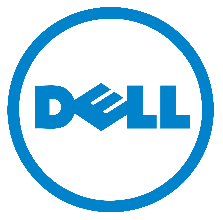
**Brocade Vepc Automation scripts**

User Guide for HEAT scripts



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# Revision History:

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision** | **Date** | **Author** | **Description** |
| 1.0 | Nov 05, 2015 | Ammar Sajid | Initial Version |
|  |  |  |  |

# Table of Acronyms

|  |  |
| --- | --- |
| **Acronym** | **Description** |
| CPE | Control Plane Engine |
| CDF | Charging Data Function |
| CLI | Command Line Interface |
| CIDR | Classless Inter-domain Routing |
| DPE | Data Path Engine |
| DHCP | Dynamic Host Control Protocol |
| EPC | Evolved Packet Core |
| EMS | Element Management System |
| GUI | Graphical User Interface |
| HTTP | Hyper Text Transfer Protocol |
| IP | Internet Protocol |
| IXIA | A company that provides tools for Network Testing |
| PDN | Public Data Network |
| RAN | Radio Access Network |
| RIF | RAN Interface |
| SDB | Session Database |
| SSH | Secure Shell |
| UDB | User Database |
| URL | Uniform Resource Locator |
| VEPC | Virtual Evolved Packet Core |
| VCM | Virtual Core for Mobile, a Product by Brocade. |
| VEM | VCM Element Management |

# Introduction

vEPC Automation scripts are developed to fully automate the Brocade VCM deployment process in high availability. User needs to perform very minimal configuration, which includes editing some required parameters that are needed for executing the scripts. These parameters vary according to the Openstack deployment in use. Once the user enters those required parameters the deployment process is fully automated. There is no need to later alter any additional parameters during vEPC deployment. This document is intended for anyone deploying Brocade vEPC using the Dell Automation scripts. It will also explain the environment and resources required for the scripts to execute.

# Pre-requisite Knowledge

To be able to use this guide effectively, users need to have a general understanding of operating systems based on Linux kernel and Openstack. Knowledge of the following will be helpful but not required:

* Linux and Openstack command line tools
* Basic knowledge of Python would be helpful but not required

# System Requirements

Two compute nodes are required for running these scripts. The scripts deploy fourteen virtual machines during initial deployment process.

The scripts have been tested in the following environments and are expected to run without any error:

|  |  |  |
| --- | --- | --- |
| **Openstack Version** | **OS Version** | **Python Version** |
| OpenStack Juno (Fuel 6.1 Deployment) | CentOS 6.5 | 2.6 |
| Openstack Juno (OPNFV Arno Deployment) | Ubuntu 12.04 | 2.7 |
| Openstack Juno (Wind River Deployment) | Wind River Linux | 2.7 |
| Openstack Juno RedHat | RedHat 7.1 | 2.7 |

Along with following hardware resources on each Compute Node:

|  |  |  |  |
| --- | --- | --- | --- |
| **Node** | **Memory** | **Storage** | **Logical CPUs** |
| Compute 1 | 56GB | 560GB | More than 28 |
| Compute 2 | 56GB | 560GB | More than 28 |

Each virtual machines consists of standard Openstack flavor “m1.medium” which has the following specifications:

|  |  |  |  |
| --- | --- | --- | --- |
| **Flavor** | **Memory** | **Storage** | **Logical CPUs** |
| m1.medium | 4GB | 40GB | 2 |

The script will create availability zones for two compute nodes. The names of the zones are ‘Compute 1’ and ‘Compute 2’. There are no specific hardware requirements for Control nodes but they need to have enough resources available to work with compute nodes.

# How to get the scripts

In order to obtain the scripts they must be downloaded. To download scripts, log in to Dell Box account using the URL <http://app.box.com/>.

**Note:** if you don’t have Box account please contact your dell representative. After login process is complete, go to the directory NFV/vnf/partner\_brocade/ and download vEPC\_heat\_final\_Oct-11-2015.tar.gz file which contains all the required files for running vEPC scripts and a vEPC\_heat\_final\_Oct-11-2015.txt file containing checksum of vEPC\_heat\_final\_Oct-11-2015.tar.gz.

SSH into the active control node and copy the vEPC\_heat\_final\_Oct-11-2015.tar.gz in /root/.

After copying vEPC\_heat\_final\_Oct-11-2015.tar.gz file on the control node, calculate its checksum using command:

*md5sum vEPC\_heat\_final\_Oct-11-2015.tar.gz*

Verify the value printed on CLI with value given in *vEPC\_heat\_final\_Oct-11-2015.txt* file to be sure that tar file is not corrupted.

Now run the command to untar the vEPC.tar.gz:

tar –zxf *vEPC\_heat\_final\_Oct-11-2015.tar.gz*

After the untar completes change the directory by entering the following command:

cd *vEPC\_heat\_final\_Oct-11-2015*

# How to run

To execute scripts, SSH into the CLI of active control node and go inside *vEPC\_heat\_final\_Oct-11-2015* directory. Before running the scripts, user need to edit the “creds.txt” file provided in vEPC scripts directory based on the required parameters explained below for successful execution of deployment scripts.

