

Data Center Extension to VMware vCloud Hybrid Service aka vCHS

With the release of vCC 2.0, most of you have noticed that we have introduced a new feature called Data Center Extension aka DCE within vCC 2.0. Now we want to show case how you can leverage that functionality with our IaaS offering which is vCHS aka vCloud Hybrid Service. Before I jump onto the example part and taking a step by step approach, I wanted to touch base on the architecture and use case side of DCE.

DCE Overview

It extends the enterprise network to public cloud, move VM from private to public cloud while retaining the same IP/MAC address.

It is a Layer 2 extension from existing enterprise network to public cloud over secure SSL VPN Tunnel. Using this you can move a VM from enterprise network (vSphere or vCloud Director) to public cloud but still retain the same IP/MAC Address. Once you are done you can consume and manage the moved VM with the same IP/MAC address. However this feature requires vCC Advanced edition license.



DCE – What happens in the background

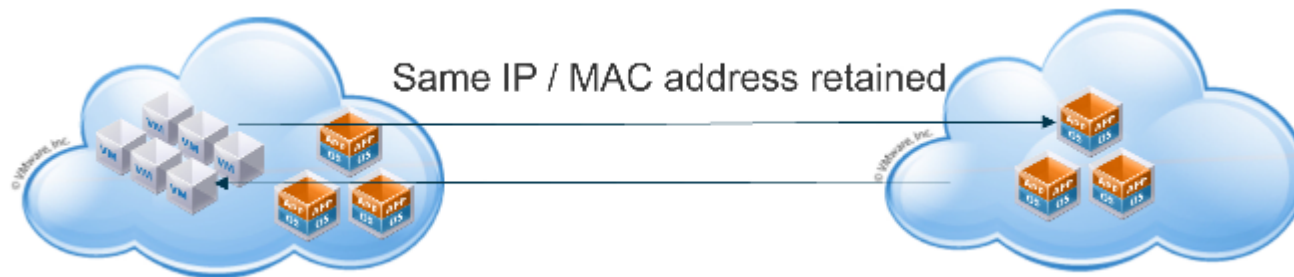
It is divided into 3 major phases:

1. **Infrastructure** – Creation of target vApp network, modification of SNAT/DNAT rules and creation of the “SSL VPN” tunnel.
2. **Copy** – Standard OVF export and copy process.
3. **Deploy** – Deployment of the OVF template to the target cloud.

DCE Use Case

It is a ideal use case for occasional high volume VM. For an example it is ideal for Retail industry with high volume shopping season.

1. Large department store chain needs extra transaction processing for some month period.
2. Purchases space on a Public Cloud (vCHS) instead of buying additional hardware that's redundant for the rest of the time.
3. Configures transaction processing VMs on their own Private Cloud and then moves them to the Public Cloud without having to reconfigure.



Key differences between DCE and Standard vCC VM Copy are:

- VM retain it's IP and MAC Address
- Any Firewall / NAT rules etc are retained
- The operation is called a Stretch Deploy as opposed to Copy/Deploy
- The target for a Stretched Deploy will always be a vCloud Organization

DCE Preparation

Performing a stretch deploy is a straight forward method however there are very stringent rules and limitations that must be followed when preparing the source and target environment:

- Software version has to met the compatibility factors
- vCC Advanced licensing has to be there
- Network configuration has to be proper. Be ready with External networks and public IP Addresses.
- VM and vApp preparation

DCE Network requirements

As discussed earlier, the retention of VM's MAC and IP Address is made possible by establishing an SSL VPN Tunnel between source and destination vApp. That means this requires that the vApp where the VM lives to have a vShield Edge for its network and have an external IP that is reachable from the target cloud.

Source vSphere On Prem Cloud

- You need to deploy vShield Edge manually and must have a single external network
- Be reachable from the Internet or target network
- Have an internal interface connected to a vDS and this has to be 5.1.0
- IP allocation can be either static or dynamic (DHCP)

- vSE can be compact or large

Step by Step approach

Source vSphere and vApp Preparation

Let us now look at how we can configure our source environment first for the DCE operation. I have segregated in steps.

1. Deploy vShield Manager (5.1.2) as the way you normally do it
2. Register it with the vCenter Server (On Prem Private vCenter)
3. Assuming vDS is already configured, create a dVPG for the external interface of vSE.
4. Create another dVPG for the internal interface of the vSE
5. Open up vSM Web Interface -> Click on the Datacenter on the left hand side and click on Network Virtualization on the right side.
6. Click on the Edges link.
7. Click on the "+" icon to deploy an Edge.
8. Specify a name of this Edge and click on Next
9. Select default on the CLI credentials page and click on Next
10. In the Edge appliance select either Compact or Large.
11. On the Edge Appliances section, click on "+" sign.
12. Select Cluster where this Edge is going to be placed and datastore too. Click on Add.
13. Click on Next.
14. In the Interfaces section, click on the "+" sign to add the internal interface first.
15. Specify a name "Internal". Select the type as Internal. Click on Select to connect this internal interface to a dVPG.
16. On the configure Subnets section, click on "+" icon.
17. Specify the subnet mask (in this example /24). Click on "+" sign there and specify the internal interface IP address (in this case 192.168.0.1). Click on OK. Click on Save. Click on Add. So at this time, your internal interface is ready. Now you need to add the External interface. Follow the same procedure to add the external interface.
18. Click on Next.
19. Specify the Default Gateway (typically external interface) and click on Next.
20. Click on Configure Firewall default policy and select default policy as Accept.
21. Click on Next and click on Finish. Your edge will be provisioned and you can see it has two legs.

You are logged in as a System Administrator Logged in as:admin [Change Password](#) [Logout](#) [Help](#) [About](#)

CIS-R&D

General App Firewall Endpoint SpoofGuard **Network Virtualization**

Preparation Network Scopes Networks Edges [Refresh](#)

vSphere_DCE_Edge

Settings Statistics **Configure** Firewall DHCP NAT VPN Load Balancer

Interfaces Certificates Grouping Objects Services Static Routing

Actions

vNIC ▲	Name	Type	IP Address	Subnet Mask	Connected To	Status
0	Internal	Internal	192.168.0.1*	255.255.255.0	DVPG	✓
1	External	Uplink	10.112.187.90*	255.255.252.0	VM Network	✓
2	vnic2	Internal				✗
3	vnic3	Internal				✗
4	vnic4	Internal				✗
5	vnic5	Internal				✗
6	vnic6	Internal				✗
7	vnic7	Internal				✗
8	vnic8	Internal				✗
9	vnic9	Internal				✗

Now as a simplification of the process, I have configured DHCP on this Edge device so that it can give DHCP IP Addresses for my VM connected to the internal interface of the Edge.

