MapR Bigdata Cluster Configuration

Node	CLDB	ZOOKEEPER	NFS	WEBSERVER/APIserver	Fileserver
Master01	✓		✓	✓	✓
S1		✓	✓		✓
S2		✓	✓		✓
S3		✓	✓		✓
S4			✓		✓
S5			✓		✓

cat /etc/hosts
echo " 10.142.0.8 master01.c.voltaic-racer-208109.internal master01" >> /etc/hosts
echo " 10.142.0.9 s1.c.voltaic-racer-208109.internal s1" >> /etc/hosts
echo " 10.142.0.10 s2.c.voltaic-racer-208109.internal s2" >> /etc/hosts
echo " 10.142.0.11 s3.c.voltaic-racer-208109.internal s3" >> /etc/hosts
echo " 10.142.0.12 s4.c.voltaic-racer-208109.internal s4" >> /etc/hosts
echo " 10.142.0.13 s5.c.voltaic-racer-208109.internal s5" >> /etc/hosts
echo " 10.142.0.14 nhost6.c.voltaic-racer-208109.internal nhost6" >> /etc/hosts

echo " 10.142.0.3 s6.c.voltaic-racer-208109.internal s6" >> /etc/hosts

yum update -y
yum install -y curl device-mapper iputils libsysfs lvm2 nc nfs-utils ntp nss openssl python-devel sdparm syslinux sysstat wget yum-utils

wget --no-cookies --no-check-certificate --header "Cookie: oraclelicense=accept-securebackup-cookie" https://download.oracle.com/otn-pub/java/jdk/11.0.1+13/90cf5d8f270a4347a95050320eef3fb7/jdk-11.0.1_linux-x64_bin.rpm

curl -v -j -k -L -H "Cookie: oraclelicense=accept-securebackup-cookie" http://download.oracle.com/otn-pub/java/jdk/8u131-b11/d54c1d3a095b4ff2b6607d096fa80163/jdk-8u131-linux-x64.rpm > jdk-8u112-linux-x64.rpm

rpm -ivh jdk-8u181-linux-x64.rpm

```
env_override.sh
export JAVA_HOME=/usr/java/jdk1.8.0_171-amd64
export MAPR_HOME=/opt/mapr
export MAPR_USER=mapr
```

```
groupadd -g 5000 mapr
useradd -g 5000 -u 5000 mapr
useradd -m -u 5000 -g 5000 -G $(stat -c '%G' /etc/shadow) mapr
passwd mapr
```

```
gpasswd -a mapr mapr
```

```
vi /etc/sudoers
mapr  ALL=(ALL)      ALL
```

```
vi /etc/ssh/sshd_config
vi /etc/ssh/ssh_config
```

```
systemctl  restart sshd
```

```
ssh-copy-id  -i /root/.ssh/id_rsa.pub 10.142.0.3:/root/.ssh/authorized_keys
```

vi /etc/yum.repos.d/maprtech.repo

[maprtech] name=MapR
Technologies
baseurl=http://package.m
apr.com/releases/v6.0.1/r
edhat/ enabled=1
gpgcheck=1

[maprecosystem] name=MapR
Technologies
baseurl=http://package.mapr.com/releases/MEP/MEP-5.0.0/redhat
enabled=1 gpgcheck=1
protect=1

rpm --import http://package.mapr.com/releases/pub/maprgpg.key

Master01

yum install -y mapr-fileserver mapr-nfs mapr-cldb mapr-resourcemanager mapr-webserver mapr-apiserver mapr-collectd mapr-nodemanager

s1

yum install -y mapr-fileserver mapr-nfs mapr-zookeeper mapr-nodemanager mapr-resourcemanager mapr-collectd

S2

yum install -y mapr-fileserver mapr-nfs mapr-zookeeper mapr-nodemanager mapr-collectd

s3

yum install -y mapr-fileserver mapr-nfs mapr-zookeeper mapr-nodemanager mapr-collectd

s4 and s5
yum install -y mapr-fileserver mapr-nfs mapr-nodemanager mapr-collectd mapr-grafana

yum install -y mapr-fileserver mapr-nfs mapr-nodemanager mapr-collectd mapr-opentsdb

