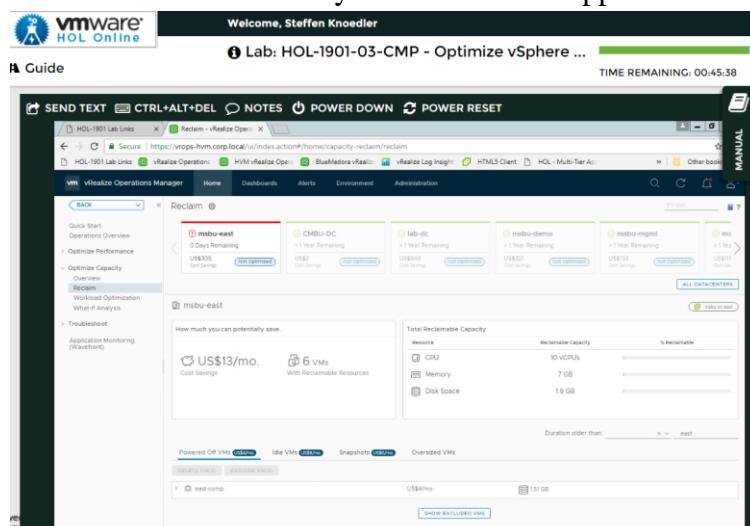
c. Overall Reclamation opportunity (for one resource)

I chose the data center msbu-center. This resource has the lowest time remaining and when looking at the total reclamation opportunity, you can see that its best to add capacity without purchasing new hardware.

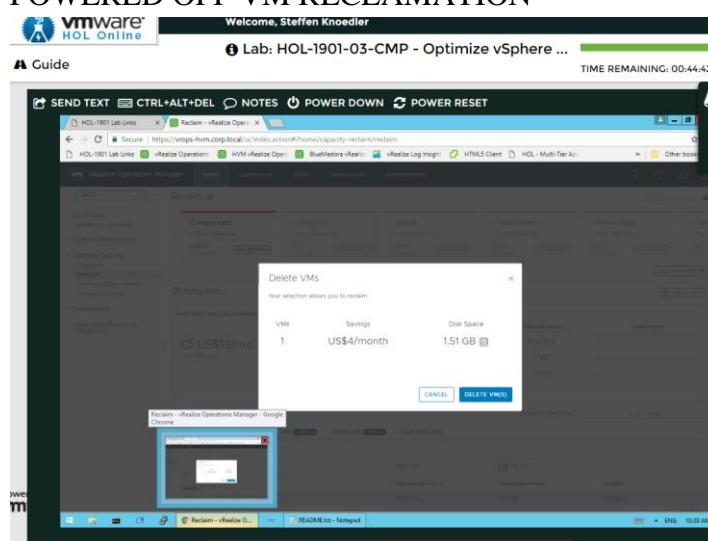


d. Filter Reclamation resources

I filtered for “east” to only see reclamation opportunities for east.



e. POWERED OFF VM RECLAMATION



Now I can select one of the reclamation opportunities and delete it.

f. Snapshots

The screenshot shows the vSphere Operations Manager interface under the 'Reclaim' tab. It lists various datacenters and hosts with their reclaimable capacities. A summary section indicates potential savings of US\$305/mo. and 69 VMs. The interface includes tabs for Powered Off VMs, Idle VMs, Snapshots, and Oversized VMs, with the Snapshots tab currently selected.

Now, we can look into the snapshot tab to see which snapshot we have stored.

g. Exclude VM

The screenshot shows the vSphere Operations Manager interface under the 'Snapshot' tab. It lists multiple snapshots for different VMs, including m1s, m2s, and labcomp. The 'EXCLUDE VMs' button is highlighted, indicating the user can exclude specific VMs from the reclaim process. The interface includes tabs for Powered Off VMs, Idle VMs, Snapshots, and Oversized VMs, with the Snapshots tab currently selected.

If we want to delete most snapshots but not the recent ones, we can simply exclude the VMs.

h. Show Excluded VM's

When clicked on exclude, we can find the excluded VMs below.

