

# VMware vCenter Server (VCS) Converter Appliance

## Fling Documentation

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The VCS to VCSA Converter Appliance is the 2013 Fling Contest winning idea. It allows customers to migrate from Windows vCenter Server with an External Microsoft SQL Server Database to the vCenter Server Appliance with an embedded vPostgres database. The Fling migrates the vCenter database, roles, permissions, privileges, certificates and inventory service. The target appliance will run at the same IP address as the source vCenter. Please see the Fling webpage <https://labs.vmware.com/flings/vcs-to-vcva-converter> for more details.



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### Change Log:

- v0.9 – Initial release
- v0.9.1 – Add support for Windows Server 2012R2 VC servers; allow specifying a different port for the SQL Server

### System Requirements:

- vCenter Server running on Windows: vSphere 5.5, any patch or update release.
- The Windows vCenter Server and the vCenter Server Appliance should be running the same version (e.g. vCenter Server Windows 5.5u1 to VCSA 5.5u1)
- The vCenter Server Appliance should be deployed with at least the same number of CPUs and at least the same amount of memory as the Windows vCenter Server host
- vCenter Components (Inventory Service, vSphere Web Client and VMware Single Sign On) must be running on the same host as the vCenter Server
- External Microsoft SQL Server 2008R2 or later for the vCenter Database (VCDB)
- vSphere Web Client Plugins connected registered with an Active Directory user

- VMware Single Sign On User/Groups are currently not migrated (require re-registration)
- Migration Appliance must be able to communicate with the Windows vCenter Server Database and its database as well as the new vCenter Server Appliance. The following ports are used for this communication and should be open on the vCenter Windows server and on the VCSA:
  - Ports: 22 (ssh), 443 (https), 445 (SMB)

#### **Limitations:**

- Microsoft SQL Server and vCenter Server must be on separate hosts
- Microsoft SQL Express Database is not supported in version 0.9
- VMware Single Sign On Users and Groups are not migrated in version 0.9
- Windows Local Users and Groups are not migrated in version 0.9
- vCenter Alarm action scripts are not migrated in version 0.9
- The migration will require some downtime for the vCenter Server
- Linked Mode configuration is not migrated. Multiple vCenters must be migrated separately
- Any VMware or 3<sup>rd</sup> party vSphere Web Client plug-ins (e.g. VUM, NSX) that are running on the same host as the vCenter Server will not be migrated

#### **Prerequisite Information Required:**

- Administrator credentials to host where vCenter Server is running
- Credentials to Windows vCenter Server (username and password)
- Credentials to vCenter Server Database (username, password and DB Name)
- Credentials for all vSphere Web Client Plugins used for registration (username and password)
- Sufficient storage to deploy the vCenter Server Appliance
- The vCenter server appliance must be on the same network as the vCenter Windows server, and will use the same IP address.

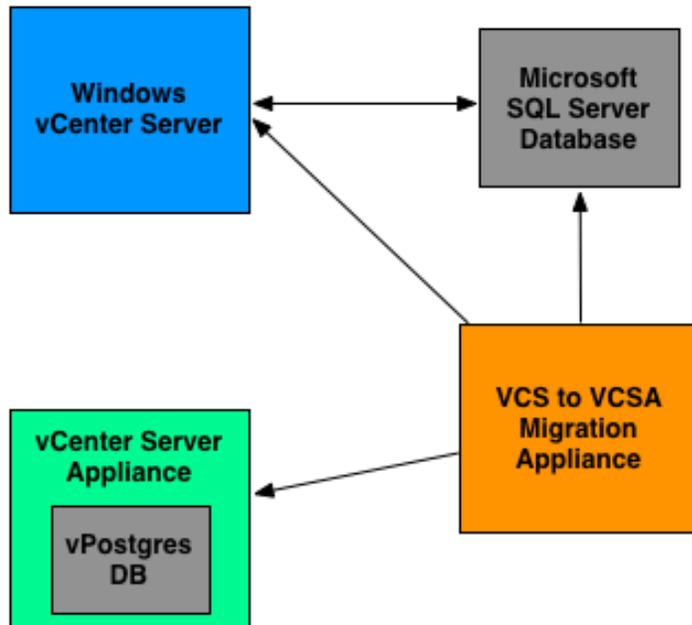
#### **Note for Windows Server 2012 R2 users:**

Version 0.9.1 of the Converter Appliance now supports VC running on Windows Server 2012 R2, using WinRM to connect to Windows Server. Unfortunately, we do not support secure WinRM connections; ensure that you have a trusted network between the Converter Appliance and VC. To configure your source VC for WinRM connections, run these commands at a command prompt as an Administrator:

```
winrm quickconfig
winrm set winrm/config/service/auth @{Basic="true"}
winrm set winrm/config/service @{AllowUnencrypted="true"}
```

Finally, make sure that TCP port 5985 on your VC server is open to the Converter Appliance.

#### **Diagram to visualize the migration process:**



#### **VCS to VCSA Migration Instructions:**

**Note:** If at any point the migration fails; you can continue managing your environment with the Windows vCenter Server.

**Note:** Some screenshots were taken with a different version of the Converter Appliance, and may have a different color scheme than the current appliance version.

1. Verify your credentials for the vCenter Server, vCenter Server Database, and any solutions or Web Client plugins that you are using.
2. Shut down or disable any solutions or Web Client plugins that you are using. In our example, we use VMware NSX and VMware Update Manager; Figures 1 and 2 demonstrate shutting down these solutions.

**NSX Manager Virtual Appliance**

DNS Name: -  
 IP Address: 172.30.0.241  
 Version: 6.1.0 Build 2107742  
 Uptime: 58 minutes  
 Current Time: Tuesday, 06 January 2015 07:35:59 PM UTC

**CPU** Free: 1963 MHZ  
 Used: 37 MHZ Capacity: 2000 MHZ

**MEMORY** Free: 4125 MB  
 Used: 3850 MB Capacity: 7976 MB

**STORAGE** Free: 50G  
 Used: 20G Capacity: 69G

Name	Version	Status	
vPostgres		Running	Stop
RabbitMQ		Running	Stop

Name	Version	Status	
SSH Service		Running	Stop

Name	Version	Status	
NSX Management Service	6.1.0 Build 2107742	Stopping...	Stop

Figure 1 - Stopping NSX service

**Services (Local)**

**VMware vSphere Update Manager Service**

Stop the service  
 Restart the service

Description:  
 VMware vSphere Update Manager is a security service that is used to scan and remediate a group of virtual machines or hosts.

Name	Description	Status	Startup Type	Log On As
VMware Snapshot Provider	VMware Sn...		Manual	Local System
VMware Tools	Provides s...	Started	Automatic	Local System
VMware vSphere Update Manager Service	VMware vS...	Started	Automatic	Local System
VMware vSphere Update Manager UFA Service	VMware Up...		Manual	Local System
Volume Shadow Copy	Manages a...		Manual	Local System
Windows Audio	Manages a...		Manual	Local Service
Windows Audio Endpoint Builder	Manages a...		Manual	Local System
Windows CardSpace	Securely e...		Manual	Local System
Windows Color System	The WcsPl...		Manual	Local Service
Windows Driver Foundation - User-mode Drive...	Manages u...		Manual	Local System
Windows Error Reporting Service	Allows erro...		Manual	Local System
Windows Event Collector	This servic...		Manual	Network S...
Windows Event Log	This servic...	Started	Automatic	Local Service
Windows Firewall	Windows Fi...	Started	Automatic	Local Service
Windows Font Cache Service	Optimizes ...	Started	Automatic (D...	Local Service
Windows Installer	Adds, modi...		Manual	Local System
Windows Management Instrumentation	Provides a ...	Started	Automatic	Local System
Windows Modules Installer	Enables ins...		Manual	Local System
Windows Presentation Foundation Font Cache...	Optimizes ...		Manual	Local Service
Windows Process Activation Service	The Windo...	Started	Manual	Local System
Windows Remote Management (WS-Managem...	Windows R...	Started	Automatic (D...	Network S...
Windows Time	Maintains d...	Started	Manual	Local Service
Windows Update	Enables th...	Started	Automatic (D...	Local System
WinHTTP Web Proxy Auto-Discovery Service	WinHTTP i...		Manual	Local Service
Wired AutoConfig	The Wired ...		Manual	Local System
WMI Performance Adapter	Provides p...		Manual	Local System
Workstation	Creates an...	Started	Automatic	Network S...
World Wide Web Publishing Service	Provides W...	Started	Automatic	Local System

Figure 2 - Stopping vSphere Web Client Plugin Services

3. Deploy the VCS to VCSA Converter Appliance into your environment, and power it on. Ensure that the appliance can connect to your vCenter Server, your vCenter Server

Database, and your new vCenter Server Appliance over the network. If you are configuring the Converter Appliance with a static IP address, use the appropriate OVF parameters when deploying the appliance.

4. The next screen will be the start of the migration wizard. Take a moment to carefully read through the instructions. For more details, take a look at the next section.