1. On the Edge screen, double click on it to open up the Edge services screen.
2. Click on DHCP Tab.
3. In the DHCP Pools section, click on the "+" icon, specify start IP and end IP and click on Add.
4. Click on Enable button to enable this service.

You are logged in as a System Administrator

Logged in as:admin

Change Password

Logout

Help

About

CIS-R&D

General

App Firewall

Endpoint

SpoofGuard

Network Virtualization

Preparation

Network Scopes

Networks

Edges

Refresh

←

vSphere_DCE_Edge

Settings

Statistics

Configure

Firewall

DHCP

NAT

VPN

Load Balancer

DHCP Service Status: Enabled

Disable

Logging Policy

☐ Enable logging

Log level: INFO

▼ DHCP Pools

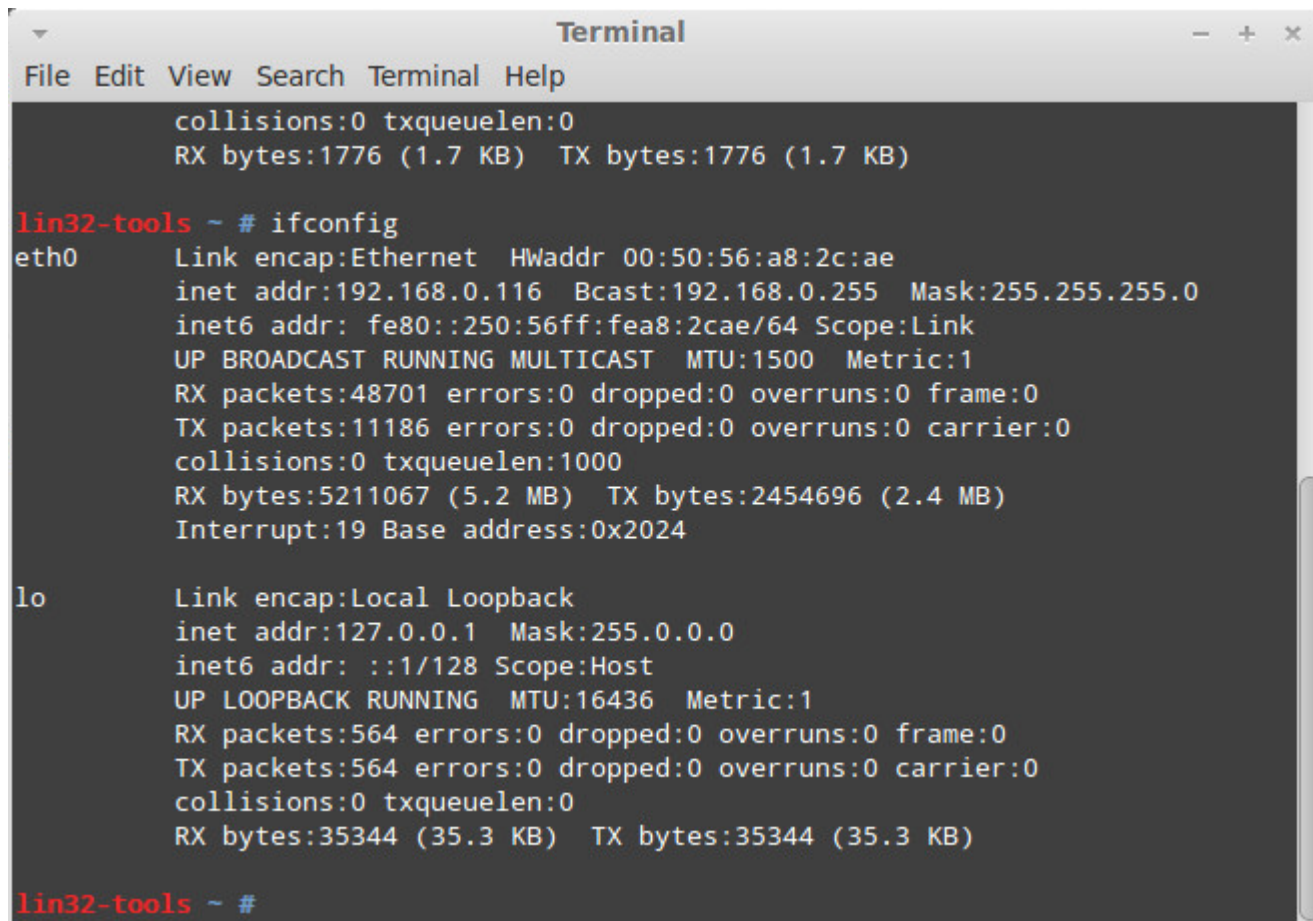
+

×

Search

Start IP	End IP	Auto configure DNS	Primary Name Server	Default Gateway	Lease Time (Seconds)
192.168.0.100	192.168.0.200	⊘		192.168.0.1	86400

1. Now create a vApp and put at least two VMs there.
2. Attach the VM Network adapter to the internal portgroup where in DHCP broadcasting is happening through vSE.
3. Power on the vApp and make sure you are getting the IP Address from this DHCP scope.
4. Also ping the Gateway (192.168.0.1) and each VM to make sure that internal network is reachable.