The screenshot shows the vRealize Operations Manager interface under the 'Reclaim' section. It displays a list of data centers and their status regarding reclaimable resources:

Data Center	Status	Cost Savings	Storage Usage
msbu-east	0 Days Remaining	US\$305	186 GB / 671.5 GB
CMBU-DC	>1 Year Remaining	US\$2	78.11 GB / 41 GB
lab-dc	>1 Year Remaining	US\$649	39.38 KB / 56 Days
msbu-demo	>1 Year Remaining	US\$321	186 GB / 671.5 GB
msbu-mgmt	>1 Year Remaining	US\$133	78.11 GB / 41 GB
ms	>1 Year Remaining	US\$10	39.38 KB / 56 Days

Below this, there is a table for 'EXCLUDED VMs':

VM Name	Cost Savings / mo.	Reclaimable Storage	Age
SAP-HM3	US\$0/mo.	39.38 KB	56 Days

2. Reclaiming Resources from Oversized VM(s)

a. Edit Reclamation Recommendation

We can also change the reclamation recommendations for oversized Vms. IN this example I changed to adjust the memory not from 8Gb to Gb but from 8GB to 6GB.

The screenshot shows the 'Resize VMs' dialog box. It displays the current configuration for the selected VM (msbu-east) and allows the user to adjust the CPU and Memory settings:

VM Name	Reduce CPU From	To	Reduce Memory From	To
msbu-east	4 vCPUs	2 vCPUs	8 GB	6 GB

A message at the bottom states: "You have selected 1 VMs to be resized, which will allow you to reclaim: CPU: 2 vCPUs, Memory: 4 GB". A note below says: "Understand that workload may be interrupted because some VMs must be restarted during the resize".

b. Review Total Reclamation List

In the review total reclamation list, I can see an overview of all oversized machine and how much memory I can reclaim.

Name	Configured vCPU	Recommended vCPUs	Configured Memory (GB)	Recommended Memory (GB)	Parent Cluster
VM-1	1	0	2.08	1.08	Host-vc-west
VM-2	1	0	2.08	1.08	Host-vc-west
VM-3	1	1	2.08	1.08	Host-vc-east
VM-4	1	1	2.08	1.08	Host-vc-east
VM-5	1	1	2.08	1.08	Host-vc-east
Total	289	16	785.68 GB	322.68 GB	-

c. Run the Report

We can also run report to get more detailed insights. We can chose from a number of reports.

Report	Last Run	Owner
DSAC Analysis Events	10 days ago	admin
DSAC Optimized Capacity	10 days ago	admin
DSAC Optimized Configuration	10 days ago	admin
DSAC Optimized Performance	10 days ago	admin
DSAC Summary Report	8 seconds ago	admin
Capacity Report - Datacenter	Outer Compute Resource, Datacenter, Host, Host	admin

d. Generated Report

We can choose the report and select “run template”. Then we choose the source (in this case we take all hosts and clusters) and generate the report that can be downloaded afterwards.

The screenshot shows the vRealize Operations Manager interface. In the center, there is a table titled "Generated Reports" with columns for "Completion Date/Time", "Report Name", "Subject", "Owner", "Executed for", and "Status". The table lists several reports, all of which are completed. The reports include "VOA Analyze Events", "VOA Summary Report", "VOA Optimize Configuration", "VOA Optimize Performance", "VOA Summary Report", "VOA Optimize Capacity", and "VOA Optimize Capacity". The status for all reports is "Completed". At the bottom of the screen, there is a taskbar with icons for "vRealize Operations Manager - Google Chrome", "vRealize Operations ...", and "README.txt - Notepad".

- e. Review Reports
- f. We can open the report and investigate the details:

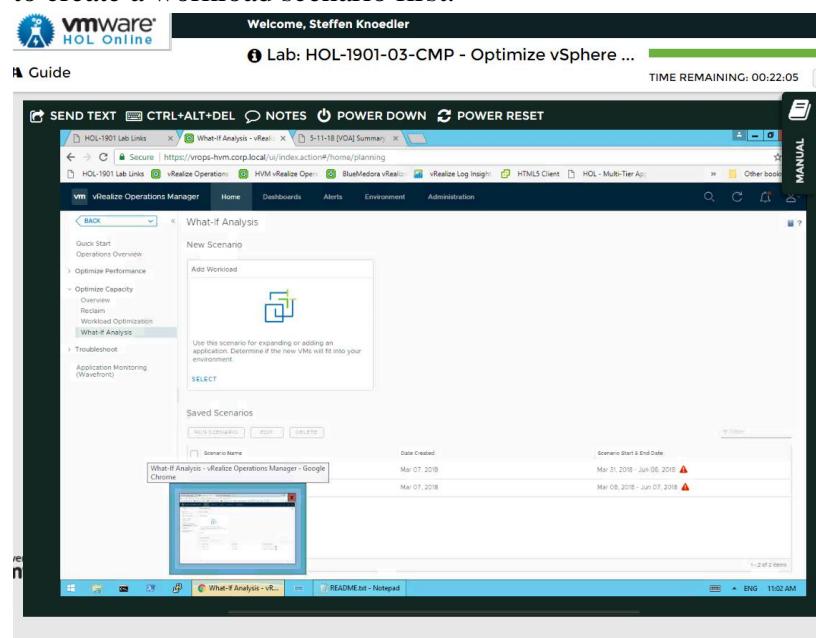
The screenshot shows a detailed VOA Summary report. On the left, there is a "Guest Operating System" pie chart showing the distribution of operating systems: Microsoft Windows Server 2012 R2 (4.3%), SUSE Linux Enterprise 11 (4.3%), SUSE Linux Enterprise 12 (4.3%), Red Hat Enterprise Linux (64 bit) (25.63%), Red Hat Enterprise Linux (64 bit) (36.29%), Microsoft Windows 10 (64 bit) (11.67%), and Others (22.51%). On the right, there is a "Host CPU Model" pie chart showing the distribution of host CPU models: Intel Xeon E5440 (6.14%), Intel Xeon E5450 (4.53%), Intel Xeon E5460 (5.15%), Intel Xeon E5470 (11.26%), Intel Xeon E5480 (8.18%), Supermicro SP3-2027P (1.14%), Supermicro SP3-2028P (1.14%), Cisco Systems Inc USC-2200 MSS (0.00%), and Others (0.00%). The top of the screen shows the vRealize Operations Manager interface with various tabs and a taskbar at the bottom.