From Master01

Run in master01:

```
/opt/mapr/server/configure.sh -secure -genkeys -Z s1.c.voltaic-racer-208109.internal:5181,s2.c.voltaic-racer-
208109.internal:5181,s3.c.voltaic-racer-208109.internal:5181 -C master01.c.voltaic-racer-208109.internal:7222 -RM
master01.c.voltaicracer-208109.internal:8090,s1.c.voltaic-racer-208109.internal:8090 -N maprcluster -u mapr -g mapr
```

```
cd /opt/mapr/conf
```

scp -r cldb.key ssl_truststore ssl_keystore maprserverticket mapr@10.142.0.(9-14):/tmp/

All S(1-5) nodes

mv ssl_truststore ssl_keystore maprserverticket cldb.key /opt/mapr/conf/
sudo chmod 600 ssl_truststore ssl_keystore maprserverticket cldb.key

(for Grafana 644 permission For a **secured cluster**, copy the `/opt/mapr/conf/ssl_truststore.pem` file from the CLDB master node to `/opt/mapr/conf` on all nodes(or, at a minimum, to the Grafana nodes))

Run in all S(1-5) Nodes

```
/opt/mapr/server/configure.sh -secure  -Z s1.c.voltaic-racer-208109.internal:5181,s2.c.voltaic-racer-208109.internal:5181,
s3.c.voltaic-racer-208109.internal:5181 -C master01.c.voltaic-racer-208109.internal:7222 -N maprcluster -u mapr -g mapr
```

vi disks /dev/sdb
/dev/sdc

/dev/sdd

/opt/mapr/server/disksetup -FW 1 disks

First Start zookeeper Service

systemctl start mapr-zookeeper
systemctl status mapr-zookeeper

2nd Warden Sevice need to be start

systemctl start mapr-warden
systemctl status mapr-warden

systemctl restart mapr-zookeeper
systemctl restart mapr-warden

mapr-posix-client-basic

```
yum update -y
yum install -y curl device-mapper iputils libsysfs lvm2 nc nfs-utils ntp nss openssl python-devel sdparm syslinux sysstat
wget yum-utils

wget --no-cookies --no-check-certificate --header "Cookie: oraclelicense=accept-securebackup-cookie"
http://download.oracle.com/otn-pub/java/jdk/8u181-b13/96a7b8442fe84 8ef90c96a2fad6ed6d1/jdk-8u181-linux-
x64.rpm

rpm -ivh jdk-8u181-linux-x64.rpm
```

vi /etc/yum.repos.d/maprtech.repo

[maprtech]
sssname=MapR
Technologies
baseurl=http://package.mapr.com/releases/v6.0.1/redhat/
enabled=1 gpgcheck=1

[maprecosystem] name=MapR
Technologies
baseurl=http://package.mapr.com/releases/MEP/MEP-5.0.0/redhat
enabled=1 gpgcheck=1 protect=1

```
rpm --import http://package.mapr.com/releases/pub/maprgpg.key
```

yum install mapr-posix-client-basic

```
vi /etc/hosts

echo " 10.142.0.8 master01.c.voltaic-racer-208109.internal master01" >>
/etc/hosts echo " 10.142.0.9 s1.c.voltaic-racer-208109.internal s1" >> /etc/hosts
echo " 10.142.0.10 s2.c.voltaic-racer-208109.internal s2" >> /etc/hosts echo "
10.142.0.11 s3.c.voltaic-racer-208109.internal s3" >> /etc/hosts echo "
10.142.0.12 s4.c.voltaic-racer-208109.internal s4" >> /etc/hosts echo "
10.142.0.13 s5.c.voltaic-racer-208109.internal s5" >> /etc/hosts

groupadd -g 5000 mapr
useradd -g 5000 -u 5000
mapr
useradd -m -u 5000 -g 5000 -G $(stat -c '%G' /etc/shadow) mapr
passwd mapr

vi /etc/ssh/sshd_config
vi /etc/ssh/ssh_config



vi /opt/mapr/conf/fuse.conf
```

#set path to mapr login ticket

fuse.ticketfile.location=/opt/mapr/conf/longlived_ticket

#Set path to the mount point

fuse.mount.point=/mapr

Create Directory

```
 mkdir
/mapr
```

Any cluster node run the command

```
maprlogin generateticket -type service -out /tmp/longlived_ticket  -user mapr

scp -p  longlived_ticket mapr@10.142.0.14:/tmp/ (copy to posix client node)
```

