

Lab 05 - Lab – Hybrid Linked Mode

Introduction

Hybrid Linked Mode allows you to link your VMware Cloud on AWS vCenter Server instance with an on-premises vCenter Single Sign-On domain.

If you link your cloud vCenter Server to a domain that contains multiple vCenter Server instances linked using Enhanced Linked Mode, all of those instances are linked to your cloud SDDC.

Using Hybrid Linked Mode, you can:

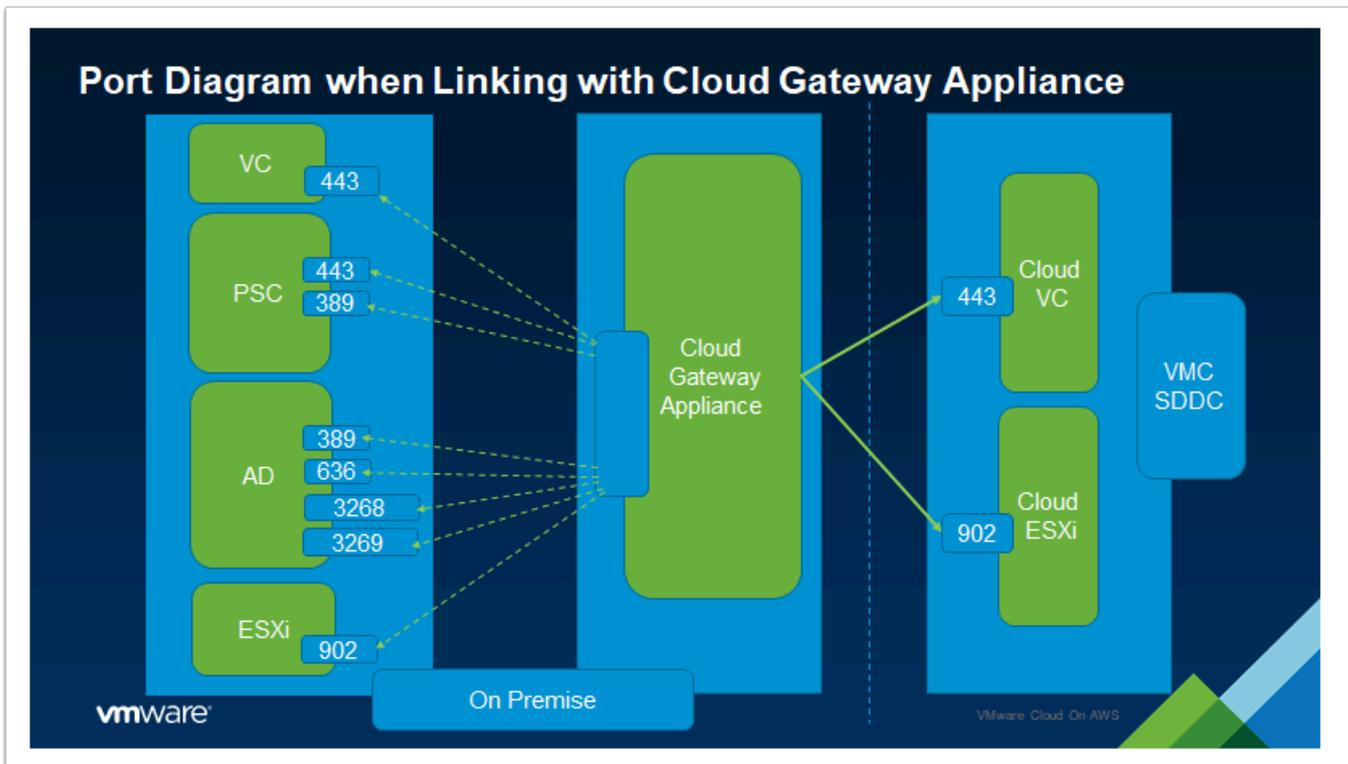
- View and manage the inventories of both your on-premises and VMware Cloud on AWS Datacenters from a single vSphere Client interface, accessed using your on-premises credentials.
- Migrate workloads between your on-premises data center and cloud SDDC.
- Share tags and tag categories from your vCenter Server instance to your cloud SDDC.

