How to install DSX Local in IBM FYRE (Internal use only)

Version Level: 0.3

Author	Date	Version	Change Description
Qijun Wang	02/14/2018	0.1	Initial Version
Qijun Wang	04/17/2018	0.2	Some change according to **Steve Gawtry**'s feedback: • Downloading the create_fyre_cluster.py in Step 3 using wget doesn't work properly using the given URL (it downloads some sort of html doc). The URL should instead be for the "raw" download from the github page. • The node name in Step 4 (the "dsx" in "--cluster=dsx") has restrictions. We initially had an invalid node name, which might have been because of an underscore in the name we chose. • In Step 11, it's not clear what one would change the IP to. I used the one supplied in the instructions and it worked, but the note "ntpdate -s 216.229.4.69 (you can change this ntp server by yours)" doesn't tell you what you might change this to. • In step 13, the "./DSX-Local-Build-Config.x86_64.373 —three-nodes" is slightly incorrect. The "—three-nodes" needs to be replaced by "--three-nodes" in the command...it looks as if Microsoft Word might have replaced the double dash with an em dash in the document at some point.
Qijun Wang	04/17/2018	0.3	Add version DSXL 1.2.0 support

Background

DSX Local installation needs multiples disks, but IBM FYRE cannot add additional disks from the Web UI, so this document is to give solutions on how to work around this limitation and then install DSX local on FYRE environment. Overall, this document will brief the way on how to use the script developed by IBM DSX local DEV team to create virtual machines meeting the requirement of installing DSX Local, and then describe the steps to install a three-nodes DSX Local cluster on this environment.

Steps

1 Go to any of the Linux machine with access to the FYRE environment (it can be your FYRE virtual machine, but should not use MAC because some of the python libraries maybe different).

2 Install necessary libraries for the python script.

```
curl "https://bootstrap.pypa.io/get-pip.py" -o "get-pip.py"
python get-pip.py
pip install requests
```

pip install paramiko

3 Download the script: create_fyre_cluster.py.

wget https://github.ibm.com/DataScienceCoC/DSX-Local-Installation-With-FYRE/blob/master/create_fyre_cluster.py

4 Create 3 nodes cluster from FYRE which have 2 additional disks on each node (replace the user and key with yours).

python create_fyre_cluster.py --user=xxxxxx --key=xxxxxxxxxxxx --cluster=dsx(change to your own cluster name, no underscore supported in the name) --3-nodes

5 After successfully creating all the nodes, you will receive an email information about virtual machine information, then login to the master node with external IP address.

6 Check the disk information by “df” command to confirm there are 2 additional disks on each node:

```
[root@dsx-master-3 ~]# df
Filesystem           1K-blocks     Used Available Use% Mounted on
/dev/mapper/rhel-root 251535360  2463024 249072336   1% /
devtmpfs              12251032        0  12251032   0% /dev
tmpfs                 12261860        0  12261860   0% /dev/shm
tmpfs                 12261860    16828  12245032   1% /run
tmpfs                 12261860        0  12261860   0% /sys/fs/cgroup
/dev/vdc1            419223556    32944 419190612   1% /data
/dev/vdb1            524029956 12326816 511703140   3% /ibm
/dev/vda1              1038336   181596    856740  18% /boot
```

7 Go to /ibm folder, there should be a file called: wdp.conf. Check the content of this file and it will be used as the DSX Local installation configuration file. Following is the example content of the file:

```
user=root
virtual_ip_address=172.16.240.98
node_1=172.16.190.47
node_data_1=/data
node_path_1=/ibm
node_2=172.16.190.117
node_data_2=/data
node_path_2=/ibm
node_3=172.16.190.118
node_data_3=/data
node_path_3=/ibm
ssh_port=22
overlay_network=9.242.0.0/16
suppress_warning=true
```

8 Download latest version of DSX local to the master node of FYRE cluster. Follow the instruction from: http://dsxl-jenkins.fyre.ibm.com:8088/

You should download the file to the same folder with wdp.conf.

For version 1.2.0:

```
scp ibmuser@9.30.110.240:/big_dir/jenkins/jobs/DSXL-Installer-Build/builds/93/archive/* .
```

For version 1.1.3:

```
scp ibmuser@9.30.110.240:/big_dir/jenkins/jobs/IDP-Installer-v1.3/builds/373/archive/* /ibm
```

password is: wdp4fun

9 Copy master node /root/.ssh to all the slave nodes.

```
scp /root/.ssh/* root@dsx-master-3:/root/.ssh/
scp /root/.ssh/* root@dsx-master-2:/root/.ssh/
```

10 Check ssh passwordless between master node and all the slave nodes.

```
[root@dsx-master-1 ibm]# ssh dsx-master-2
Last login: Tue Feb 13 22:11:42 2018 from 172.16.190.47
[root@dsx-master-2 ~]#
```