From posix client node

```
 cd
/tmp/
ls
mv longlived_ticket /opt/mapr/conf
```

export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/mapr/lib

```
 /opt/mapr/server/configure.sh -secure -Z s1.c.voltaic-racer-208109.internal:5181,s2.c.voltaic-racer-
208109.internal:5181,s3.c.voltaic-racer-208109.internal:5181 -C master01.c.voltaic-racer-208109.internal:7222 -N maprcluster
-u mapr -g mapr -c
```

Run service

service mapr-posix-client-basic status

service mapr-posix-client-basic start

service mapr-posix-client-basic status

Check the Directory and verify

cd /mapr

Latest change in Posix: fuse.conf

`fuse.num.libs = 1`

`fuse.cluster.conf.location`	`/opt/mapr/conf/mapr-clusters.conf`	The path to the configuration file to use.

Hive Configuration

Install

```
yum install mapr-hive mapr-hiveserver2 mapr-hivemetastore mapr-hivewebhcat
```

Database

```
yum -y install mariadb-server
yum install mysql-connector-java
```

Edit the configuration file

```
cd /opt/mapr/hive/hive-2.1/conf

vi hive-site.xml
```

```
<property>
    <name>javax.jdo.option.ConnectionURL</name>
    <value>jdbc:mysql://n3.us-east1-b.c.main-form-217005.internal:3306/metastore</value>
    <description>JDBC connect string for a JDBC metastore</description>
</property>

 <property>
    <name>javax.jdo.option.ConnectionDriverName</name>
    <value>com.mysql.jdbc.Driver</value>
    <description>Driver class name for a JDBC metastore</description>
 </property>

 <property>
    <name>javax.jdo.option.ConnectionUserName</name>
    <value>hive</value>
    <description>username to use against metastore database</description>
 </property>

 <property>
    <name>javax.jdo.option.ConnectionPassword</name>
    <value>hivepwd</value>
    <description>password to use against metastore database</description>
 </property>

 <property>
    <name>hive.metastore.uris</name>
    <value>thrift://n3.us-east1-b.c.main-form-217005.internal:9083</value>
</property>
```

Add the below parameter

```
 <property>
```

```
  <name>hive.exec.scratchdir</name>
  <value>/tmp</value>
  <description>Scratch space for Hive jobs</description>
 </property>

 <property>
  <name>hive.exec.local.scratchdir</name>
  <value>/tmp</value>
  <description>Local scratch space for Hive jobs</description>
 </property>
```