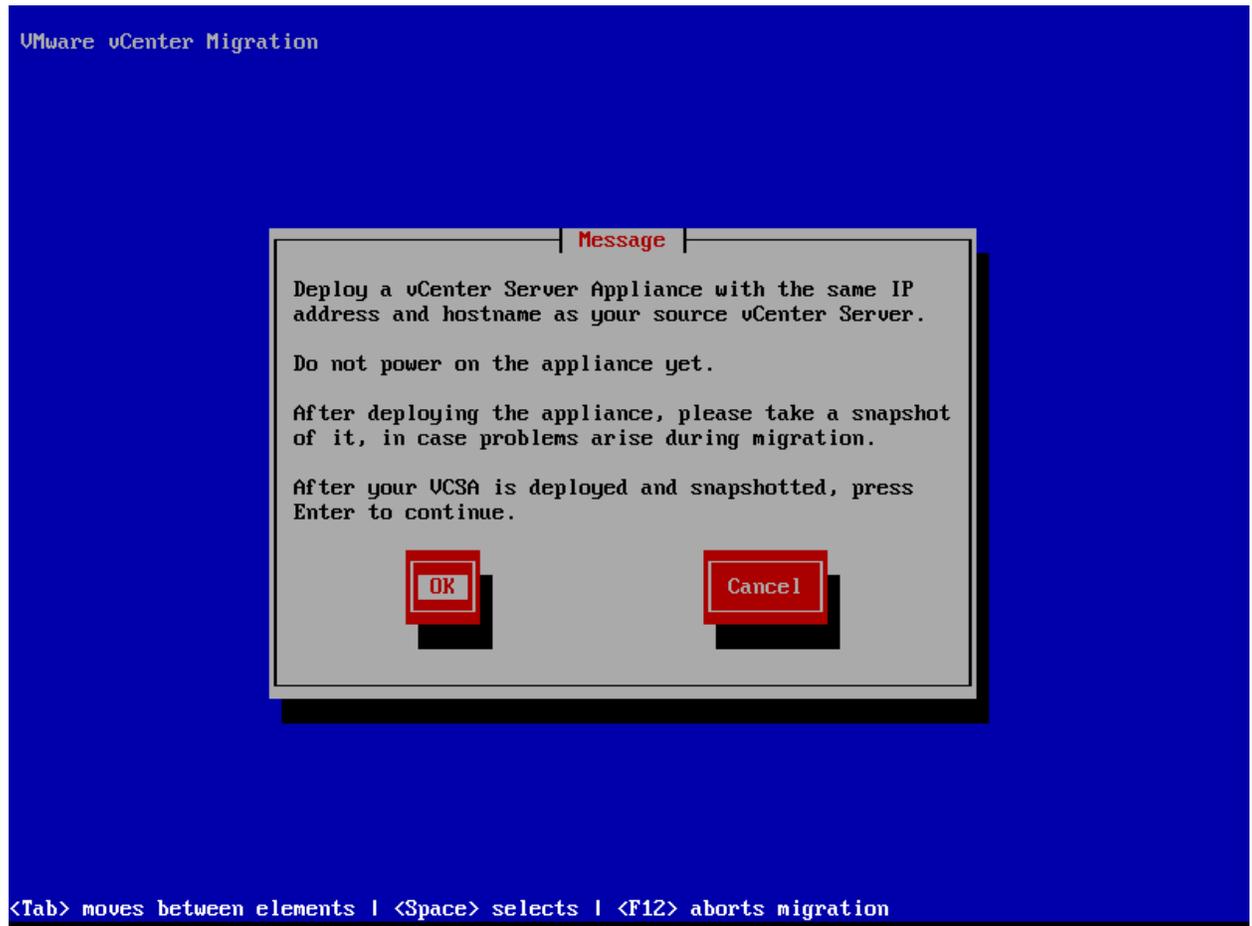


Figure 3 - Deploy powered off VCSA

Deploy the same version of the VCSA as the Windows vCenter Server using the same hostname and IP Address as your source Windows vCenter Server. Do **not** power on the VCSA yet. Take a snapshot in case problems arise during the migration and you need to reset the appliance to a clean state.

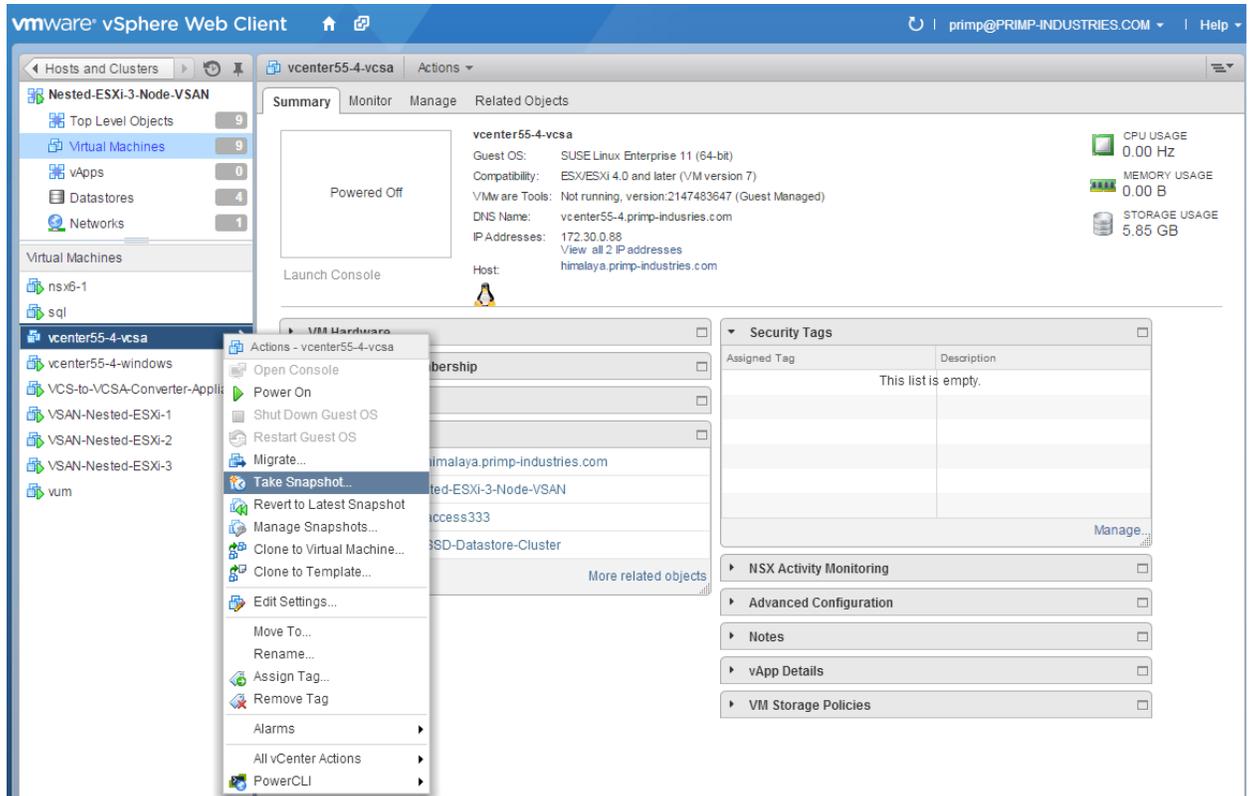
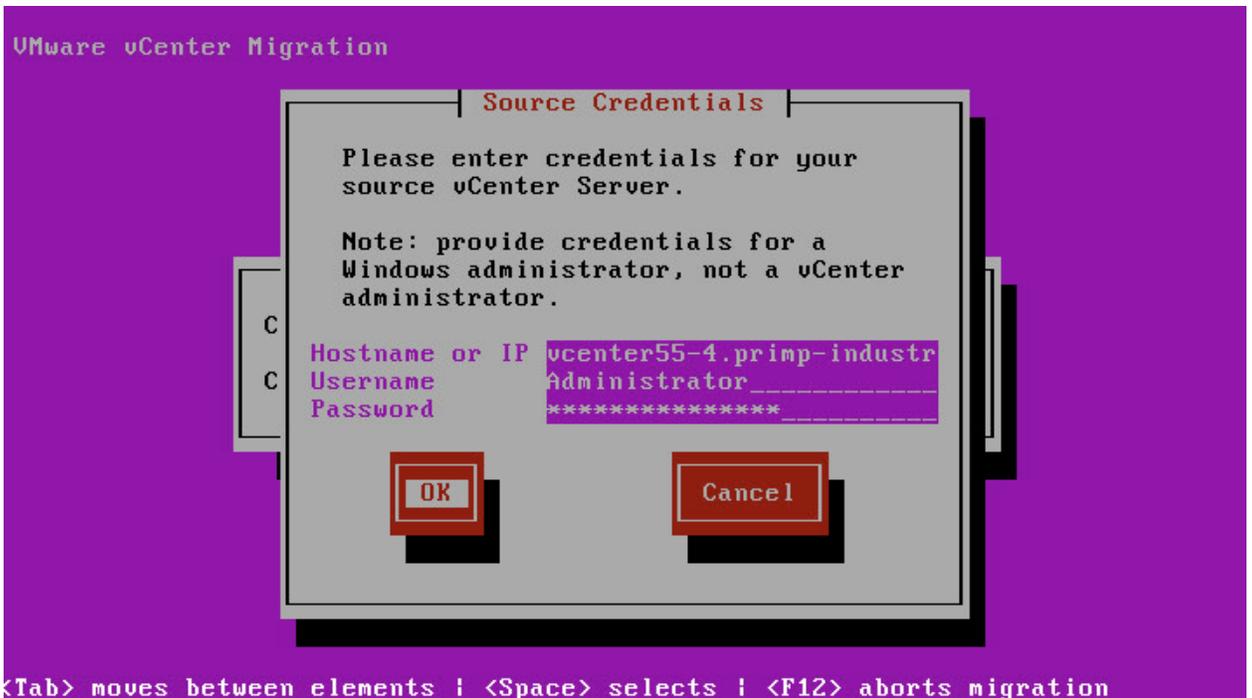


Figure 4 - Create snapshot of VCSA after deployment

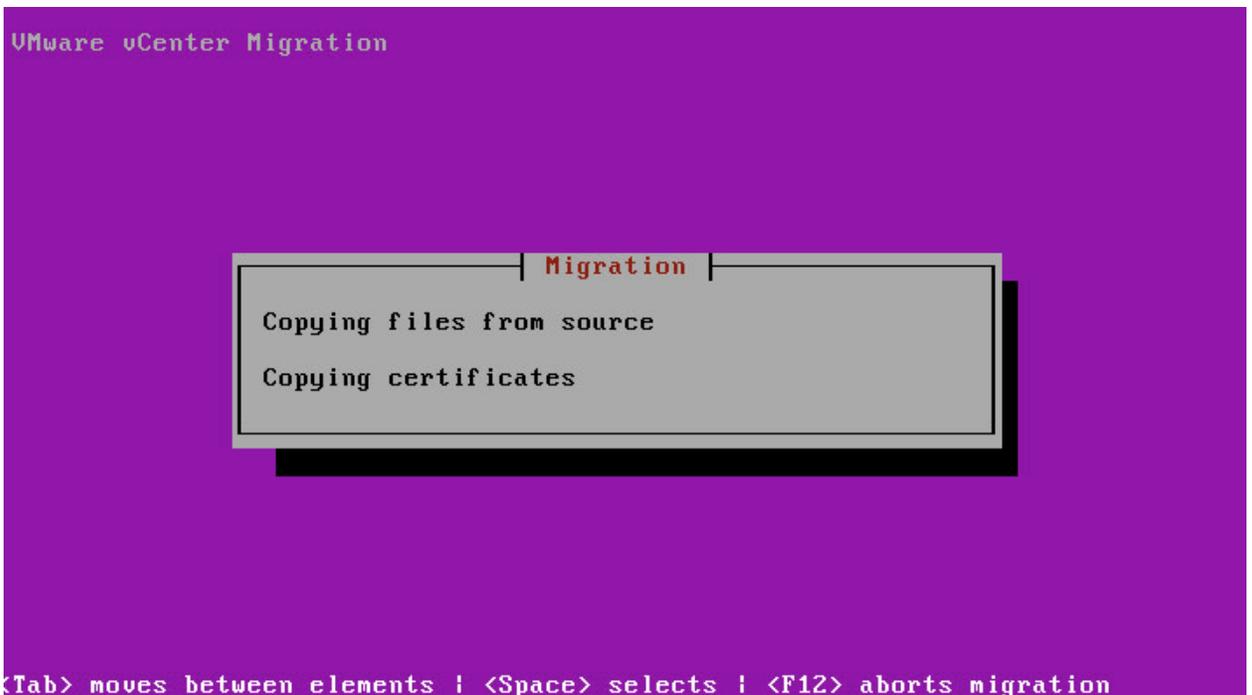
- Once you have finished deploying the VCSA, you may proceed to the next step in the VCS Migration Appliance wizard. You will be asked to enter the IP or Hostname of the Windows vCenter Server along with the Windows Administrator credential.