Hybrid Linked Mode supports on-premises vCenter Server systems running 6.0 Update 3 patch c and later with either embedded or external Platform Services Controller (both Windows and vCenter Server Appliance). vCenter Server systems with external platform Services Controller instances linked in Enhanced Linked Mode are also supported.

You have two options for configuring Hybrid Linked Mode. You can use only one of these options at a time.

- You can install the Cloud Gateway Appliance and use it to link from your on-premises data center to your cloud SDDC. In this case, SSO users and groups are mapped from your on-premises environment to the SDDC.
- You can link your VMware Cloud on AWS SDDC to your on-premises vCenter Server. In this case, you must add an identity source to the SDDC LDAP domain.

 For this lab we will use the Cloud Gateway Appliance (Option 1). This is the favored option as it doesn't require you to expose your AD infrastructure to the cloud and open multiple firewall ports



💡 Below are key prerequisites to configuring Hybrid Linked Mode:

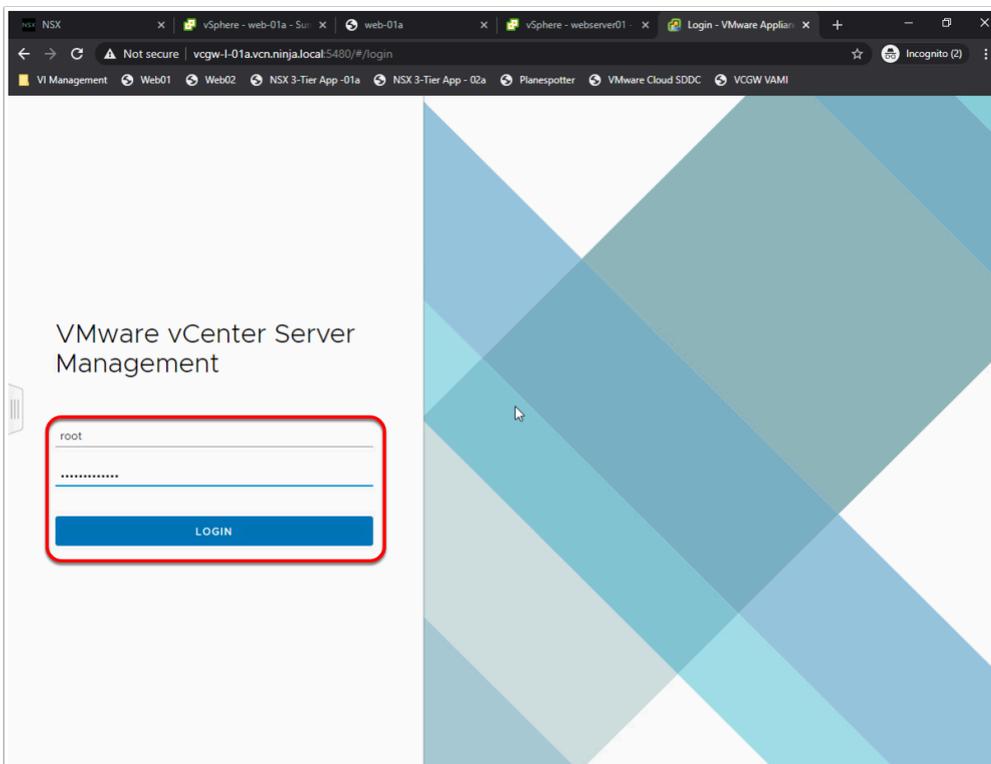
1. Configure a connection between your on-premises data center and the SDDC. Direct Connect, a VPN, or both can be used.
2. Regardless of the type of connection chosen, the vCenter FQDN must resolve to a private IP address. This is not the default configuration.
3. Ensure that your on-premises data center and your cloud SDDC are synchronized to an NTP service or other authoritative time source. When using Hybrid Linked Mode, VMware Cloud on AWS can tolerate a time skew of up to ten minutes between the on-premises data center and the cloud SDDC.
4. The maximum latency between your cloud SDDC and on-premises data center cannot exceed 100ms round-trip.
5. Decide which of your on-premises users will have Cloud Administrator permissions. Add these users to a group within your identity source. Ensure that this group has access to the on-premises environment. In this lab, we use a user called **"SDDCAdmin"**
6. On-Premises and Management Gateway firewall must allow the required ports