A terminal window titled "Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help) and window controls. The terminal output shows the results of the 'ifconfig' command for two interfaces: eth0 and lo. For eth0, it shows an Ethernet link with IP 192.168.0.116, MAC 00:50:56:a8:2c:ae, and various statistics. For lo, it shows a Local Loopback link with IP 127.0.0.1 and similar statistics. The prompt is 'lin32-tools ~ #'.

```
collisions:0 txqueuelen:0
RX bytes:1776 (1.7 KB) TX bytes:1776 (1.7 KB)

lin32-tools ~ # ifconfig
eth0      Link encap:Ethernet  HWaddr 00:50:56:a8:2c:ae
          inet addr:192.168.0.116  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::250:56ff:fea8:2cae/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:48701 errors:0 dropped:0 overruns:0 frame:0
          TX packets:11186 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:5211067 (5.2 MB) TX bytes:2454696 (2.4 MB)
          Interrupt:19 Base address:0x2024

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:564 errors:0 dropped:0 overruns:0 frame:0
          TX packets:564 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:35344 (35.3 KB) TX bytes:35344 (35.3 KB)

lin32-tools ~ #
```

With this you end up configuring the vSphere and vSM side of it. Now you need to start configuring the vCC Node and Server.

vCC Node and Server Preparation

Steps:

In order to accomplish this you will need to do the following

1. Install VCC Server and VCC Node in Corporate Environment
2. Install VCC Node in your vCHS instance

Software

Go to <https://my.vmware.com/web/vmware/details?downloadGroup=VCC20-GA&productId=289> and download VCC 2.0 server and node virtual appliance. These virtual appliances can be installed either on Virtual Center or vCloud Director.

Please Refer VCC 2.0 documentation center <http://pubs.vmware.com/hybridcloud-20/index.jsp> for detailed documentation on installation and user guide

Internal Corporate Server

Install VCC Server and one instance of VCC Node. Refer VCC 2.0 documentation center <http://pubs.vmware.com/hybridcloud-20/index.jsp> for detailed documentation on installation and user guide

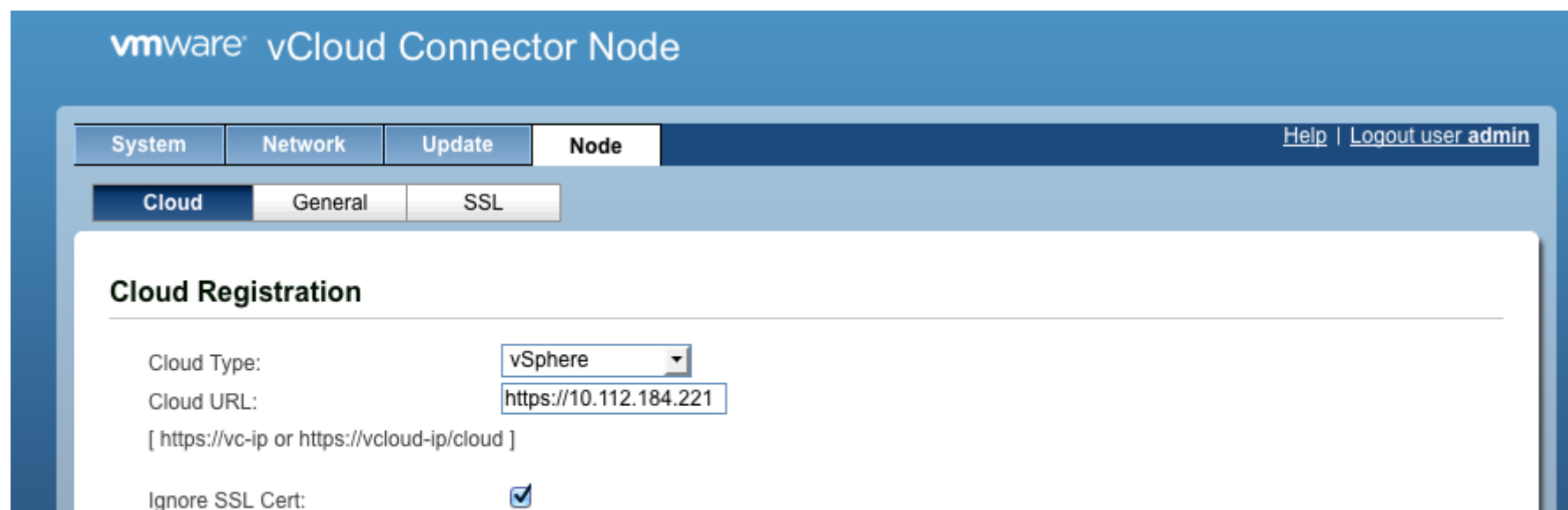
vCHS Instance

Install one instance of VCC node on vCHS/destination cloud. Refer VCC 2.0 documentation center <http://pubs.vmware.com/hybridcloud-20/index.jsp> for detailed documentation on installation and user guide