MODULE 4 - CAPACITY PLANNING WITH VREALIZE OPERATIONS

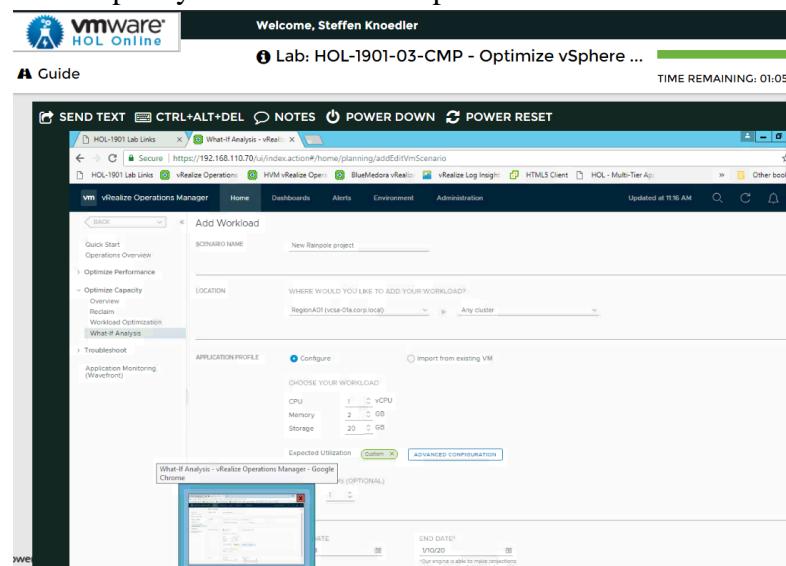
1. Make a new Workload Scenario

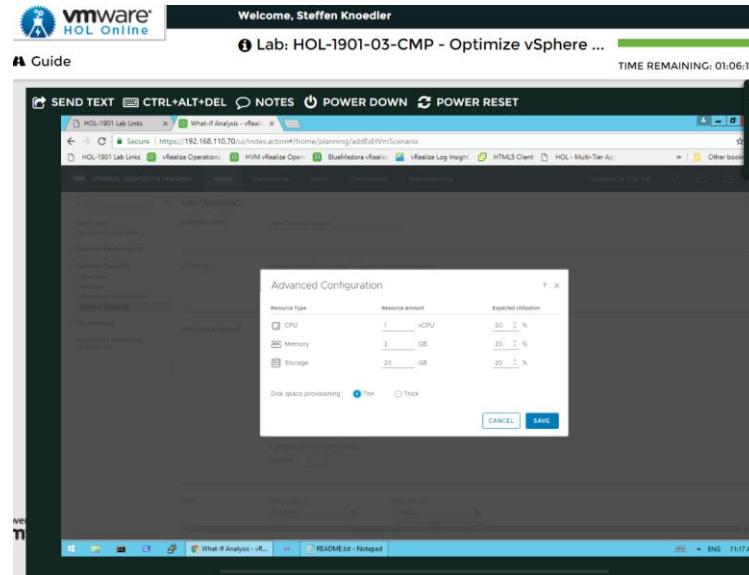
a. New What-if Analysis

In workload scenario page, I can specify a scenario to identify if a project can fit any of my cluster inside the data center. To create a what-if analysis, I had to create a workload scenario first.



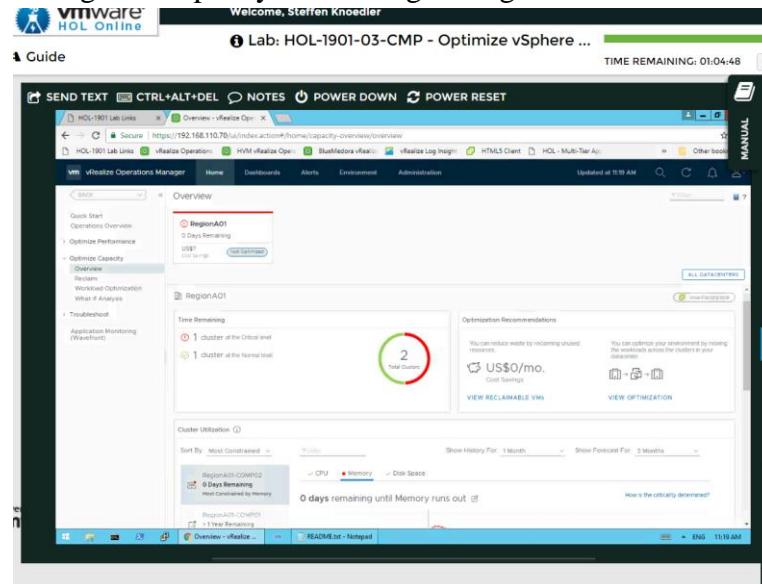
So we specify a scenario with expected workload.



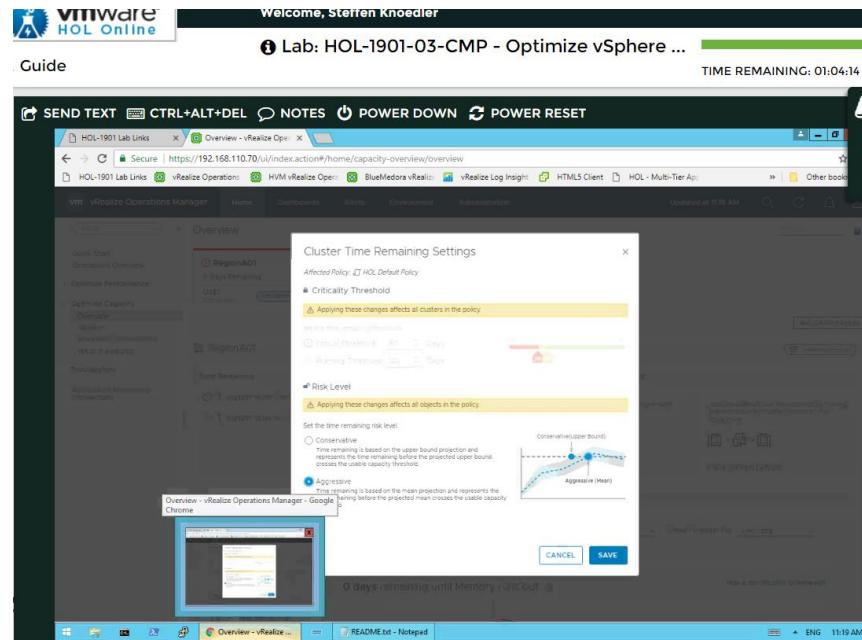


When running, we would see that we will not have enough capacity in Region A01 for this scenario. However, we can...