In our lab environment, the Cloud Gateway Appliance has already been deployed. We will begin by reviewing its settings and proceed with the HLM Configuration afterward.

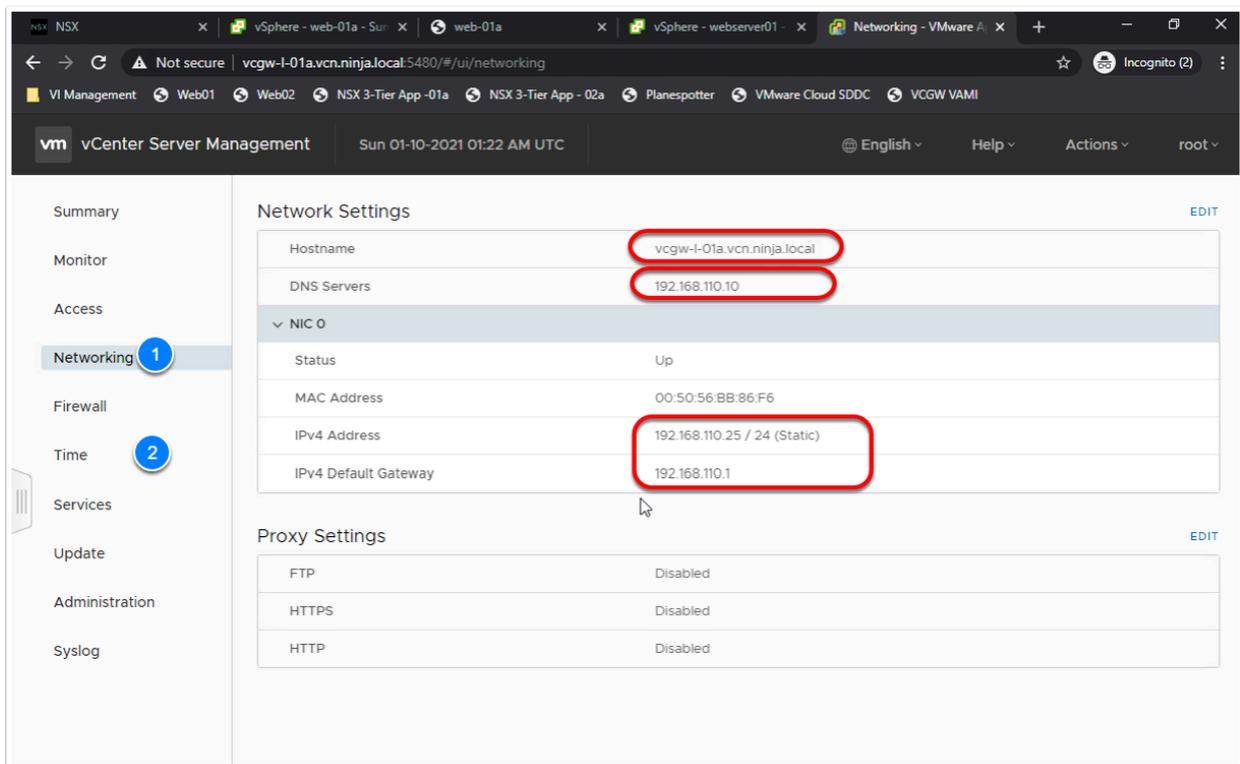
TASK

Task 1 - Review Cloud Gateway Appliance Settings

1. From the VDI Desktop open the **Google Chrome** Browser or **Firefox**
2. Launch the VI Management > VCGW VAMI bookmark or browse to <https://vcgw-l-01a.vcn.ninja.local:5480>
3. Login as
 - **root**
 - **VMwareNinja1!** **Note: You can also use ctrl+m to paste in the password**