Register Clouds to Correspond VCC Nodes

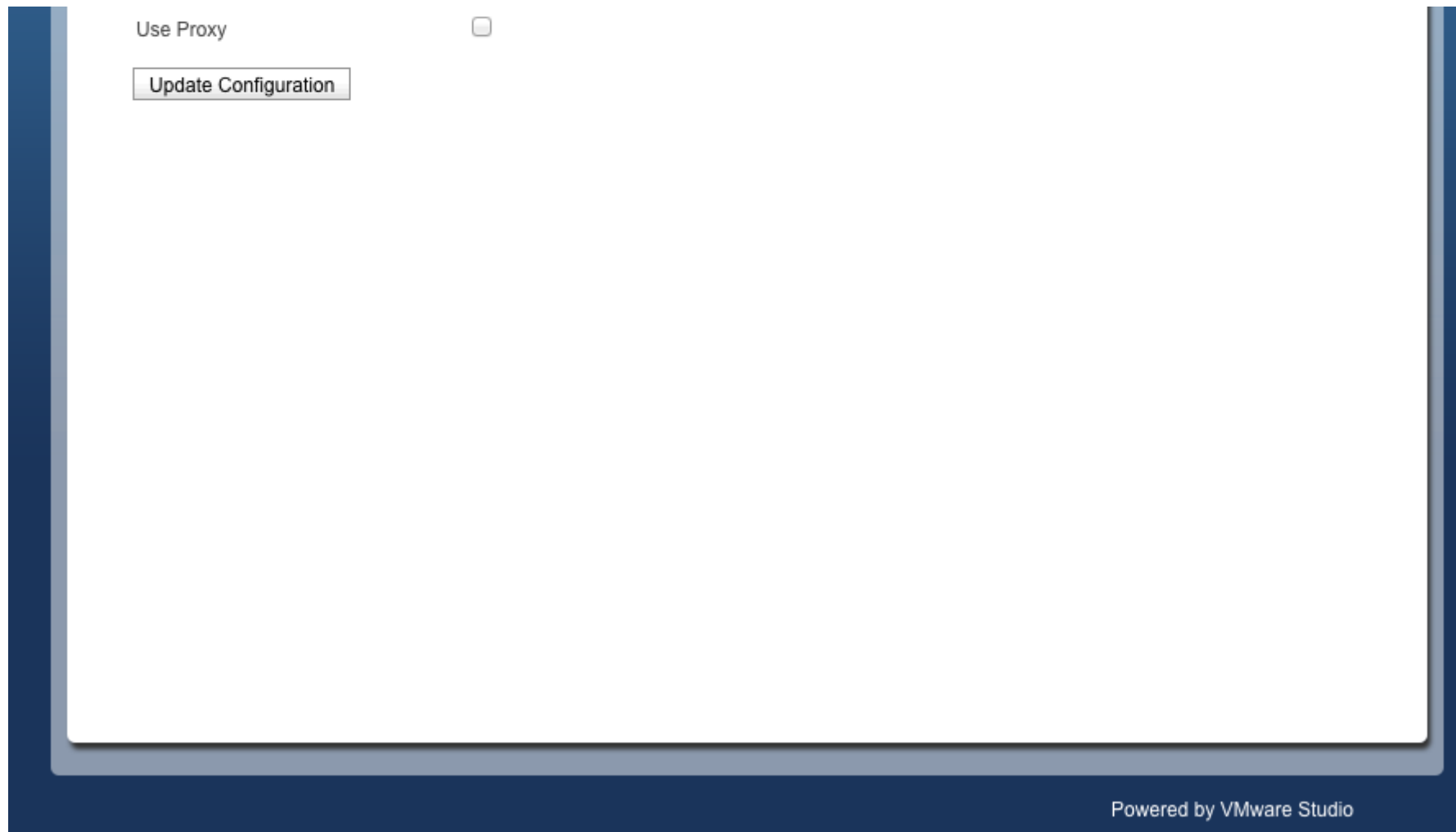
Internal Corporate Network

1. Login to <https://<VCC-NODE-IP>:5480> using admin/vmware as username/password
2. Select "Node" tab
3. Select Cloud type as vSphere for VC and enter the vCenter URL
4. Check Ignore SSL cert and Use Proxy check boxes as appropriate.



The screenshot displays the VMware vCloud Connector Node web interface. The top navigation bar includes tabs for System, Network, Update, and Node, with the Node tab currently selected. To the right of the tabs are links for Help and Logout user admin. Below the main tabs, there are sub-tabs for Cloud, General, and SSL, with the Cloud tab selected. The main content area is titled "Cloud Registration" and contains the following fields:

- Cloud Type: A dropdown menu with "vSphere" selected.
- Cloud URL: A text input field containing "https://10.112.184.221". Below this field is a hint text: "[https://vc-ip or https://vcloud-ip/cloud]".
- Ignore SSL Cert: A checkbox that is checked.



VMware vCHS Environment

1. Login to <https://<VCC-NODE-IP>:5480> using admin/vmware as username/password
2. Select "Node" tab
3. Select Cloud type as vCloud Director for vCD and enter the url of the vCD instance you are assigned
4. Check Ignore SSL cert and Use Proxy check boxes as appropriate.

Register VCC server to vSphere client VCC user interface

1. Login to <https://<VCC-SERVER-IP>:5480asadmin/vmware>

2. Goto "Server" tab
3. Click on "vSphere client" tab, provide the VC details and click on register to use vSphere client for VCC user interface

vmware vCloud Connector Server

SystemNetworkUpdateServerNodes

Help | Logout user admin

GeneralSSLvSphere Client

Register with vSphere Client

Registration completed.

vCloud Connector Server URL

http://10.112.187.24

vCenter Server IP / FQDN

10.112.184.221

vCenter username

root

vCenter password

Overwrite existing registration

☐

RegisterUnregisterUpdate Registration

Register VCC nodes to VCC server

1. Login to <https://<VCC-SERVER-IP>:5480asadmin/vmware>
2. Goto "Nodes" tab
3. Click on "Register Node" and provide the node details as below and register both the corporate VCC node and vCHS VCC node to VCC server.

The screenshot shows the VMware vCloud Connector Server interface. The 'Nodes' tab is selected in the top navigation bar. The 'Manage Nodes' section is visible, with a 'Register Node' button. A modal dialog box titled 'Node URL is required' is open, displaying the 'Node Info' section. The 'Name' field contains 'On-Prem', the 'Description' field is empty, and the 'URL' field contains 'https://10.112.185.206' and 'https://node1.company.com'. The 'Public' checkbox is unchecked, 'Use Proxy' is unchecked, and 'Ignore SSL Certificate' is checked.

vmware vCloud Connector Server

System Network Update Server **Nodes** Help | Logout user admin

Manage Nodes Refresh Register Node

Cloud

Local Content Library
http://localhost:80

13

Node URL is required

Node Info

Name On-Prem

Description

URL
https://10.112.185.206
https://node1.company.com

Public ☐

Use Proxy ☐

Ignore SSL Certificate ☒

Cloud Info



Cloud Info

Cloud Type vSphere

VCD Org Name

Username root

Password

Register Cancel

Powered by VMware Studio

Registered nodes will be listed under "Manage Nodes" on the "Nodes" tab. Ensure that the nodes are in "Up" state.