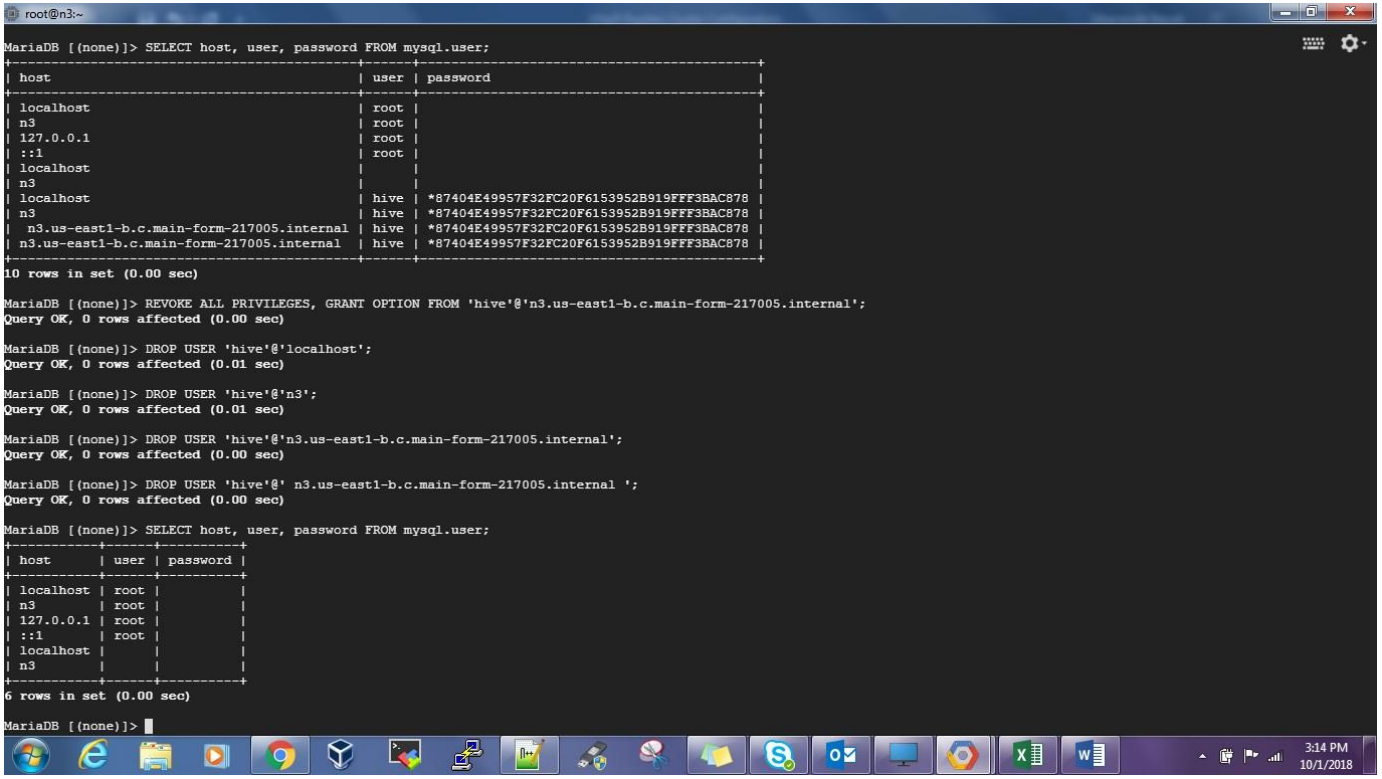
Db service Start

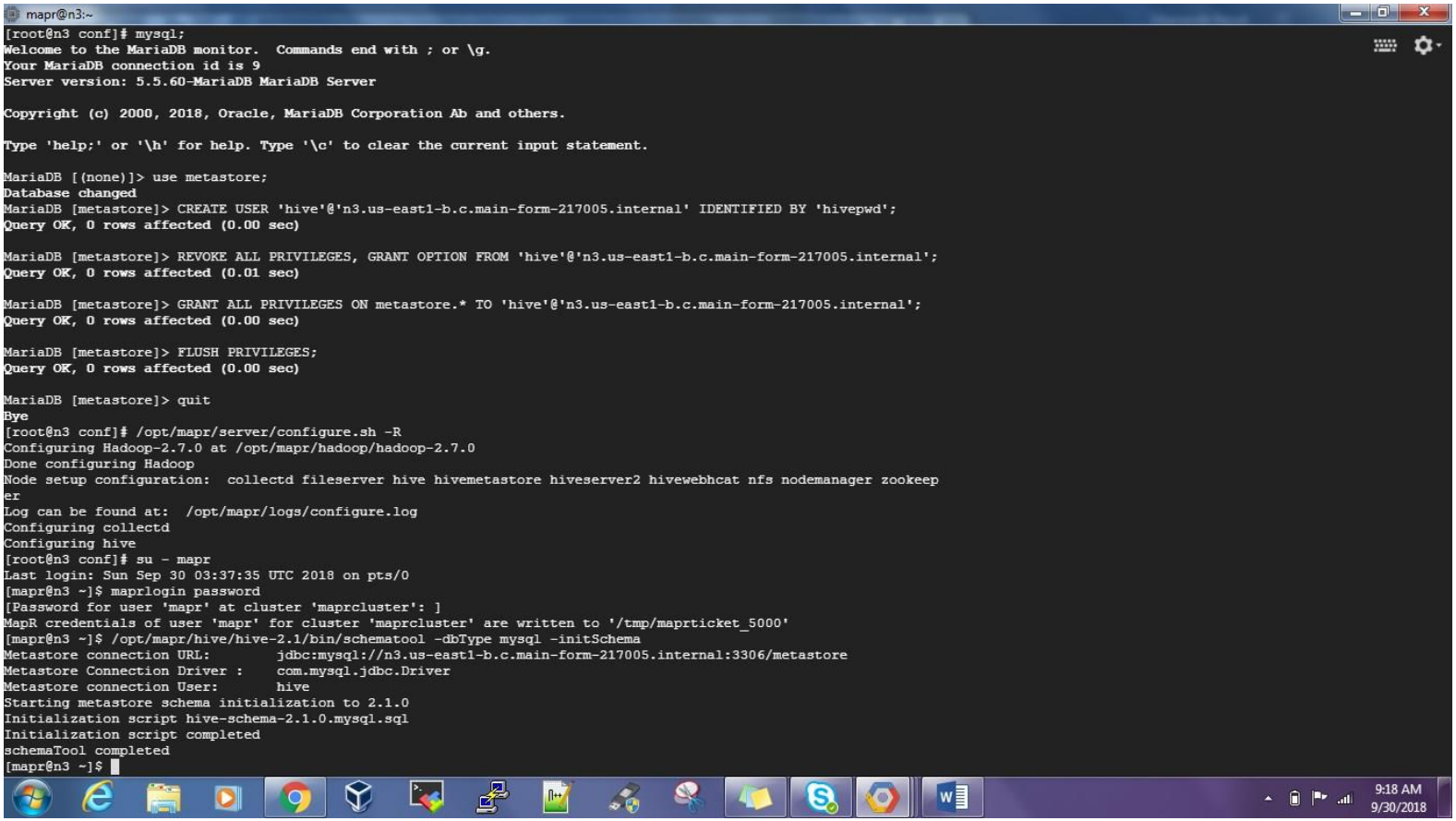
```
Systemctl start mariadb
```

Create Database,user and give Grant access

```
#mysql
mysql> create database metastore;
mysql>  use metastore;
 mysql> CREATE USER 'hive'@'localhost' IDENTIFIED BY
'hivepwd';
...
mysql> REVOKE ALL PRIVILEGES, GRANT OPTION FROM
'hive'@'localhost';
mysql> GRANT ALL PRIVILEGES ON metastore.* TO 'hive'@'localhost';
mysql> FLUSH PRIVILEGES;
mysql> quit;

and
mysql> CREATE USER 'hive'@'n2' IDENTIFIED BY 'hivepwd';
...
mysql> REVOKE ALL PRIVILEGES, GRANT OPTION FROM
'hive'@'n2';
mysql> GRANT ALL PRIVILEGES ON metastore.* TO 'hive'@'n2';
mysql> FLUSH PRIVILEGES;
```

```
mysql> quit;
 and
mysql> CREATE USER 'hive'@'n3.us-east1-b.c.main-form-217005.internal' IDENTIFIED BY
'hivepwd';


mysql> REVOKE ALL PRIVILEGES, GRANT OPTION FROM 'hive'@'n3.us-east1-b.c.main-form-217005.internal';
mysql> GRANT ALL PRIVILEGES ON metastore.* TO 'hive'@'n3.us-east1-b.c.main-form-217005.internal';
mysql> FLUSH PRIVILEGES; mysql> quit;

SELECT host, user, password FROM mysql.user;
Drop databasemetastore;

Check for Login

#mysql -u hive -h s6.c.voltaic-racer-208109.internal -p
```





Configure

/opt/mapr/server/configure.sh -R

systemctl restart mapr-zookeeper