Note: Be sure to provide credentials for a Windows administrator, not a vCenter administrator.



<Tab> moves between elements | <Space> selects | <F12> aborts migration  
Figure 5- Enter Windows vCenter Server credentials

During this step, vCenter data and configuration information is copied over to the Converter Appliance.



<Tab> moves between elements | <Space> selects | <F12> aborts migration  
Figure 6 - Copying files from Windows vCenter Server

- Next, power off your Windows vCenter Server machine, and when it is off, power on the VCSA. Do not login to the VCSA administrator interface on port 5480 this is because the Windows vCenter Server and the VCSA is using the same IP Address. Once the VCSA is powered up and showing its blue console, select OK to continue to the next step in the VCS Migration Wizard.

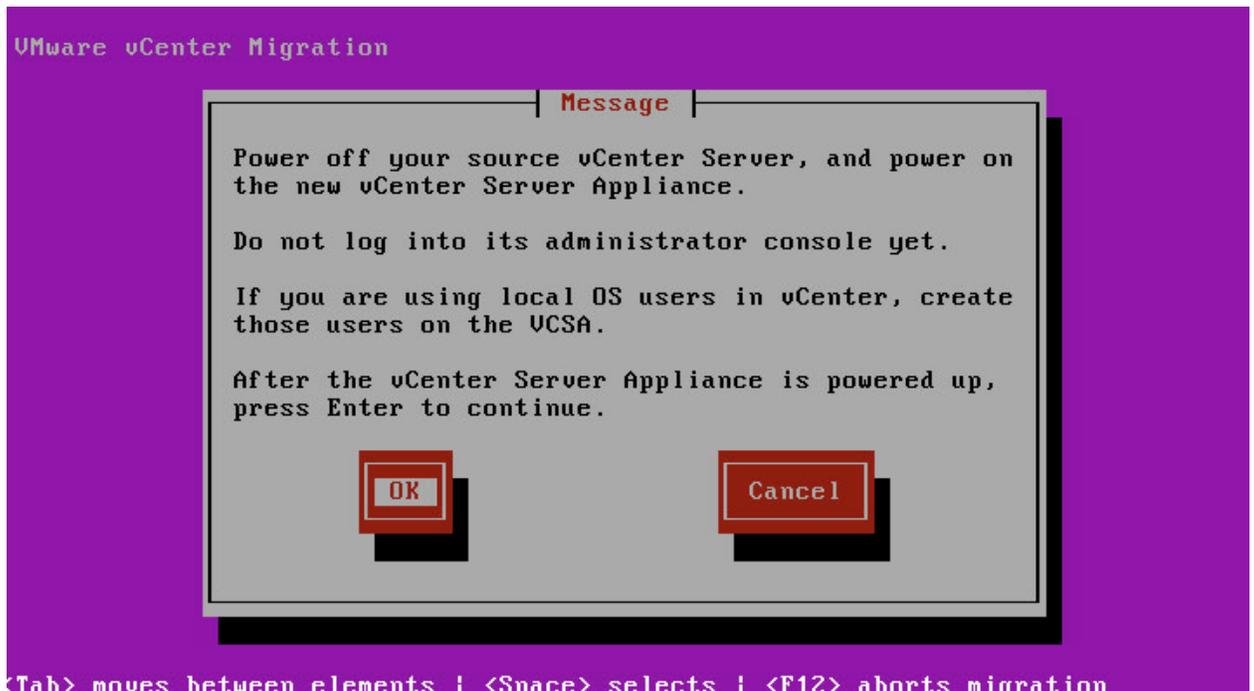


Figure 7 - Power off Windows VC and power on VCSA

- If the VCSA has not finished booting, the Converter Appliance will wait for it. When the VCSA has finished booting, the Converter Appliance will ask you to verify the SSH public key presented by the VCSA. If you would like to verify the key presented by the VCSA, follow the instructions given by the Converter Appliance. Continue by selecting "Yes".

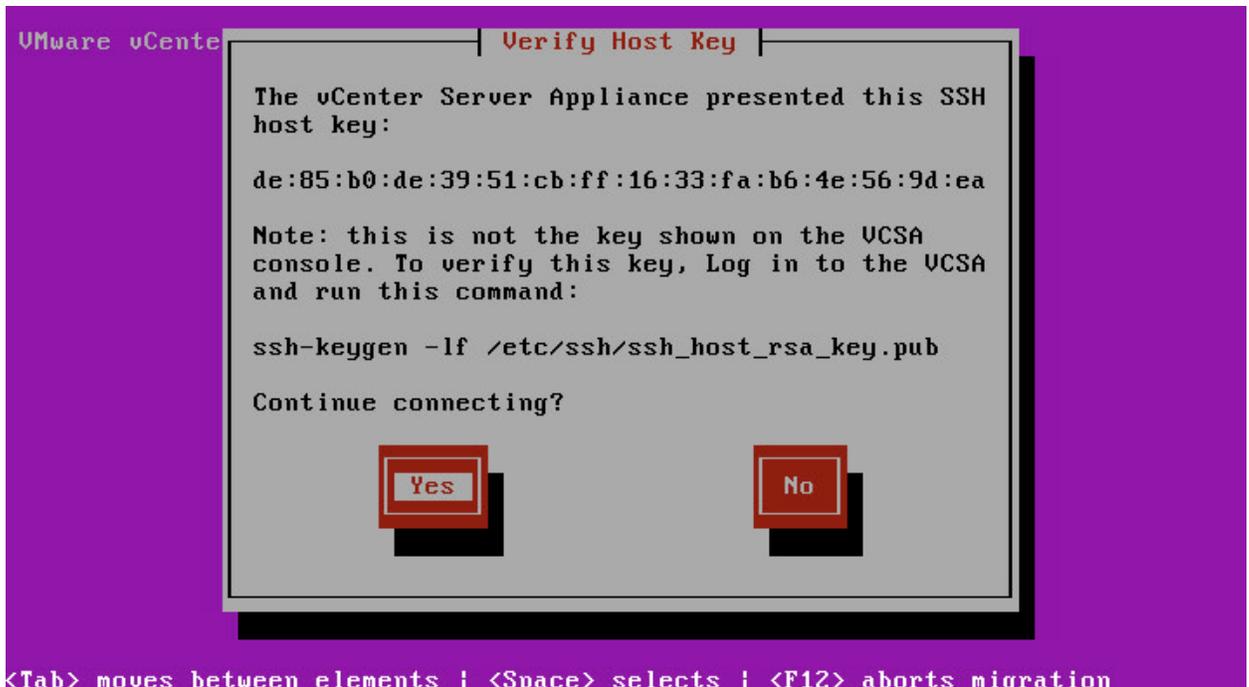


Figure 8 - SSH host key acceptance

8. Next, you will need to enter the root password of the VCSA. This should be "vmware" unless you have changed it.

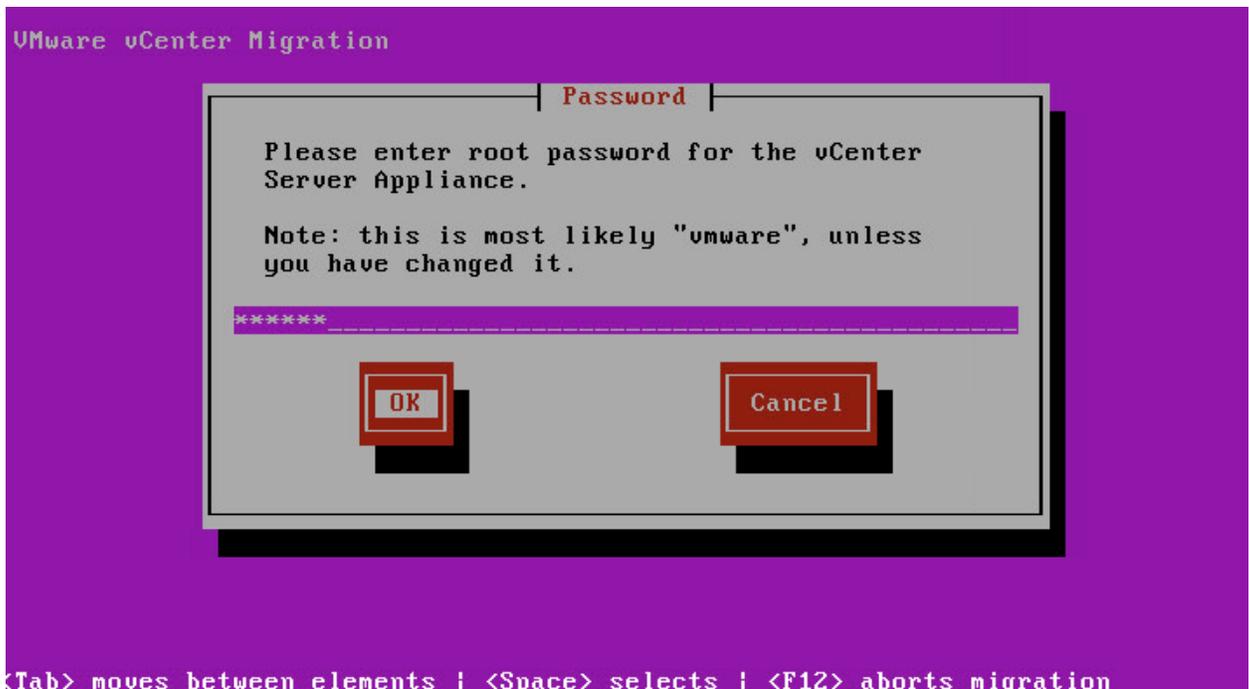


Figure 9 - Enter VCSA root password

During this step, the Windows vCenter Server configurations and other files are being restored into the VCSA.