4. In the left pane, click the **Networking** menu to view the Hostname and IP settings of the appliance
5. **Note:** we already have a firewall rule on the MGW allowing vCenter and ESXi access form the 192.168.110.0/24 subnet
6. In the left pane, click the **Time** menu to confirm NTP time servers have been set to ntp.org:
 - **0.us.pool.ntp.org**
 - **1.us.pool.ntp.org**

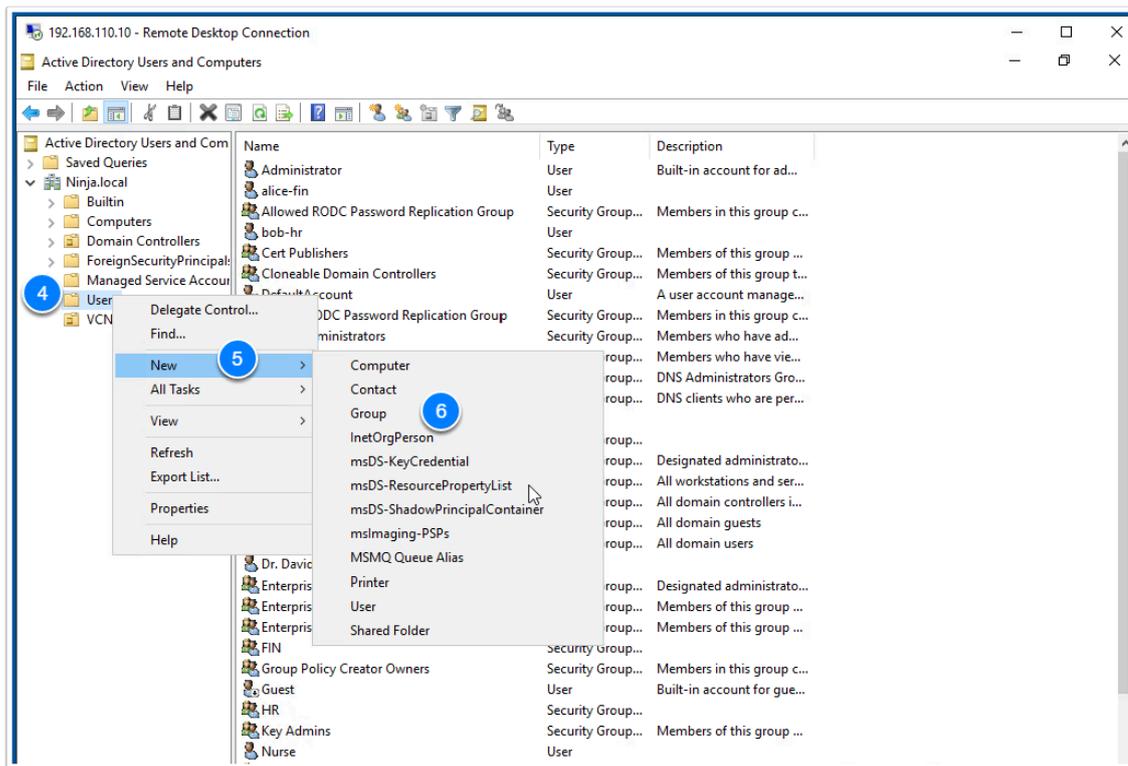


Task 2 - Create an HLM Admin Group

- From the VDI Desktop Click the **Remote Desktop Shortcut** on the desktop to connect to the Domain controller.
Click the **Ninja DC&DNS** icon
- If Prompted enter the following details to connect to the domain controller:
 - Computer: **192.168.110.10**
 - Username: **Ninja\Administrator**
 - Password: **VMwareNinja1!** **Note: You can also use ctrl+m to paste in the password**
- From the start menu of the Domain Controller Click the blue icon on the right for **Active Directory Users and Computers**