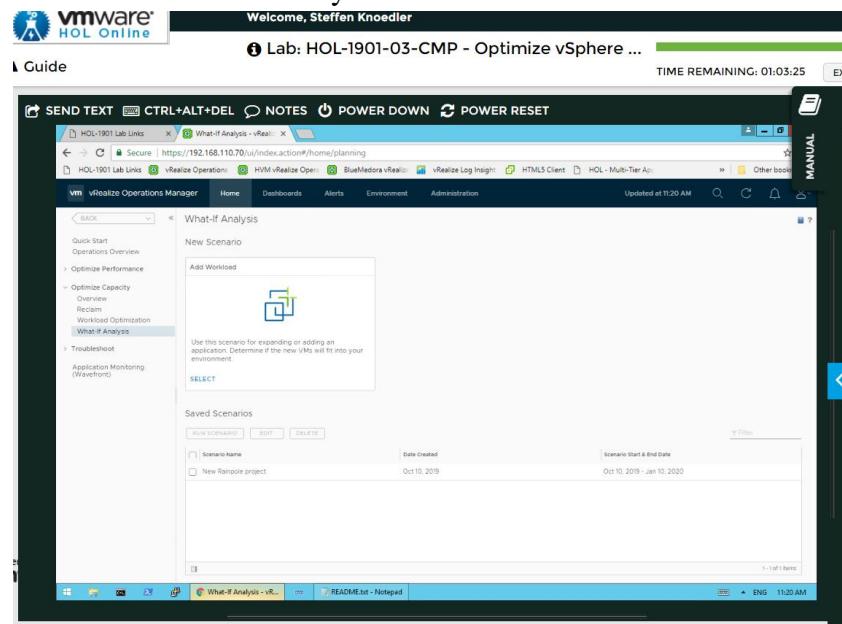
b. Change the capacity forecasting settings



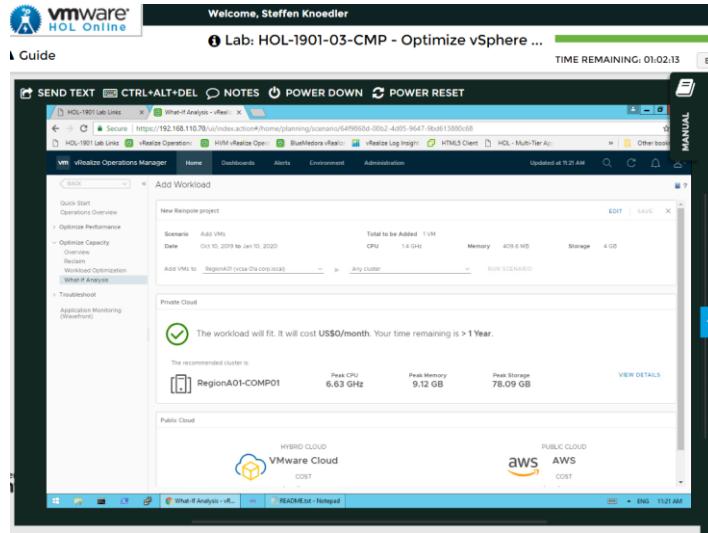
Before I run the What-if analysis, I can also adjust the risk level of my capacity forecast. This changes how the cluster time remaining is calculated. So, we can increase the risk but allow for more capacity.