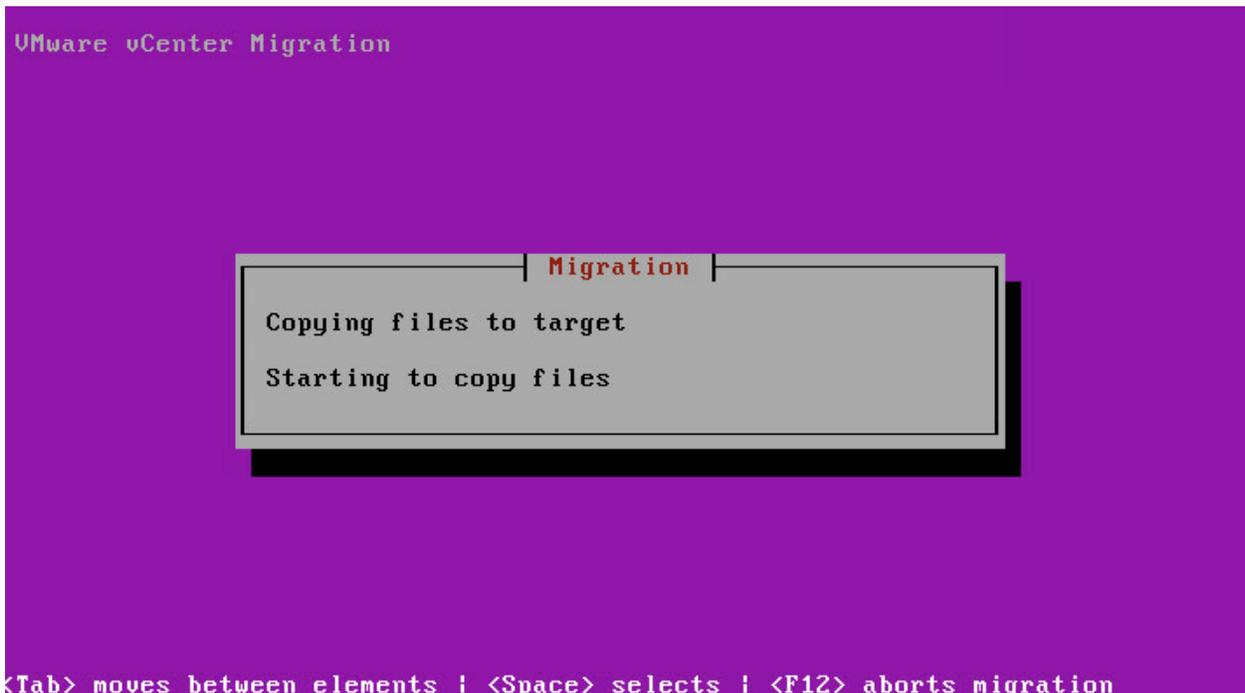


Figure 10 - Copying files to VCSA

9. Enter your DNS Domain suffix (e.g. yourcompany.com) and hit OK to continue. Note that the Converter Appliance may fill this in with its best guess for your default DNS suffix. If the prefilled answer is incorrect, or you do not wish to configure the DNS search suffix, feel free to edit or delete the suffix given.

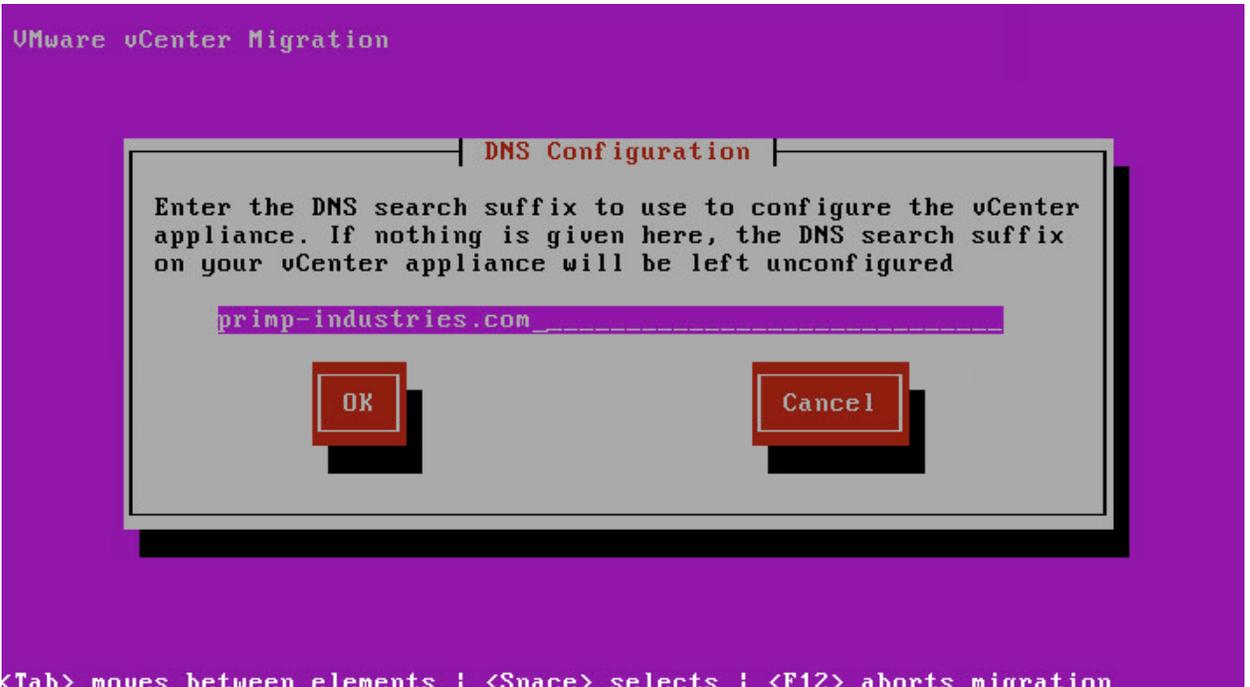


Figure 11 - Enter DNS Domain

We will now configure the destination VCSA. To begin this process, open up a new browser window and point it at the VCSA Virtual Appliance Management Interface (VAMI) on port 5480. The URL is shown on the Converter appliance console

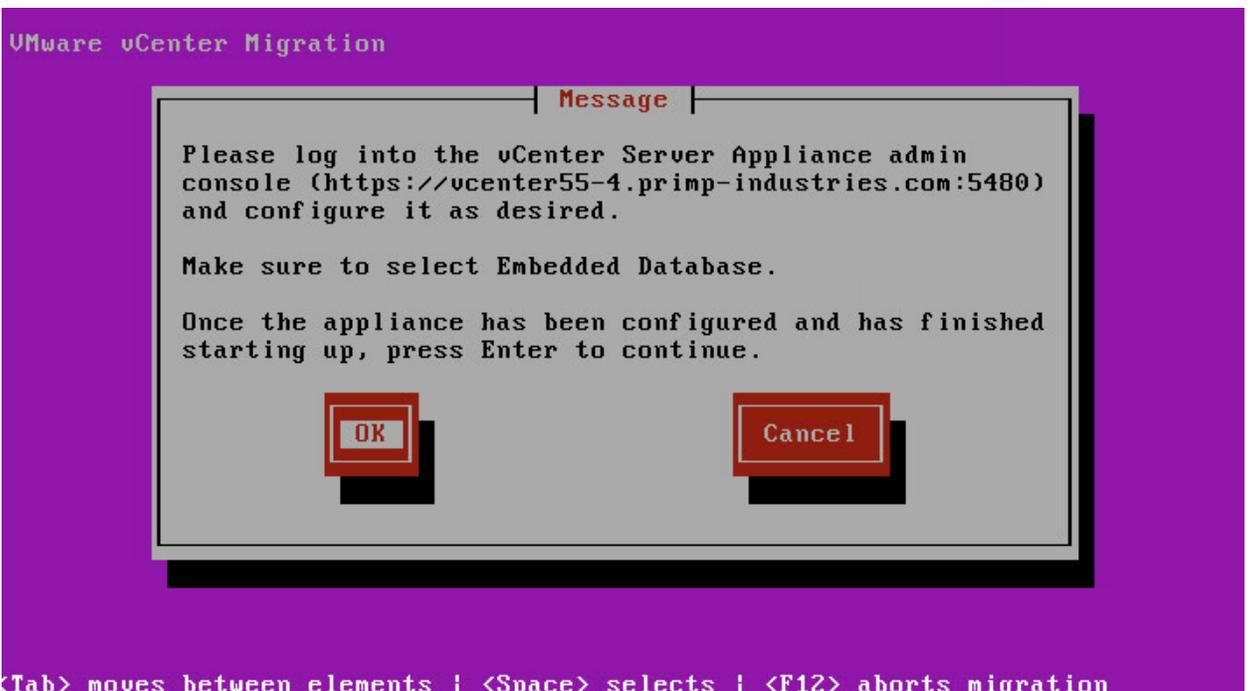


Figure 12 - Configure VCSA using VAMI

Connect to the following address: **https://[VCSA-IP]:5480**. Log in as **root**, using **vmware** as the password unless you have changed it.