4. Right-Click the **Users** Container
5. Select **New**, Click **Group**
 - Group Name: **SDDC Admins**
 - Leave group scope as Global and type as security (defaults)
 - Click **OK**
6. Double-Click the Newly created "**SDDC Admins**" Group
7. In the Popup click the **Members** Tab
8. Click **Add**
9. In the second pop up type **SDDCAdmin** and Click **Check Names**
10. Click **OK** (To add SDDCAdmin to the SDDC Admins Group) and close the 2nd pop up
11. Click Apply, then OK to close the pop up
12. Close/Disconnect the Remote Desktop Session



Task 3 - Configure Hybrid Linked Mode

We will now configure Hybrid Linked mode by registering the On-Premises vCenter and SDDC vCenter to the Cloud gateway, we'll also provide an Active Directory Group that will be assigned Cloud Admin Privileges

1. From the Chrome Browser on the VDI desktop navigate to:

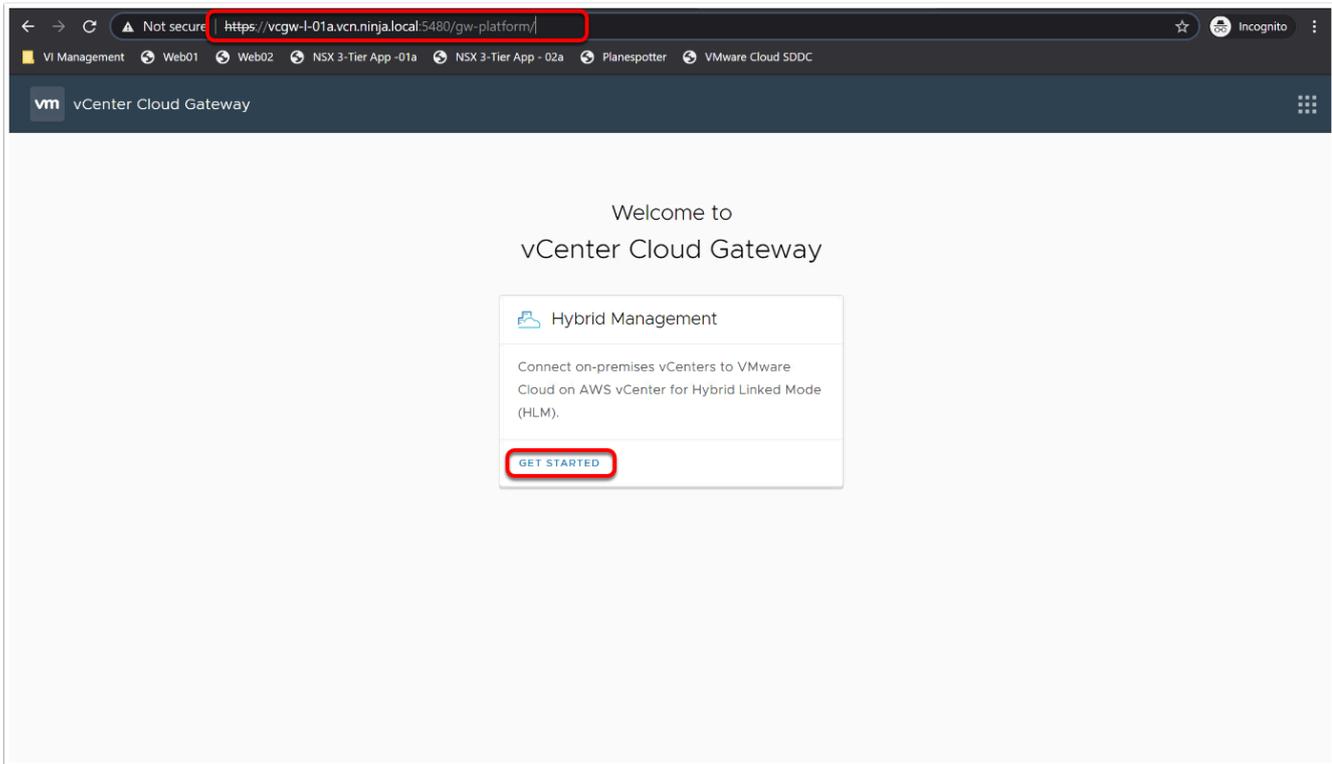
<https://vcgw-l-01a.vcn.ninja.local:5480/gw-platform>

or on the Summary tab of <https://vcgw-l-01a.vcn.ninja.local:5480/> click **Enable Hybrid Management**