systemctl status mapr-zookeeper
systemctl restart mapr-warden
systemctl status mapr-warden

/opt/mapr/hive/hive-2.1/bin/schematool -dbType mysql -initSchema
All HIVE service need to start

systemctl start mapr-hiveserver2
Systemctl start mapr-hivemetastore
Systemctl start mapr-hivewebhcat

hive

Disk adding and data encryption

cryptsetup --batch-mode --use-random luksFormat /dev/sdg /etc/crypto/lukskey.bin
cryptsetup luksOpen /dev/sdg luks-sdg < /etc/crypto/lukskey.bin
--

/opt/mapr/server/mrconfig sp list -v
/opt/mapr/server/disksetup -F -W 4 /home/mapr/disklist

Or

---

cryptsetup --batch-mode --use-random luksFormat /dev/sdq /etc/crypto/lukskey.bin
cryptsetup luksOpen /dev/sdq luks-sdq < /etc/crypto/lukskey.bin

check if added luks --> fdisk -l |grep /dev/sdq

<property>

<name>hive.metastore.sasl.enabled</name>

<value>false</value>

</property>

https://mapr.com/docs/60/Spark/IntegrateSparkSQL_Hive.html

Hive Upgrade

Upgrade hive -2.1 to hive -2.3

```
[root@n2 tmp]# cat /etc/yum.repos.d/maprtech.repo
[maprtech] name=MapR
Technologies
baseurl=http://package.mapr.com/releases/v6.1.0/redhat/
enabled=1 gpgcheck=1

[maprecosystem] name=MapR Technologies
baseurl=http://package.mapr.com/releases/MEP/MEP-6.0.0/redhat
enabled=1 gpgcheck=1 protect=1
```