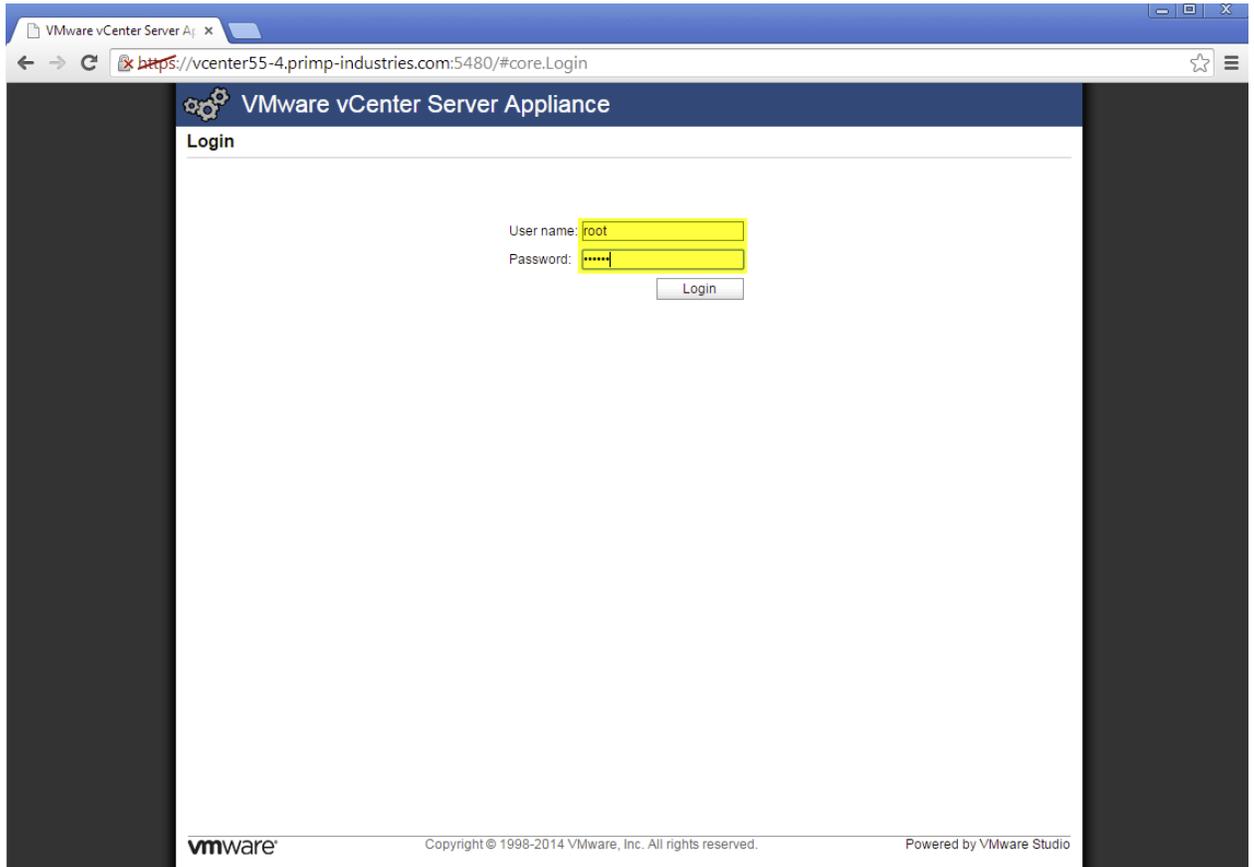


Figure 13 - Login to VAMI

10. Configure the VCSA using the VAMI.
  - a. First, accept the EULA and click Next to continue.



Figure 14 - VAMI Eula

- Enable the VMware Customer Experience Program if you wish. Click Next to continue.
- Select "**Set Custom Configuration**" and click Next to continue.

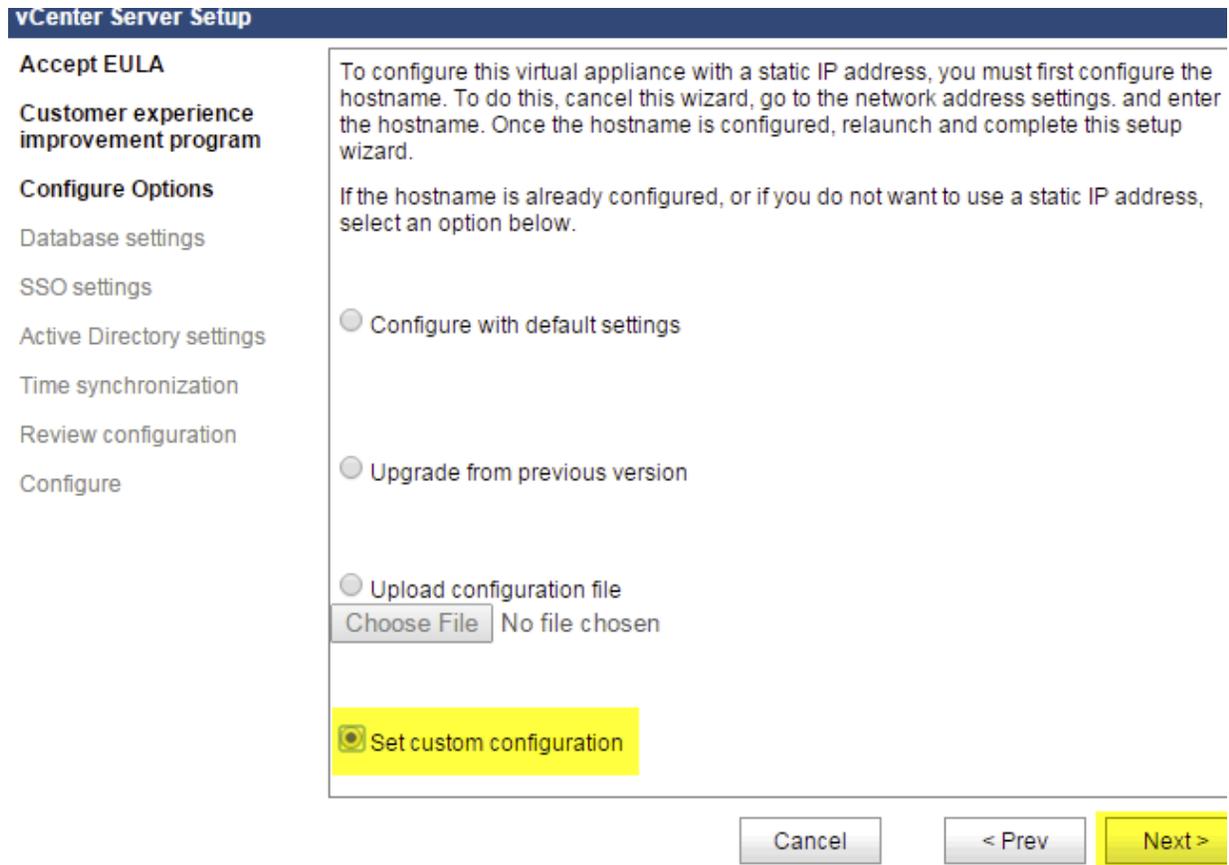


Figure 15 - VAMI Configure Options

- d. Select the default “Embedded” database and click Next to continue.

**vCenter Server Setup**

Accept EULA

Customer experience improvement program

Configure Options

**Database settings**

SSO settings

Active Directory settings

Time synchronization

Review configuration

Configure

Database type:

Server:

Port:

Instance name:

Login:

Password:

Cancel < Prev Next >

Figure 16 - VAMI Database settings

- e. Select the default “**embedded**” SSO deployment type. Enter a password for the SSO Administrator account and then click Next to continue.

The screenshot shows the 'vCenter Server Setup' wizard with the 'SSO settings' section selected in the left-hand navigation pane. The main content area displays the following configuration options:

- SSO deployment type:** A dropdown menu set to 'embedded'.
- Embedded SSO requires choosing a password for the user administrator@vsphere.local:**
  - New administrator password:** A text field containing seven asterisks.
  - Retype the new password:** A text field containing seven asterisks.
- Account with right to register vCenter with the SSO server:**
  - Username:** An empty text field.
  - Password:** An empty text field.
- Account that will be assigned as vCenter administrator:**
  - Name:** An empty text field.
  - Is a group**
- Lookup service location:**
  - URL:** An empty text field.
  - Certificate status:** A label with no associated input field.

At the bottom of the wizard, there are three buttons: 'Cancel', '< Prev', and 'Next >'. The 'Next >' button is highlighted in yellow.

Figure 17 - VAMI SSO Database settings

- f. If you are using Active Directory in your environment and would like to join the VCSA to your AD domain, check the box for “Active Directory Enabled”, and enter your AD domain and credentials. You may need to remove the previous AD object in your AD database. If you aren’t using Active Directory, just click Next.

**vCenter Server Setup**

- Accept EULA
- Customer experience improvement program
- Configure Options
- Database settings
- SSO settings
- Active Directory settings**
- Time synchronization
- Review configuration
- Configure

Active Directory Enabled

Domain:

Administrator user:

Administrator password:

Cancel < Prev Next >

Figure 18 - VAMI Active Directory settings

- g. The next screen is a review of your configuration. You can go back and make changes, or click Next to start the appliance configuration.
- h. If you do not have Active Configured, it is highly recommend you provide an NTP Serer for time synchronization.