NOTE: Ensure the URL includes the "**https//**" or the page will not be displayed. You may have to manually type it. Alternatively go to the summary page of the VCGW VAMI (<https://vcgw-l-01a.vcn.ninja.local:5480/>) and click **Enable Hybrid Management**

2. Click **Get Started**
3. If Prompted Login as

- **root**
- **VMwareNinja1!** **Note: You can also use ctrl+m to paste in the password**



4. On the Prerequisites Screen select the check boxes for
 - Your on-Premises environment is running vSphere 6.5 patch d or higher
 - Check that network connectivity is correctly established for Hybrid Linked Mode
5. Click **Configure**
6. When Prompted Login as
7. **root**
8. **VMwareNinja1!** **Note: You can also use ctrl+m to paste in the password**

Ensure that you have met the following prerequisites before configuring Hybrid Linked Mode.

- Your on-premises environment is running vSphere 6.5 patch d or later.
- Check that network connectivity is correctly established for Hybrid Linked Mode.

[Learn more about pre-requisites](#)

The diagram illustrates the Hybrid Linked Mode architecture. It is divided into two main sections: VMC (Virtual Machine Cloud) and Datacenter. The VMC section, located above a dashed line, contains vCenter Servers represented by two server icons. The Datacenter section, located below the dashed line, contains a Cloud Gateway and a vCenter Server, each represented by a server icon. A double-headed arrow connects the Cloud Gateway and the vCenter Server in the Datacenter. A single-headed arrow points from the vCenter Server in the Datacenter up to the vCenter Servers in the VMC. A 'CONFIGURE' button is visible at the bottom left of the interface.

9. In the On-Premises SSO section, enter the following values

- Platform Services Controller: **vc-l-01a.vcn.ninja.local**
- HTTPS Port: **443**
- Single Sign-on Password: **VMwareNinja!** **Note: You can also use ctrl+m to paste in the password**

10. Click **Next**

11. On the certificate warning dialog, click **Connect**

Configure Hybrid Management (HLM)

1. On-premises SSO

Join the Single Sign-On domain of your on-premises Platform Services Controller.

Platform Services Controller	<input type="text" value="vc-l-01a.vcn.ninja.local"/>
HTTPS Port	<input type="text" value="443"/>
Single Sign-On username	<input type="text" value="Administrator"/>
Single Sign-On password	<input type="password" value="....."/>

NEXT

! NOTE: This step can take up to 20 minutes. The Interface says 5 minutes, but it takes longer.

12. In the Active Directory section, enter the following values
13. Domain: **Ninja.local**
14. User Name: **Administrator**
15. Password: **VMwareNinja!** **Note: You can also use ctrl+m to paste in the password**
16. Click **Next**

< Configure Hybrid Management (HLM)

> On-premises SSO

Join the Single Sign-On domain of your on-premises Platform Services Controller.

2. Active Directory (Optional)

Join Active Directory domain.

If you have configured an Active Directory (AD) identity source using Integrated Windows Authentication (IWA), enter your credentials to join the domain.

Domain

Organization Unit (Optional)

Username

Password

In the Hybrid Linked Mode section, enter the following values

17. Cloud vCenter: [<Copy from settings tab of your SDDC>](#)
18. Username: [cloudadmin@vmc.local](#)
19. Password: [<Copy from settings tab of your SDDC>](#)
20. Identity Source: [Ninja.local](#)
21. Groups: [SDDC Admins](#) (ensure it appears in a blue bubble in the text box)
22. Click **Configure** (**This process can take up to 2 mins**)
23. Click **Restart**

Provide the VMware Cloud vCenter details for Hybrid Linked Mode.