c. Go back to What-if Analysis

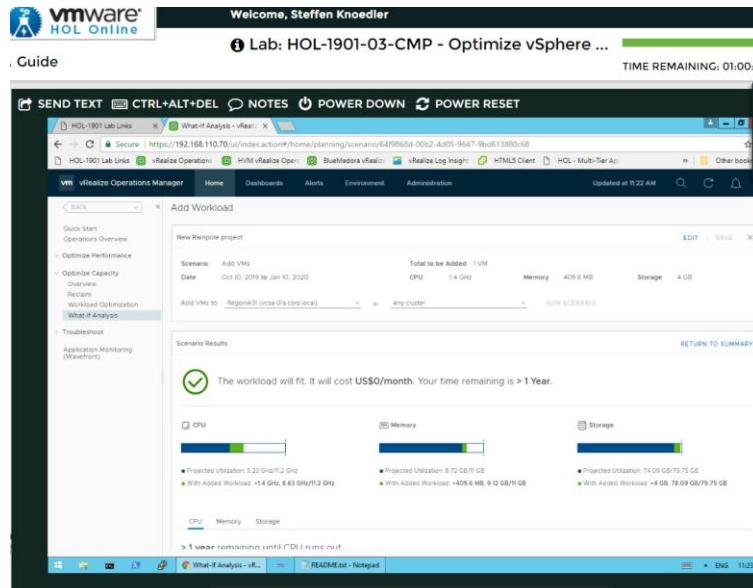


d. Run Scenario Again



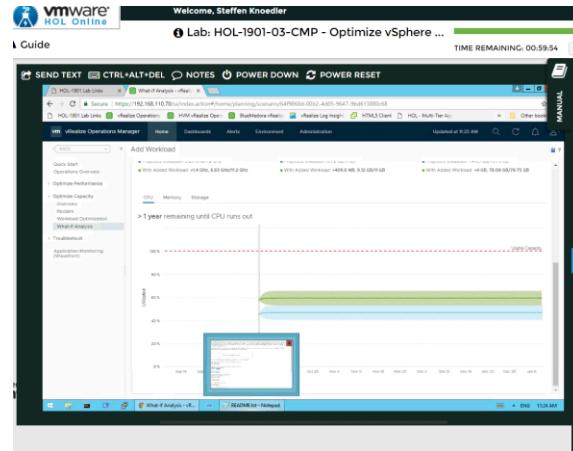
Now we have enough capacity for this scenario.

e. View Details



IN the details you can see more about the increase of cpu, memory and storage demand increase as well as the cost import of the project.

f. Forecasted Demand Growth

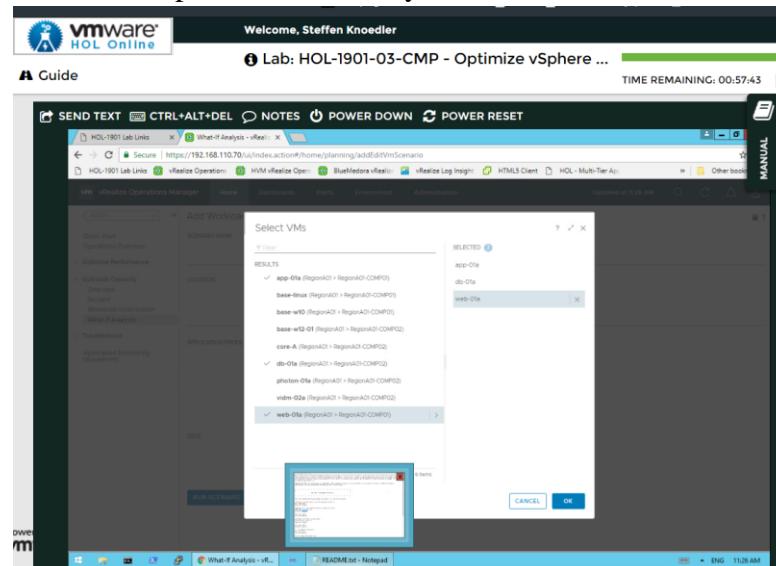


It is also possible to analyze the expected demand growth.