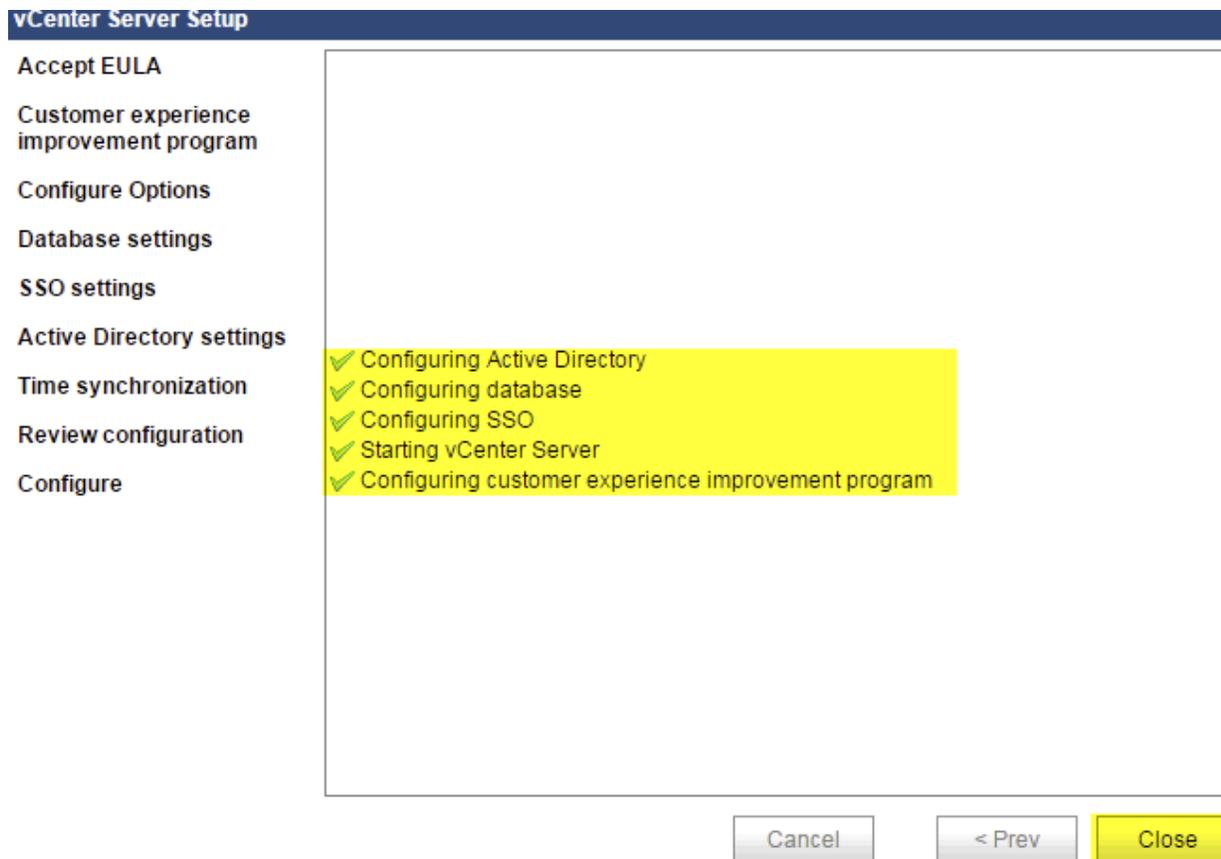
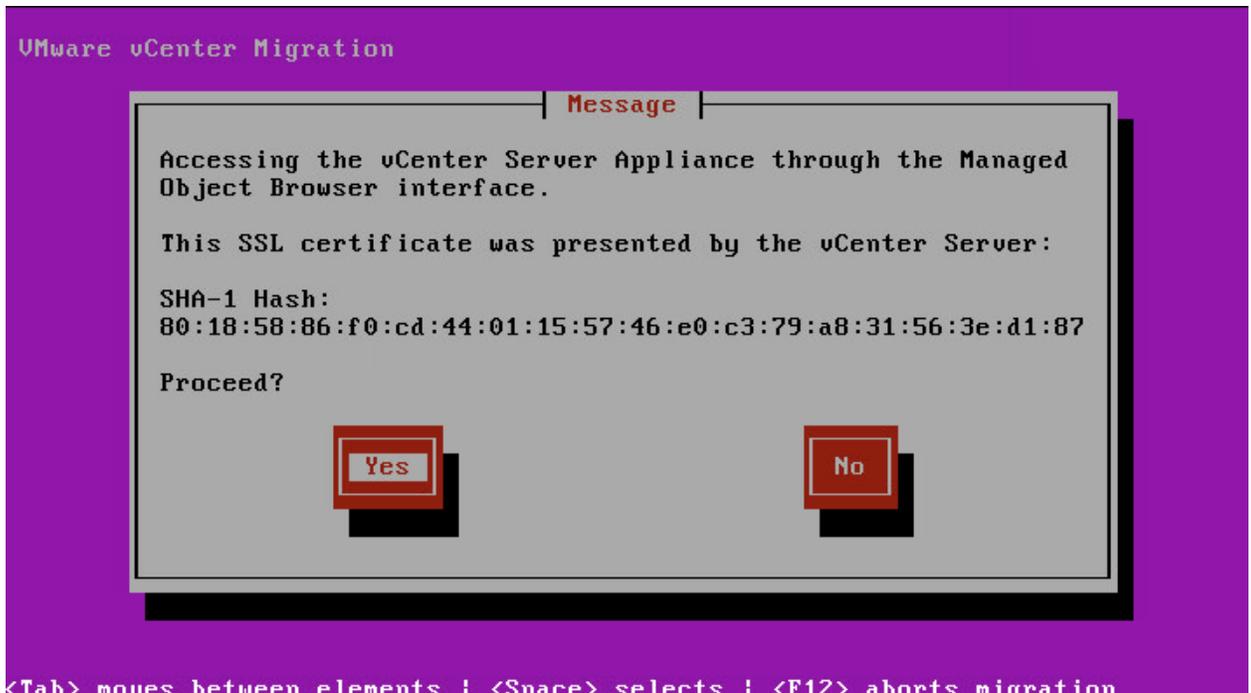


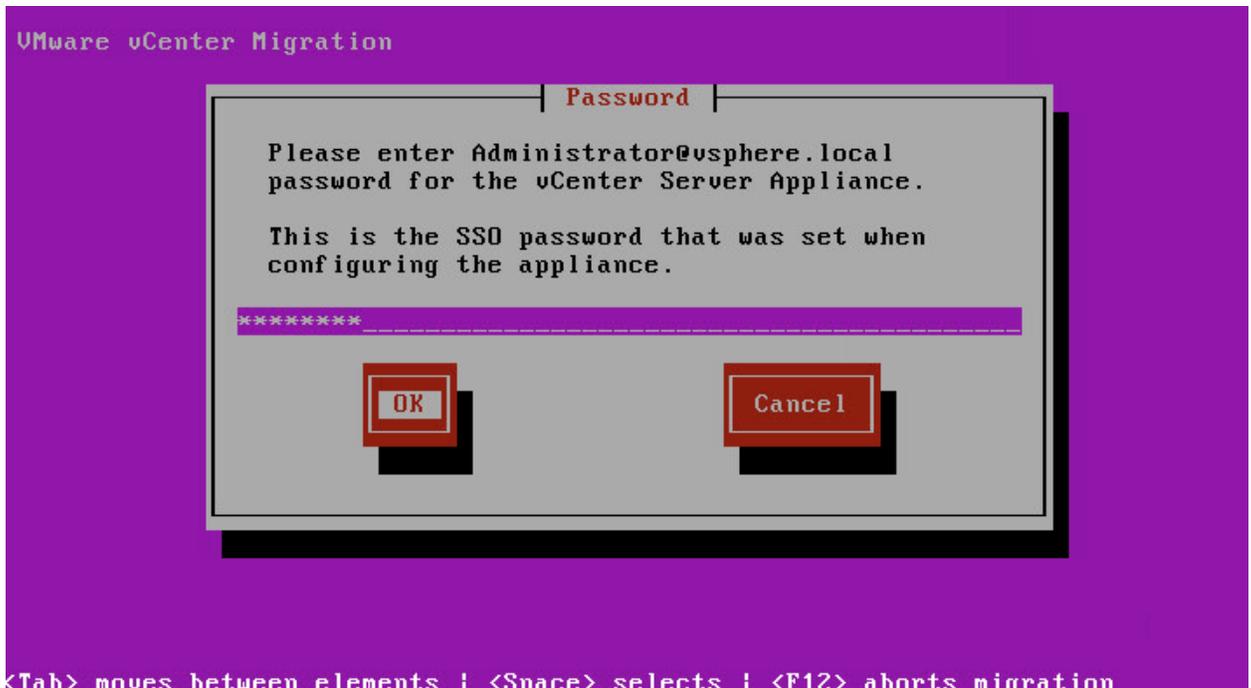
Figure 20 - VAMI configuration complete

11. Once the VCSA has finished configuring, go back to your Converter Appliance and select OK to proceed to the next step. You can now close the VCSA browser window. Once a connection can be made to the VCSA, you should be prompted to accept the SSL certificate fingerprint. The fingerprint is shown on the VCSA console. Select "Yes" to accept to continue to the next step.



<Tab> moves between elements ; <Space> selects ; <F12> aborts migration  
Figure 21 - Accept VCSA SSL certificate fingerprint

12. Next, enter the new vSphere SSO Administrator password that you had configured earlier in step 12e and hit OK to proceed to the next step.



<Tab> moves between elements ; <Space> selects ; <F12> aborts migration  
Figure 22 - Enter new vSphere SSO password

During this step, the SSL certificates from the source Windows vCenter Server are loaded into the new VCSA.

13. If you have joined the newly deployed VCSA to an Active Directory Domain, you have the option to configure the AD Domain to be an Identity Source in vSphere SSO. This is usually a manual step that is performed by the administrator but can be configured by the VCS to VCSA Converter Appliance simply by confirming the AD Domain name is correct.