System

Network

Update

Server




Nodes

Help | Logout user admin

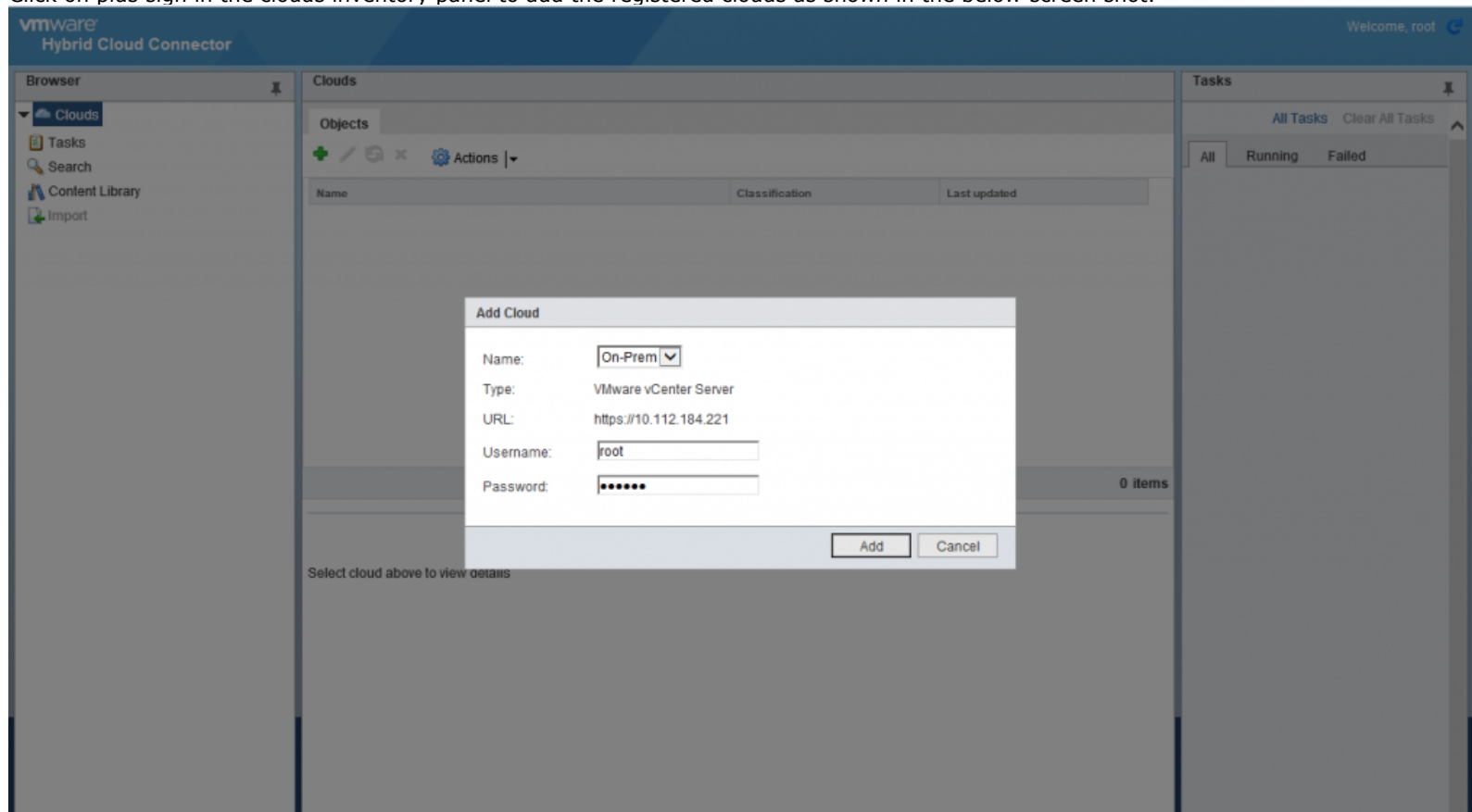
Manage Nodes

Refresh

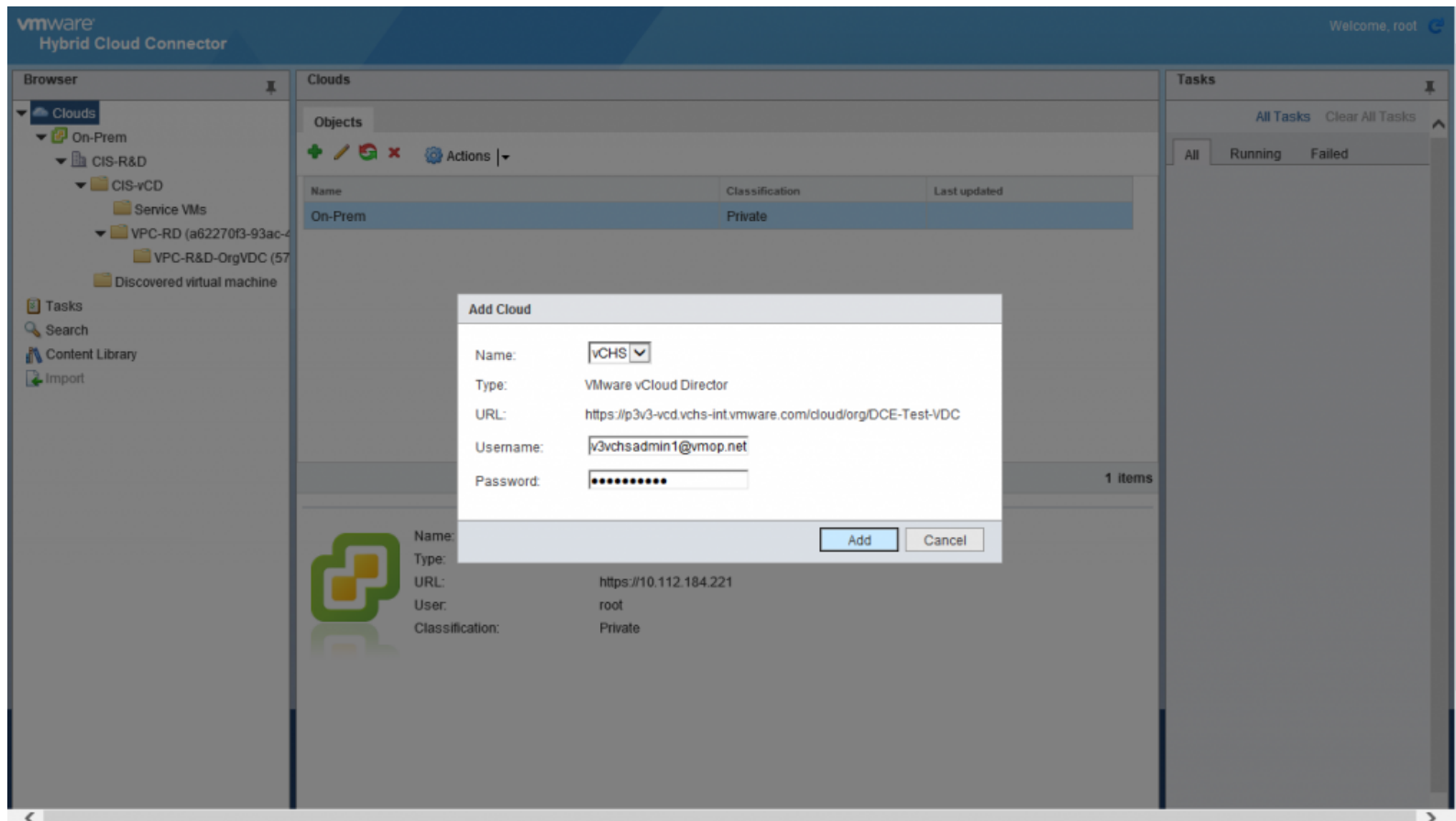
Register Node

Cloud	Cloud Type	Node URL	Status	Last Health Check	Actions
Local Content Library http://localhost:80	Content Directory	http://localhost:80	Up	Wed Jul 31 16:38:30 2013	
On-Prem https://10.112.184.221	VMware vCenter Server	https://10.112.185.206	Up	Wed Jul 31 16:38:30 2013	
vCHS https://p3v3-vcd.vchs-int.vmware.com/cloud/org/DCE-Test-VDC	VMware vCloud Director	https://p3v3-vccmt.vchs-int.vmware.com:8443	Up	Wed Jul 31 16:38:31 2013	

1. After registrations are complete, open VCC UI through vSphere client
2. Click on plus sign in the clouds inventory panel to add the registered clouds as shown in the below screen shot.



3. Add Cloud wizard will list the available clouds registered to VCC server, select one cloud and enter the user name and password for the cloud.
4. Click on the source cloud, Inventory panel will list all available VMs, vApps and Template in the cloud.
5. Repeat the same step for the vCHS instance as well.



Advanced Option

To use VCC advanced features like Content Sync and DCE enter the license keys on VCC server VAMI UI. Please see <http://pubs.vmware.com/hybridcloud-20/index.jsp>

Perform a Stretch Deploy of a VM

1. To allow the Stretch deploy to happen the Datacenter Extension settings need to be updated on the vCloud Connector Server
2. Open the Browser go to the vCC Server and Login
3. Go to the Nodes tab, find the On Prem Node and click on the "gears" icon on the far right under the Actions column

4. Select Datacenter Extension Settings and enter the On Prem vSM details and click Register

The screenshot shows a web application interface for managing nodes. At the top, there are tabs for System, Network, Update, Server, and Nodes. The Nodes tab is active. In the top right corner, there are links for Help and Logout user admin. Below the tabs, there is a section titled "Manage Nodes" with a "Refresh" button and a "Register Node" button. A table lists the nodes:

Cloud	Cloud Type	Node URL	Status	Last Health Check	Actions
Local Content Library http://localhost:80	Content Directory	http://localhost:80	Up	Wed Jul 31 16:...	
On-Prem https://10.112.184.221	VMware vCenter Server	https://10.112.185.206	Up	Wed Jul 31 16:...	

An "Actions" dropdown menu is open over the second node, showing options: Edit, Unregister, Download Logs, Stretch Deploy Settings, Inregister, stretch, eploy, ettings. The "Stretch Deploy Settings" option is highlighted. A modal dialog titled "Stretch Deploy Settings" is open in the foreground, containing the following fields and options:

- vShieldManager URL:
- UserName:
- Password:
- Use Proxy: ☐