11 NTP sync all the nodes.

```
ntpdate -s 216.229.4.69
```

12 Make the installation file executable.

For version 1.2.0:

```
chmod +x ./DSXL-Installer-Build.x86_64.93
```

For version 1.1.3:

```
chmod +x ./DSX-Local-Build-Config.x86_64.373
```

13 Execute the installation file.

For version 1.2.0:

```
./DSXL-Installer-Build.x86_64.93 --three-nodes --centos-repo
```

For version 1.1.3:

```
./DSX-Local-Build-Config.x86_64.373 --three-nodes
```

14 Installer will ask if you will use the configuration file in the same folder. Answer Y and accept the agreement as well.

15 Installer will start the pre-installation check, including:

Hardware check: CPU, memory and disks

System check: OS, user, file system, NTP

Performance test: IO speed test of disk

Connection between all the nodes

16 if everything is ok, it will begin the actual installation, including:

Install kubernete

install docker

pre-load all the docker images, including compute sevice, storage service and control service.

start kubernete

start docker

… …

There are totally 65 steps and it take around 2.5 hours to finish the installation.

```
Cluster configuration is in progress...   /

Step 65/65: Creating dsx-local-proxy services

[==========================================================================================>] 100%
```

```
The installation completed successfully.

Please visit https://172.16.240.98/dsx-admin for DSX portal
```

17 The IP address provided by FYRE is internal, so you need to enable public IP access. To do that,

In version 1.2.0, you need to run below command to enable the external IP:

/wdp/utils/nginx_ips.py --add 9.30.xxx.xxx(your external IP address)

In version 1.1.3, you need to edit the nginx service configuration file.

cd /wdp/k8s/dsx-local-proxy/k8s

cp nginx-service.yaml nginx-service.yaml.orig

Then edit nginx-service.yaml and change the IP you see in the file to the public IP of the master-1

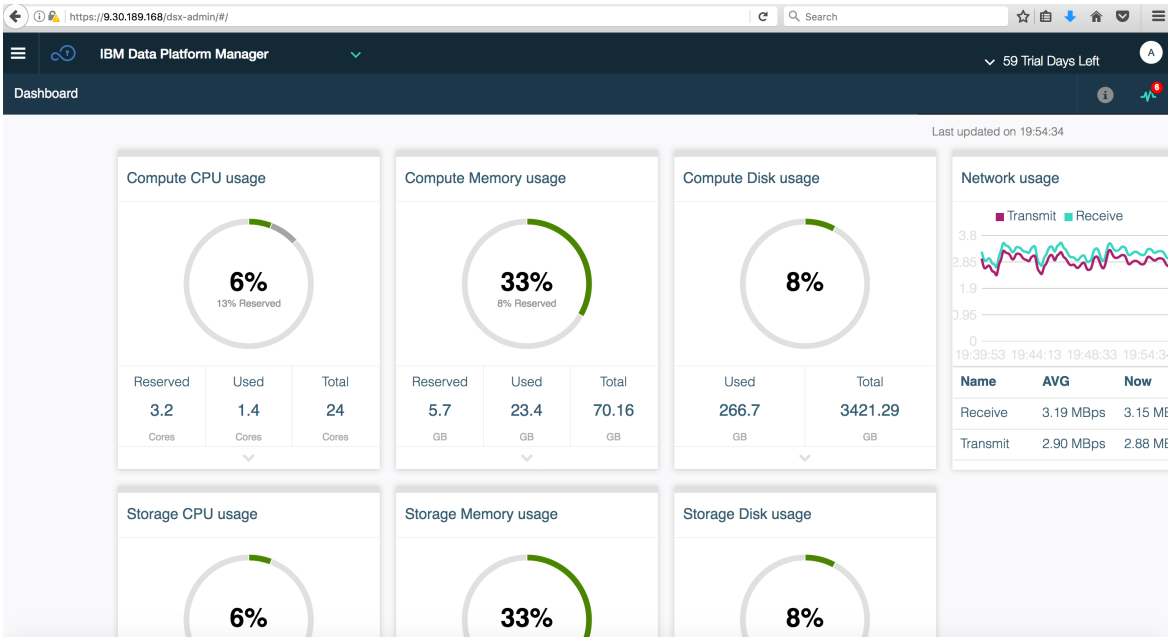
Finally, run:

kubectl delete -f nginx-service.yaml.orig --namespace=ibm-private-cloud

kubectl create -f nginx-service.yaml --namespace=ibm-private-cloud

Then you should be able to connect with the public IP of the first master node.

18 Log onto the new DSX Local Web UI URL with username: “admin” and password: “password.”



Issues

1 How to remove docker engine if you fail the installation and need to reinstall DSX local?

yum remove docker-engine.x86_64