2. Private and Public Cloud What-If Scenarios

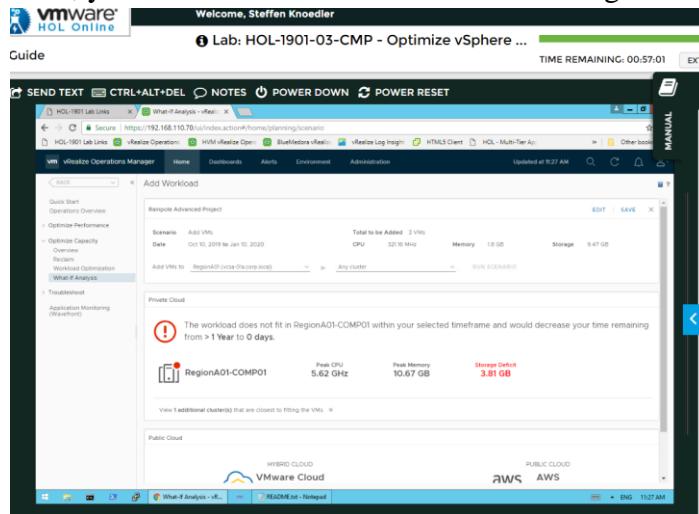
a. Add Advanced Workload Scenario (public cloud)

We can add a new advanced workload scenario and import from existing VMs to use their specification for my scenario.

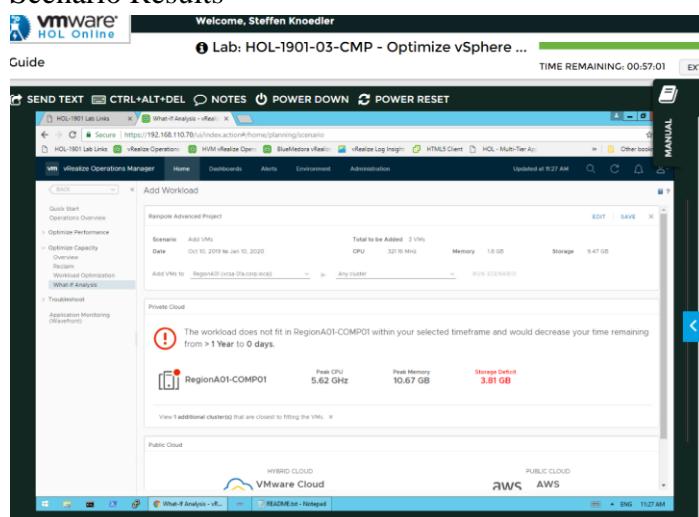


b. Run Scenario

Here, you can see that I would run out of storage.



c. Scenario Results



We do not have enough computing resources but instead of upgrading the own hardware, we can take advantage of public cloud resources...

d. Utilize Public Cloud Modeling

We can choose a AWS region to see what would be an AWS equivalent to my VM and how much it would cost.

The screenshot shows the vRealize Operations Manager interface. On the left, there's a sidebar with options like Quick Start, Operations Overview, Optimize Performance, Optimize Capacity (with sub-options: Overview, Reclaim, Workload Optimization, What-If Analysis), Troubleshoot, and Application Monitoring (Wavefront). The main area is titled 'Add Workload' and compares a local VM configuration with its AWS equivalent. The local VM has 2.8 GHz CPU, 1 GB Memory, and 3.15 GB Storage, running on one EC2 instance type. The AWS equivalent shows 3.3 GHz CPU, 1 GB Memory, and 3.15 GB Storage, also running on T2 Micro Instances. The total cost per instance type is listed as \$11. The interface includes tabs for SEND TEXT, CTRL+ALT+DEL, NOTES, POWER DOWN, and POWER RESET. At the bottom, there are windows for Putty, What-If Analysis - vR..., README.txt - Notepad, and a taskbar with icons for HOL-1901 Lab Links, vRealize Operations, vRealize Log Insight, and others. The status bar at the bottom right shows 'Updated at 11:28 AM' and the date 'ENG 11/29 AM'.

e. Total Cost for VMC on AWS

In this example, the total cost per month would be \$32.

This screenshot is similar to the previous one but includes a message at the bottom stating: 'if you move to public cloud, the estimated total cost per month is \$32'. A red box highlights the word 'ON DEMAND' in the 'Total Cost per Month' section of a floating panel on the right. The rest of the interface and window arrangement are identical to the previous screenshot.