- Ignore SSL Certificate: ☒

At the bottom of the modal are "Register" and "Cancel" buttons.

5. Repeat steps 3 & 4 except this time you will be using the vCHS Node and entering credentials for the VCD Public Org
6. Reload both the clouds on vCC UI



Note: Incase if the source requires proxy to reach the vCHS environment, both vCC server and vCC node on source side should be configured with Proxy server.

Now the source and destination clouds are enabled for DCE.

In order to run DCE source VM should be part of a vAPP which is connected to routed network. Incase of VC the vApp should be connected to edge. Incase of vCD, vApp network should be created and this vApp can be connected to Org direct or routed network.

Once completed go back to the vCloud Connector interface in vSphere and click on On Prem Node then the Virtual Machines tab, highlight the Memhog2 VM then Stretch Deploy. A wizard will appear, please complete as follows:

- Source Catalog
- Cloud
- Stretched vApp Name
- Target Catalog
- Target VDC
- Network
- External IP / Public IP
- Power on deployed entity


 **Stretch Deploy Wizard** 

1 Select Destination
1a Select a target
1b Select resources
1c Select Proxy
1d Deployment options



2 Ready to complete


Select a target
Cloud:
Stretched
vApp Name:

Select a catalog:

Name	Shared	Published	vApp Templates	Media
 DCE-Cat	No	Unpublished	0	0

BackNextFinishCancel

 **Stretch Deploy Wizard** 

 **1 Select Destination**

1a Select a target

1b Select resources

1c Select Proxy

1d Deployment options

2 Ready to complete

Select resources

Select VDC where the stretched network will be created:

DCE-Test-VDC

Select the OrgVDC network which the stretched network will connect to:

DCE-Test-VDC-default-routed

External IP of the stretched network for DNAT/Firewall rules:

Select IP:

Public IP:

☐ Enter Public IP

Back

Next

Finish

Cancel

Click Next and then Finish. Click on Tasks on the left and you will see the Deploy Stretch Virtual Machine tasks progress in the center panel.

vmware Hybrid Cloud Connector Welcome, root

Browser

- Clouds
 - On-Prem
 - CIS-R&D
 - CIS-vCD
 - Discovered virtual machines
 - vCHS
 - DCE-Test-VDC
 - Public Catalog
 - workload_catalog
 - Tasks
 - Search
 - Content Library
 - Import

Tasks

Task Name	Source Object	Status	Source Cloud	Target Cloud
Stretch Deploy Infrastructure Virtual Machine	Memhog-VM2	90%	On-Prem	vCHS
Stretch Deploy Virtual Machine	Memhog-VM2	23%	On-Prem	vCHS

3 items

Status: In Progress Initiator: 52C897C1-5131-48D6-8002-493DA850F180/root

Source Cloud: On-Prem Source Object: Memhog-VM2

Target Cloud: vCHS Target Object: Memhog-VM2

Start Time: 07/31/2013 21:02:52 End Time:

Tasks (3)

All Tasks Clear All Tasks

All Running Failed

Copy Virtual Machine

Memhog-VM2_DCE_XYZ46789...