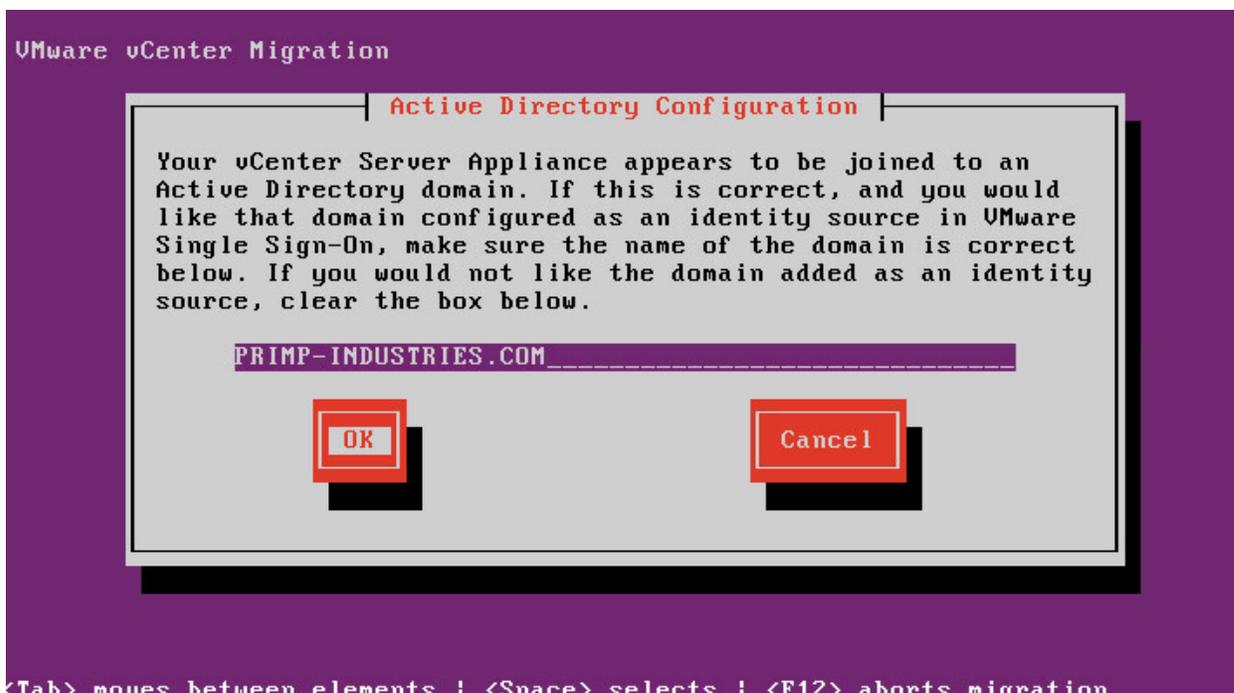


Figure 23 - Configure vSphere SSO Identity Source

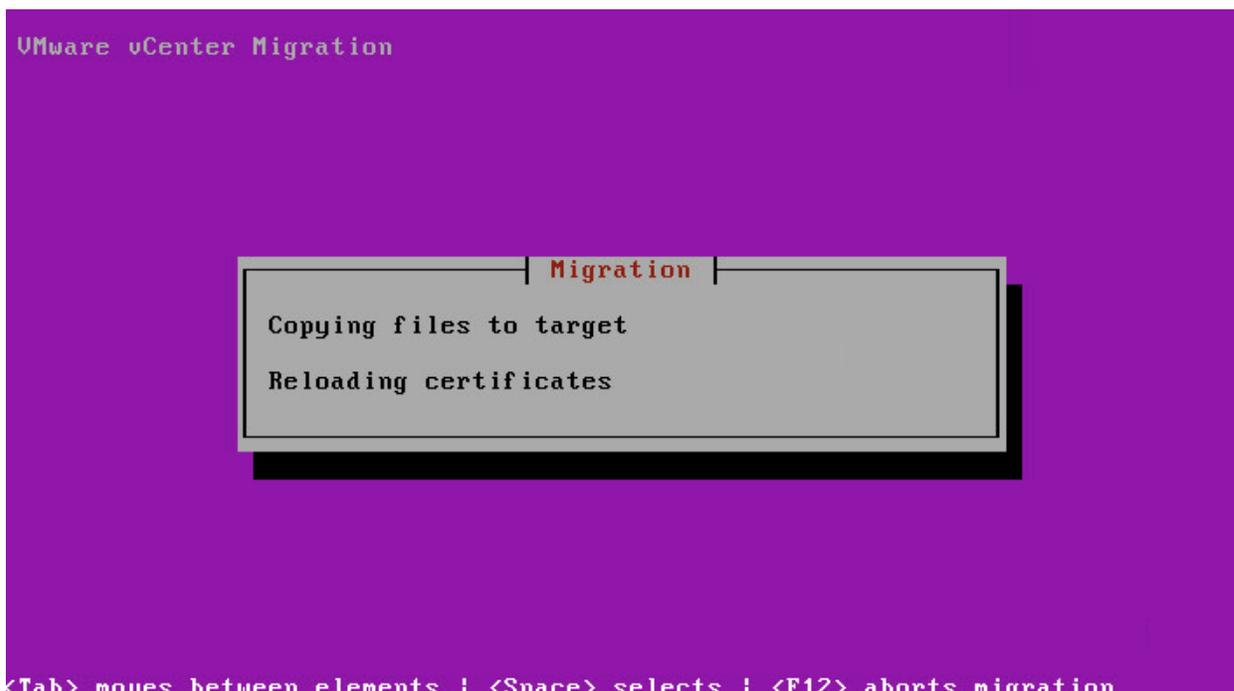


Figure 24 - SSL Certificate copy and reload

14. Next, enter the following information:

- Hostname or IP Address of the vCenter Server Database
- Database Name
- Port number to use to connect to the vCenter Server Database (1433 by default for SQL Server)
- Schema name (leave as default dbo unless you have changed it in your environment)
- Username for the vCenter Server Database (tested using “sa”, the SQL Server administrator user; the user entered here must have read permissions for all vCenter tables)
- Password for the vCenter Server Database
- “Migrate stats/events/tasks”: Use the spacebar to check this box and migrate statistics, events, and tasks. Checking this box will increase the time for the migration, depending on the amount of statistics and events in your database. As a rule of thumb, if you have more than 100K entries in any of these tables, we recommend that you not migrate this data.

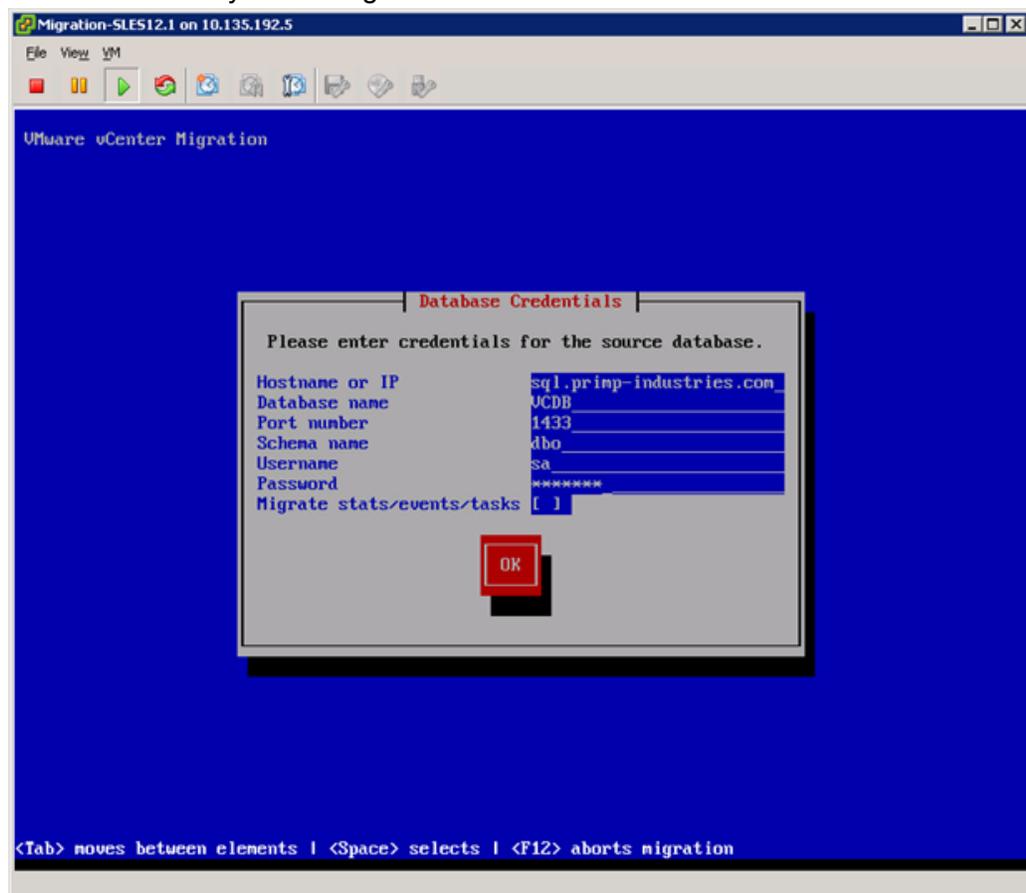


Figure 25 - Source VCDB credentials

During this step, all the data from the Microsoft SQL Server is being copied to the embedded vPostgres database running within the VCSA. The amount of time this takes

will depend on the size of your inventory and if you are migrating over your Stats, Events and Tasks tables.

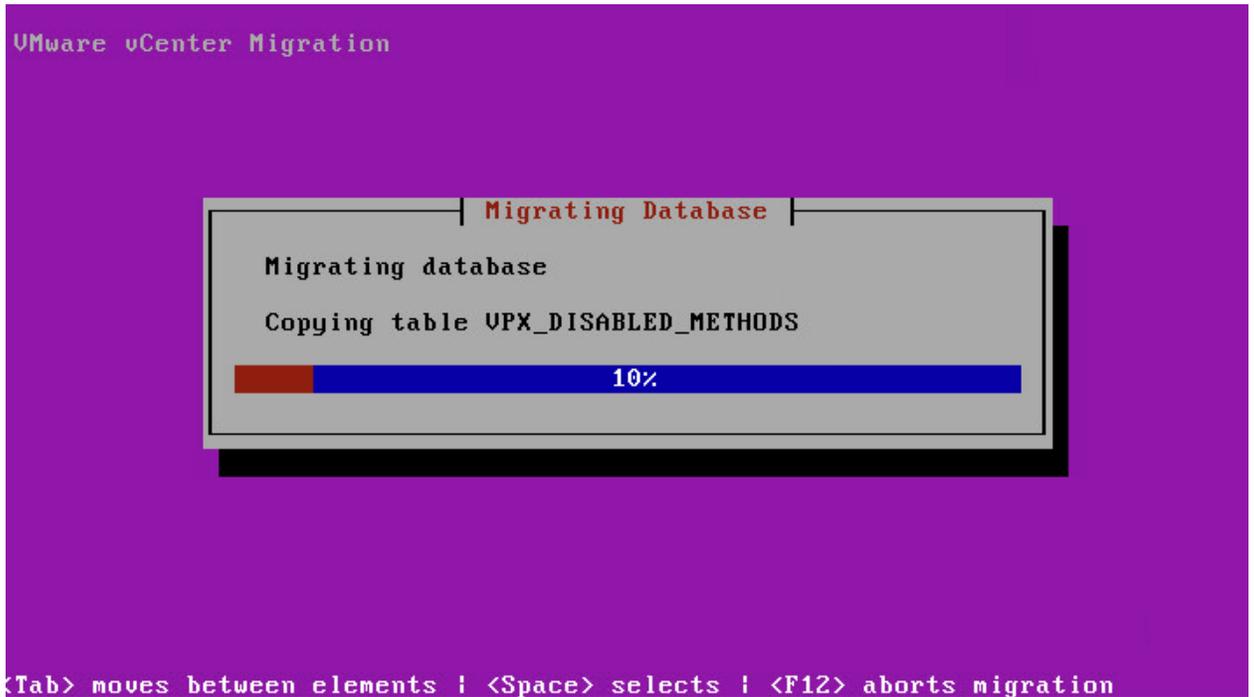


Figure 26 - Migrating database

15. Once the migration has successfully completed, select OK to finish the wizard and you will automatically be brought back to the start of the wizard.