Values should be entered in inverted commas as currently entered as a sample in creds.txt file shown in Figure 1, the order and format of parameters should not be changed.

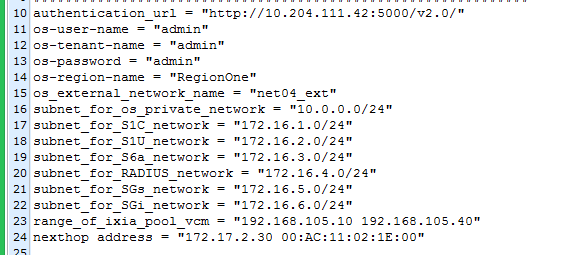


Figure 1: Sample values of creds.txt file

1. authentication\_url = “OS\_AUTH\_URL from openrc/keystonerc\_admin file located at /root/ openrc/keystonerc\_admin in Control Node”
2. os-user-name = “OS\_USERNAME from openrc/keystonerc\_admin file located at /root/ openrc/keystonerc\_admin in Control Node”
3. os-tenant-name = “OS\_TENANT\_NAME from openrc/keystonerc\_admin file located at /root/ openrc/keystonerc\_admin in Control Node”
4. os-password = “OS\_PASSWORD from openrc/keystonerc\_admin file located at /root/ openrc/keystonerc\_admin in Control Node”
5. os-region-name = “RegionOne” You can get this value by entering the following commands on active control node:

*keystone endpoint-list*

1. os\_external\_network\_name is the public network name is the name of the External network in Openstack.
2. subnet\_for\_os\_private\_network is the subnet of a private network for the internal communication of VCM VMs.
3. subnet\_for\_S6a\_network is the subnet of a private network for
4. subnet\_for\_S1U\_network is the subnet of a private network for
5. subnet\_for\_S1C\_network is the subnet of a private network for
6. subnet\_for\_RADIUS\_network is the subnet of a private network for
7. subnet\_for\_SGs\_network is the subnet of a private network for
8. subnet\_for\_SGi\_network is the subnet of a private network for
9. Range of IP addresses to be allowed for IXIA traffic. Sample value:

range\_of\_ixia\_pool\_vcm = "192.168.105.10 192.168.105.40"

First IP specifies the start of pool and second IP address specifies the end of pool.

1. Nexthop address with MAC Address of outbound traffic to PDN server

nexthop address = "172.17.2.30 00:AC:11:02:1E:00"

After successfully updating the above parameters, following are the commands to run the vEPC scripts.

1. To deploy vEPC, run “python vEPC\_deploy.py”
2. To terminate vEPC, run “python vEPC\_termination.py”

# Summary of Scripts

There are total of 2 scripts for vEPC deployment process, each script performs a specific operation:

1. **vEPC\_deploy.py**

* This script deploys vEPC VCM components in high availability. Total of 14 virtual machines are deployed in the form of VCM-1 (7 virtual machines), VCM-2 (7 virtual machines). Also 7 different networks with a router and a security group.

1. **vEPC\_termination.py**

* Terminates the vEPC all components and prompts the user if he wants to delete aggregate groups and glance images of VCM and performs the action based on the user input

# Execution time of scripts

Approximate time for the completion of scripts is stated below:

1. vEPC\_deploy scripts takes 18-22 minutes
2. vEPC\_termination script takes 8-10 minutes

# Login Credentials

To SSH into VCM VMs use the following credentials:

Username: root

Password: root123

# Logs

All the scripts generate logs during execution. To see the logs generated during the execution of scripts, go into the /vEPC/logs/ directory. It contains a total of 4 files, 2 for each script; one file is for activity log i.e. the total flow of script in which it deploys VCM components and the second is error log in case if any error occurs during the execution of script.

1. deploy\_date\_time.log and deploy\_error\_date\_time.log
2. terminate\_date\_time.log and terminate\_error\_date\_time.log

# Known bugs

If you see any of the following bugs in log files or CLI please refer to the resolution/possible reason of the bug to know the actual cause of bug.

|  |  |  |
| --- | --- | --- |
| **Sr. #** | **Bugs** | **Resolution/Possible reason** |
| 1. | Unauthorized: The request you have made requires authentication. (HTTP 401) | This error usually occurs when the authentication URL, OS\_USERNAME, OS\_PASSWORD or OS\_TENANT\_NAME entered in creds.txt doesn’t match with the values of keystonerc\_admin/openrc file. Please double check the values and try running the scripts again. |
| 2. | novaclient.exceptions.NotFound: No more floating ips in pool. (HTTP 404) | This error usually occurs when there are no more floating IPs available in the pool to assign to VMs. Please increase the number of floating IP pool and then re-try. |
| 5. | No valid host was found. | This issue usually occurs because of not enough resources available to deploy the VMs. There is a resource check function which gives warning to the user if the resources are not enough and if user still continues deployment this could lead to an error. |