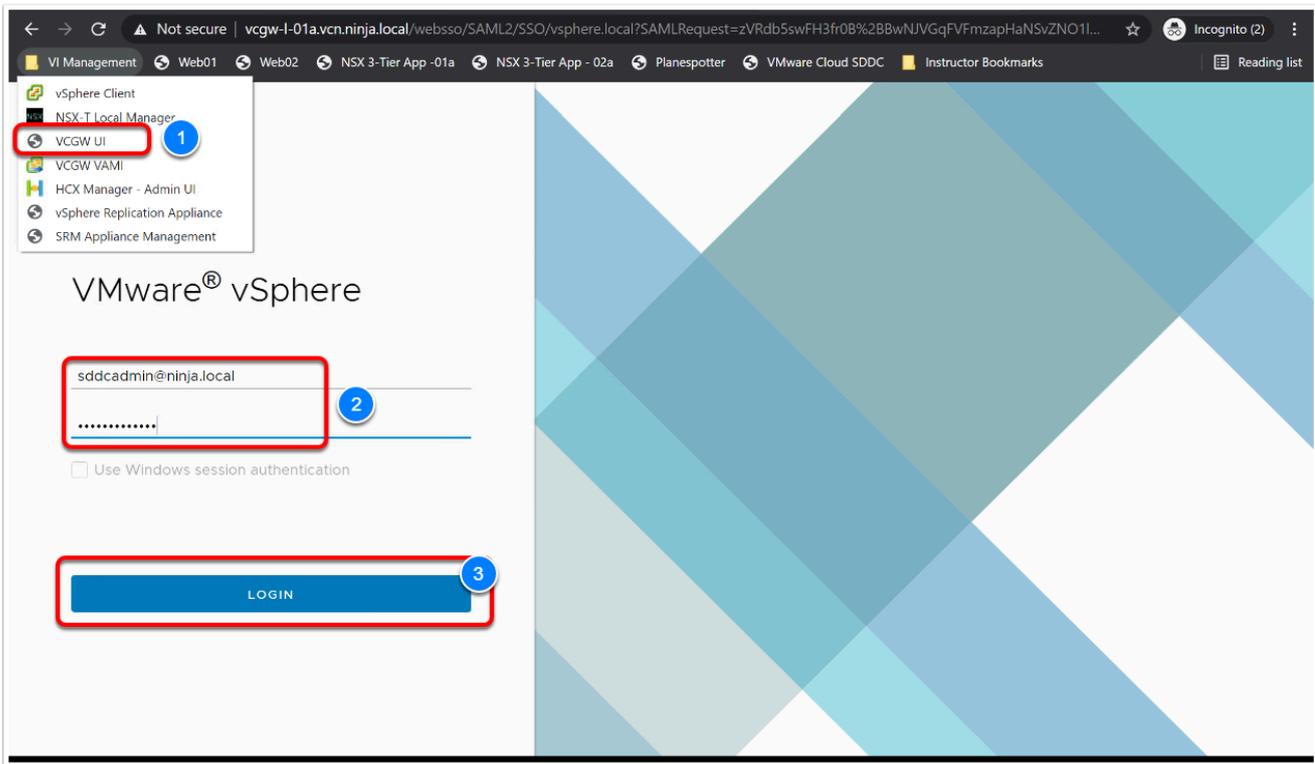
Cloud vCenter	<input type="text" value="vcenter.sddc-54-203-241-194.vmwarevmc.com"/>
Username	<input type="text" value="cloudadmin@vmc.local"/>
Password	<input type="password" value="....."/>

Select groups for *CloudAdmin* access.