5%

Stretch Deploy Virtual Machine

Memhog-VM2

23%

✓ Stretch Deploy Infrastructure Virtual Machine

Memhog-VM2

Clear

Specifically, vCloud Connector does the following.

1. Verifies that the network of the VM or vApp on the private datacenter can be extended.
2. Creates a new routed vApp network in your Organization VDC in the public vCloud.
3. Creates NAT and firewall rules in the public network, if required.
4. Creates NAT and firewall rules in the private network, if required.
5. Creates an SSL VPN tunnel from the vShield Edge of the private network to the vShield Edge of the new routed vApp network in the public vCloud.
6. Copies and deploys the VM or vApp into the new routed vApp in the public vCloud.

Configure Services: DCE-Test-VDC

DHCP NAT Firewall Static Routing VPN Load Balancer

Network Address Translation (NAT) modifies the source/destination IP addresses of packets arriving to and leaving from this Edge Gateway. Source NAT (SNAT) translates the source address of a packet before leaving this gateway, whereas Destination NAT(DNAT) translates the destination IP address/port of a packet received by this gateway.

Applied On	Type	Original IP	Original Port	Translated IP	Translated Port	Protocol	Enabled
d1p3v3-ext	DNAT	64.20. .	443	192.168.109.2	443	TCP	✓

Configure Services: DCE-Test-VDC

DHCP NAT Firewall Static Routing VPN Load Balancer

Rules can be added to the Firewall to allow or deny specific network traffic. The order of these rules can be changed by selecting one or more rules, dragging and dropping them at the desired location in the list. The order of any selected rules is preserved after dropping them into a different location within the list.

☒ Enable firewall

Default action ☒ Deny ☐ Allow ☐ Log

Applicable to traffic that does not match the rules in the list.

Rule Id	Name	Source	Destination	Protocol	Action	Log	Enabled
1	Firewall_64.20.105.28_Any	Any:Any	64.20. .:443	TCP	Allow	-	✓

Now login to the vCHS Portal and Go to your vDC and check the VM. It should retain the same IP Address as it had in the source.

vmware vCloud Hybrid Service

VPC3 Admin Help

Dashboard

Virtual Machines

Gateways

Users

DASHBOARD > VIRTUAL DATACENTER DETAILS

DCE-TEST-VDC ON 26853-120836

Usage & Allocation

Virtual Machines

Gateways

Networks

Users

Showing 2 of 2

[Manage in vCloud Director](#)[+ Add One](#)[Power On](#) [Power Off](#) [See More](#)

	Name	Owner	Resources		OS	vAPP	Virtual Datacenter
			CPU	Memory			
	Memhog-VM2	d1p3v3vchsad...	2 vCPUs	2 GB	Ubuntu Linux (...)	Stretched_Me...	DCE-Test-VDC
	test	psreekan@vm...	1 vCPUs	1 GB	CentOS 4/5/6 (...)	test-VApp	DCE-Test-VDC

STATUS: Unlocked

VM QUOTA: Unlimited

[Edit VDC Name & Description](#)[Delete VDC](#)

RELATED LINKS

- [Purchase More Resources](#)
Memory, Storage or CPU
(Service ID: 26853)
- [vCloud Director URL](#)
- [Manage Catalogs in vCloud Director](#)

vmware vCloud Hybrid Service

VPC3 Admin ▾ Help ▾

Dashboard

Virtual Machines

Gateways

Users

DASHBOARD > VIRTUAL DATACENTER DETAILS > VIRTUAL MACHINE DETAILS

MEMHOG-VM2 ON DCE-TEST-VDC

Settings

Networks

Showing 1 of 1 networks this VM connects to

Power Off VM to edit network assignment [Power Off](#)

STRETCHED_MEMHOG2_NETWORK

Virtual Machine IP: **192.168.0.116**TYPE: **GATEWAY**GATEWAY: **DCE-Test-VDC**Gateway IP: **64.20. ...**VAPP: **Stretched_Memhog2**CLOUD: **26853-120836**OS: **Ubuntu Linux**GUEST OS CUSTOMIZATION: **Disabled**GUEST OS PASSWORD: **-**VMWARE TOOLS: **Installed**[Edit VM Name & Description](#)[Manage VM in vCloud Director](#)

Now look at the VPN tunnel and in this example I can show you from my On Prem vSE Tunnel. It should be up.

You are logged in as a System Administrator Logged in as:admin [Change Password](#) [Logout](#) [Help](#) [About](#)

CIS-R&D

General App Firewall Endpoint SpoofGuard **Network Virtualization**

Preparation Network Scopes Networks Edges [Refresh](#)

vSphere_DCE_Edge

Settings Statistics Configure Firewall DHCP NAT **VPN** Load Balancer

IPSec VPN | [SSL VPN-Plus](#)

IPSec VPN Service Status: Enabled Disable

Global configuration status: Not Configured [Change](#)