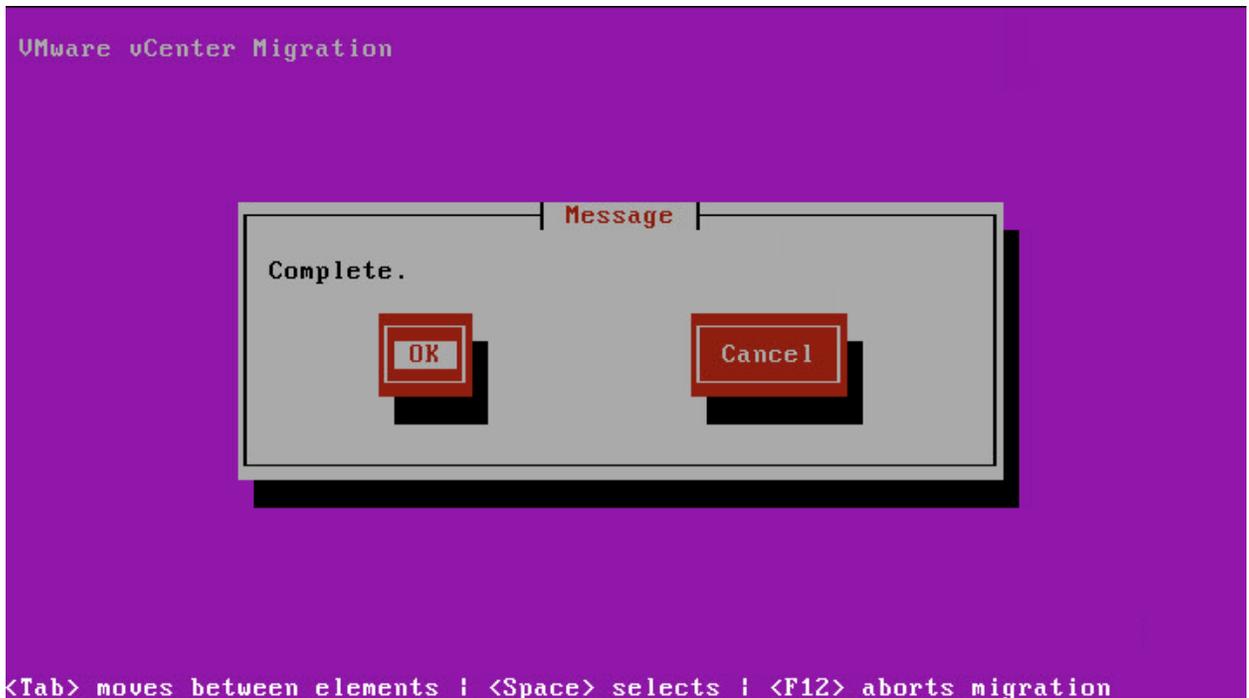
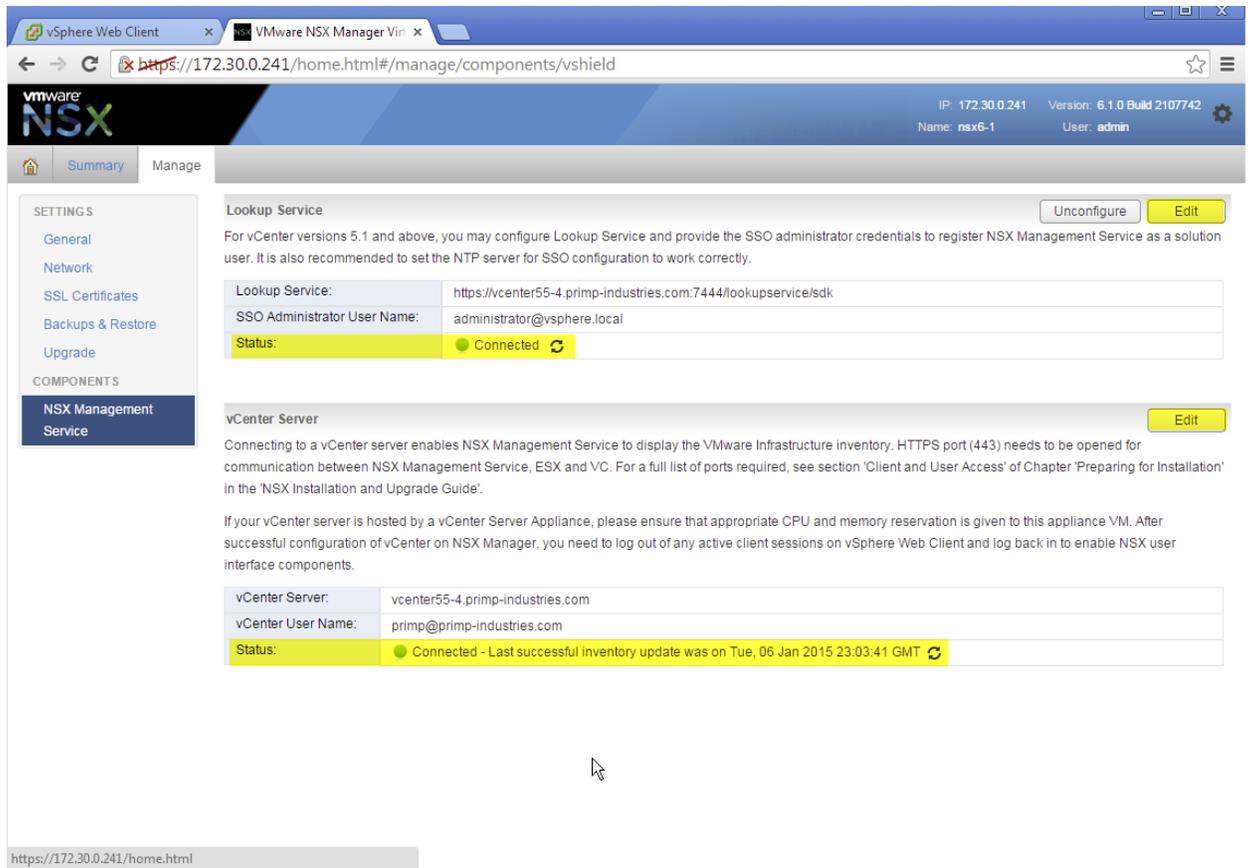


Figure 27 - Migration complete

16. At this point, you are almost done! Before logging into your vCenter Server and specifically the vSphere Web Client, you will need to first startup or re-enable all the vSphere Web Client Plugin Solutions. If you have plugins that provide the status of the connection, you should reload or refresh the connection. One example of this is VMware NSX, where you need to ensure the connection is re-established prior to logging into the vSphere Web Client Plugin.



**Figure 28 - NSX connectivity to VC**

The reason this is required is that the first time you log back into the vSphere Web Client, all your vSphere Web Client Plugins will be downloaded from each of the solutions. For this to succeed, you need to ensure proper communication between the vSphere Web Client Server and each of the solutions. If this is not properly done, then you may not see all your vSphere Web Client Plugins. Once you have restarted your services, you must log out of the vSphere Web Client and then log back in in order to see these services.

17. Please close and relaunch your browser before logging into the vSphere Web Client.
18. At this point you are now ready to login to your VCSA using the vSphere Web Client. You may notice this may take several minutes depending on the number of vSphere Web Client Plugins you have and the amount of time it takes to download them into the vSphere Web Client Server. Please be patient and do not try to refresh the page, else the process will have to start over.

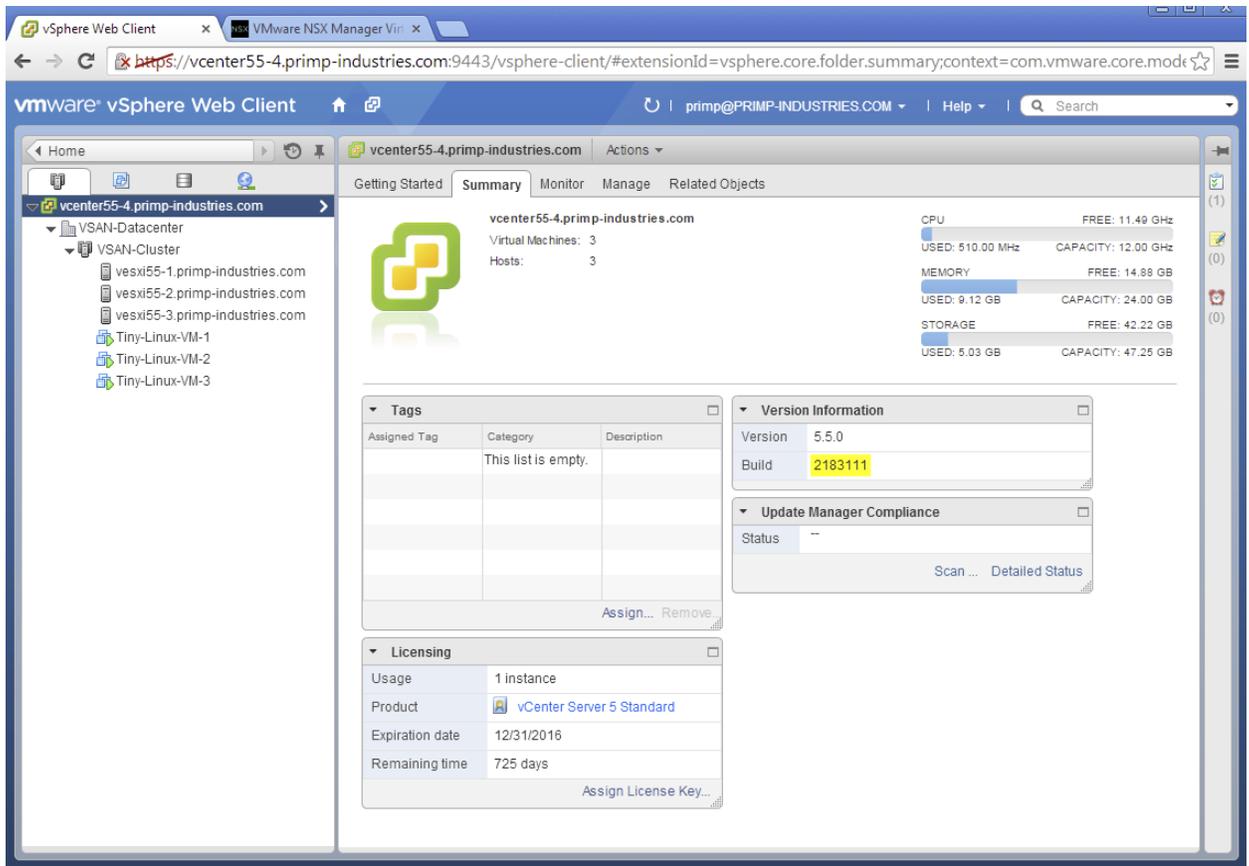


Figure 29 - VCSA Login

### Troubleshooting:

In the event of a failed migration or unexpected error, you can simply gain access to your original vCenter Server by powering off the VCSA and powering on the Windows vCenter Server.

If you run into any issues, please post the error in the comments section of the Fling and provide a link to the VCS to VCSA Converter Appliance log file. To access the log, press Alt-F2 at the Converter Appliance console to access the shell, log in (username 'root', password 'vmware'), and run "less /var/log/migrate.log" to read the error log ("q" to quit). The log can be copied to another machine running a Secure Shell server with this command:

```
scp /var/log/migrate.log [user]@[host]:[path]
```

where [user], [host], and [path] are the username, hostname, and file path for the Secure Shell server, respectively.