---

yum update mapr-hive* -y

```
cp hive-site.xml ../hive-2.3/conf
cp hive-site.xml /opt/mapr/hive/hive2.3/conf/
pwd
cp hive-site.xml /opt/mapr/hive/hive-2.3/conf
pwd
ls -lrt
cd .. cd hive-2.3/ ls -lrt
cd /opt/mapr/hive/hive-2.1/lib
cd /opt/mapr/hive/hive-2.1/
```

```
ls -lrt cd ..
ls -lrt cd hive-
2.1.201804020853
ls -lrt
-----
cd /usr/share/java
ls -lrt
cp mysql-connector-java.jar /opt/mapr/hive/hive-2.3/lib

#/opt/mapr/server/configure.sh -R
 ----
su mapr
mysql
/opt/mapr/hive/hive-2.3/scripts/metastore/upgrade/mysql/

[root@n3 mysql]# mysql

MariaDB [(none)]> use metastore
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
MariaDB [metastore]> select * from VERSION;
+--------+----------------+----------------------------+
| VER_ID | SCHEMA_VERSION | VERSION_COMMENT            |
+--------+----------------+----------------------------+
|      1 | 2.3.0          | Hive release version 2.3.0 |
+--------+----------------+----------------------------+
1 row in set (0.00 sec)

MariaDB [metastore]> source /opt/mapr/hive/hive-2.3/scripts/metastore/upgrade/mysql/upgrade-2.1.0-to-2.2.0.mysql.sql


MariaDB [metastore]> source /opt/mapr/hive/hive-2.3/scripts/metastore/upgrade/mysql/upgrade-2.2.0-to-2.3.0.mysql.sql
```

@@@@@@@@@@@@@@@ Elastic Search Indeces Issue@@@@@@@@@@@@@@@@@@@@@@@

https://mapr.com/support/s/article/Log-retention-doesn-t-work?language=en_US

```
[root@esekilxgp10 enaysib]# cd /opt/mapr/elasticsearch/elasticsearch-5.4.1/usr/share/curator/ [root@esekilxgp10
curator]#
[root@esekilxgp10 curator]# find . -type d -exec chmod +x {} \;
[root@esekilxgp10 curator]# ls -ltr total
2128
-rw-r--r-- 1 mapr maprg 1843136 Oct 28  2017 libpython2.7.so.1.0
-rw-r--r-- 1 mapr maprg   10488 Oct 28  2017 es_repo_mgr
-rw-r--r-- 1 mapr maprg   10488 Oct 28  2017 curator_cli
-rw-r--r-- 1 mapr maprg   10488 Oct 28  2017 curator -rw-r-
-r-- 1 mapr maprg  296399 Oct 28  2017 cacert.pem drwxr-xr-
x 3 mapr maprg      43 Jan 23  2018 lib drwxr-xr-x 3 mapr
maprg      43 Jan 23  2018 lib64 [root@esekilxgp10
curator]# chmod +x curator curator_cli
[root@esekilxgp10 curator]# cd /opt/mapr/elasticsearch/elasticsearch-5.4.1/bin
[root@esekilxgp10 bin]# ln -s /opt/mapr/elasticsearch/elasticsearch-5.4.1/usr/share/curator/curator curator
[root@esekilxgp10 bin]# vi /opt/mapr/elasticsearch/elasticsearch-5.4.1/etc/elasticsearch/curator.yml
[root@esekilxgp10 bin]# cat  /opt/mapr/elasticsearch/elasticsearch-5.4.1/etc/elasticsearch/curator.yml ---
# Remember, leave a key empty if there is no value.  None will be a string,
# not a Python "NoneType"
client:   hosts:
    - esekilxgp10.rnd.ki.sw.ericsson.se
port: 9200   url_prefix:   use_ssl:
True   certificate:   client_cert:
client_key:   aws_key:
  aws_secret_key:
aws_region:
  ssl_no_validate: True
http_auth: admin:admin
timeout: 30   master_only:
False
 logging:
  loglevel: INFO
logfile:
  logformat: default
  blacklist: ['elasticsearch', 'urllib3'] [root@esekilxgp10
bin]# crontab -u mapr -l
SHELL=/bin/bash
15 3 * * *      /opt/mapr/elasticsearch/elasticsearch-5.4.1/bin/curator --config /opt/mapr/elasticsearch/elasticsearch-
5.4.1
/opt/mapr/elasticsearch/elasticsearch-5.4.1/etc/elasticsearch/curator_actions/delete_indices.yml >>
/opt/mapr/elasticsearch/e
[root@esekilxgp10 bin]# su mapr
[mapr@esekilxgp10 bin]$ maprlogin password
```

```
[Password for user 'mapr' at cluster 'rdidev1': ]
MapR credentials of user 'mapr' for cluster 'rdidev1' are written to '/tmp/maprticket_123400016'
[mapr@esekilxgp10 bin]$ /opt/mapr/elasticsearch/elasticsearch-5.4.1/bin/curator --config
/opt/mapr/elasticsearch/elasticsearc
/opt/mapr/elasticsearch/elasticsearch-5.4.1/etc/elasticsearch/curator_actions/delete_indices.yml >> /opt/mapr/elasticsearch/
[mapr@esekilxgp10 bin]$ exit
[root@esekilxgp10 bin]# df -H /opt/
Filesystem                 Size  Used Avail Use% Mounted on
/dev/mapper/rootvg-rootvol  500G  193G  307G  39% /
[root@esekilxgp10 bin]#
```