Identity Source	<input type="text" value="Ninja.local"/>
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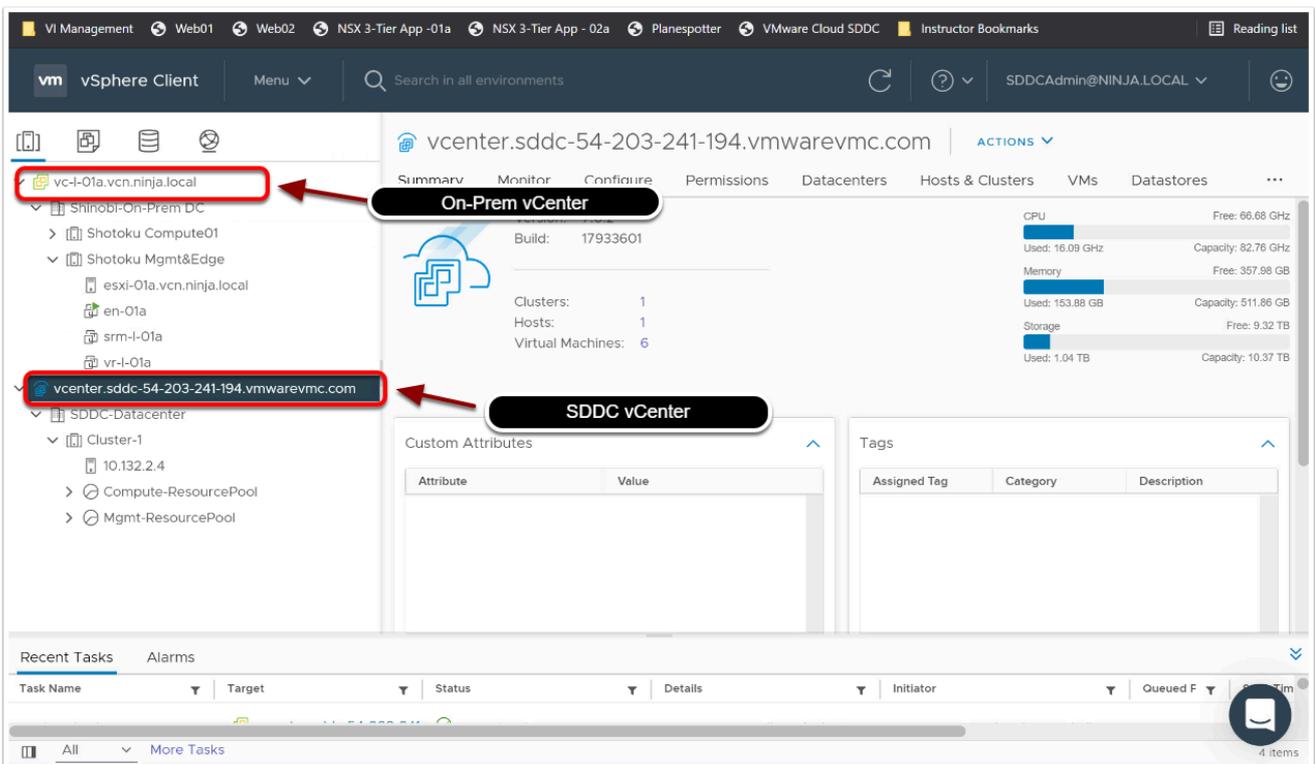
Group(s)

24. Once the Appliance has completed restarting, open a new browser tab
25. In the Browser bookmark bar click **VI Management --> VCGW UI**
or type in the following address:
<https://vcgw-l-01a.vcn.ninja.local/ui>
26. Login using the following credential
 - **sddcadmin@ninja.local**
 - **VMwareNinja1!** **Note: You can also use ctrl+m to paste in the password**



28. Upon login click **Menu** then click **Hosts and Clusters**

29. Notice you can see inventory for both the green (on-premises) and blue (VMC) vCenters now



Conclusion

-  With Hybrid Linked Mode now configured, you can:
- View and manage the inventories of both your on-premises and VMware Cloud on AWS data centers from a single vSphere Client interface, accessed using your on-premises credentials.
 - Migrate workloads between your on-premises data center and cloud SDDC.
 - Share tags and tag categories from your vCenter Server instance to your cloud SDDC.