Logging Policy

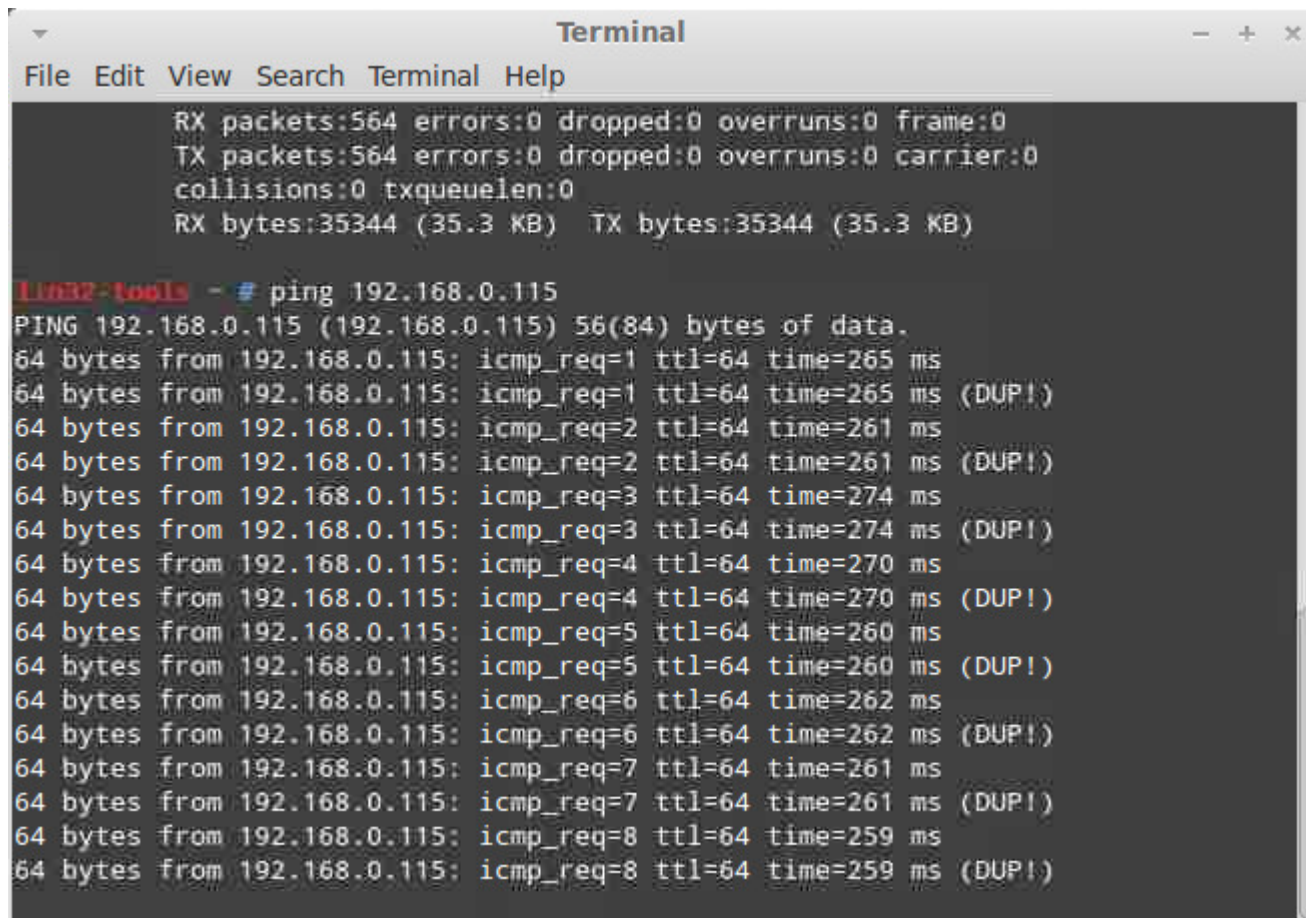
☐ Enable logging

Log level: INFO ▼

Search

Name	Local Endpoint	Local Subnets	Peer Endpoint	Peer Subnets	Status	Channel Status	Tunnel Status
__SSL_VPN_SOURCE_192.1	10.112.187.9	192.168.0.0/	64.20.	192.168.0.0/	✓	✓	1 UP 0 DOWN

At last I will try to ping the on prem VM from this DCE'd VM in vCHS to understand the connectivity.

A screenshot of a terminal window titled "Terminal". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal output shows network statistics: "RX packets:564 errors:0 dropped:0 overruns:0 frame:0", "TX packets:564 errors:0 dropped:0 overruns:0 carrier:0", "collisions:0 txqueuelen:0", and "RX bytes:35344 (35.3 KB) TX bytes:35344 (35.3 KB)". Below this, a red prompt "11632-tools" is followed by the command "# ping 192.168.0.115". The output of the ping command shows "PING 192.168.0.115 (192.168.0.115) 56(84) bytes of data." followed by 16 lines of ping results. Each line shows "64 bytes from 192.168.0.115: icmp_req=X ttl=64 time=Y ms" where X ranges from 1 to 16 and Y ranges from 259 to 274. Lines 2, 4, 6, 8, 10, 12, 14, and 16 are marked as "(DUP!)" in parentheses at the end of the line.

```
Terminal
File Edit View Search Terminal Help

RX packets:564 errors:0 dropped:0 overruns:0 frame:0
TX packets:564 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:35344 (35.3 KB) TX bytes:35344 (35.3 KB)

11632-tools - # ping 192.168.0.115
PING 192.168.0.115 (192.168.0.115) 56(84) bytes of data.
64 bytes from 192.168.0.115: icmp_req=1 ttl=64 time=265 ms
64 bytes from 192.168.0.115: icmp_req=1 ttl=64 time=265 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=2 ttl=64 time=261 ms
64 bytes from 192.168.0.115: icmp_req=2 ttl=64 time=261 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=3 ttl=64 time=274 ms
64 bytes from 192.168.0.115: icmp_req=3 ttl=64 time=274 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=4 ttl=64 time=270 ms
64 bytes from 192.168.0.115: icmp_req=4 ttl=64 time=270 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=5 ttl=64 time=260 ms
64 bytes from 192.168.0.115: icmp_req=5 ttl=64 time=260 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=6 ttl=64 time=262 ms
64 bytes from 192.168.0.115: icmp_req=6 ttl=64 time=262 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=7 ttl=64 time=261 ms
64 bytes from 192.168.0.115: icmp_req=7 ttl=64 time=261 ms (DUP!)
64 bytes from 192.168.0.115: icmp_req=8 ttl=64 time=259 ms
64 bytes from 192.168.0.115: icmp_req=8 ttl=64 time=259 ms (DUP!)
```

Caution !! After a Stretch Deploy

- Once you are done with the stretch deploy you need to keep these points in mind:
- Do not power on the source VM. It will cause an IP/MAC conflict
- Do not delete the source VM. The reservation of IP/MAC may get lost
- Do not change anything on the target vShield Edge or routed vApp network. It will impact the routing of traffic to the target VMs.

Finally, after one VM has been stretch deployed from a vApp, all other VMs that are stretch deployed will skip the "Infrastructure" step as the target vApp and SSL VPN Tunnel has already been established.

Food for thought

1. Do you know how can you get your VM back in your On Prem Cloud after a DCE? This is typically called Reverse DCE.
2. Do you know how can you protect your DCE'd VM and restore the service once you (accidentally?) delete your VM (vApp)? If your answer is no then [read here](#).

Tune in here to know the answer of these two questions. If you know already, then point me to it 😊