curl -k -u admin:admin -XDELETE https://esekilx5646.rnd.ki.sw.ericsson.se:9200/mapr_monitoring-2019.03.*

----------R and sparkR and Spark and hive ---------------

```
[root@esekilxgp05 ~]# yum install R

[root@esekilxgp05 ~]# which R
Set $HOME in /usr/bin and its show in env
[root@esekilxgp05 ~]# cat .bash_profile
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
. ~/.bashrc fi

# User specific environment and startup programs

PATH=$PATH:$HOME/bin

export PATH

[root@esekilxgp05 ~]# env

PATH=/usr/lib64/qt-
3.3/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/root/bin:/usr/java/jdk1.8.0_161//bin:/usr/java/
```

For sparkR and Spark and hive--------------------

[root@esekilxgp05 ~]# yum install -y mapr-spark mapr-hive

[root@esekilxgp05 ~]# cd /opt/mapr/spark/spark-2.1.0/conf/

[root@esekilxgp05 ~]#ls -ltar

-rwxr-xr-x 1 mapr maprg 7191 Oct 11 07:51 spark-env.sh
-rw-r--r-- 1 mapr maprg 3727 Oct 11 07:51 hive-site.xml
-rw-r--r-- 1 mapr maprg 1749 Oct 11 07:52 spark-defaults.conf

[root@esekilxgp05 ~]# vi spark-defaults.conf

Add below files:

spark.yarn.dist.files = /opt/mapr/spark/spark-2.3.1/conf/hive-site.xml
spark.sql.hive.metastore.version = 1.2.0

[root@esekilxgp05 conf]# cat hive-site.xml
<?xml version="1.0"?>
<!--
  Licensed to the Apache Software Foundation (ASF) under one
or more contributor license agreements. See the NOTICE file
distributed with this work for additional information
regarding copyright ownership. The ASF licenses this file   to
you under the Apache License, Version 2.0 (the
  "License"); you may not use this file except in compliance
with the License. You may obtain a copy of the License at

       http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,   WITHOUT

```
WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.   See the
License for the specific language governing permissions and   limitations
under the License.
-->
<configuration>

            <property>
        <name>javax.jdo.option.ConnectionURL</name>
        <value>jdbc:mysql://esekilxgp06.rnd.ki.sw.ericsson.se:3306/hive?createDatabaseIfNotExist=true</value>
<description>JDBC connect string for a JDBC metastore</description>
    </property>

    <property>
        <name>javax.jdo.option.ConnectionDriverName</name>
        <value>com.mysql.jdbc.Driver</value>
        <description>Driver class name for a JDBC metastore</description>
</property>

    <property>
        <name>javax.jdo.option.ConnectionUserName</name>
        <value>hive</value>
        <description>username to use against metastore database</description>
</property>

    <property>
        <name>javax.jdo.option.ConnectionPassword</name>
        <value>CyT4cPPfwDs</value>
        <description>password to use against metastore database</description>

    </property>
        <property>
        <name>hive.metastore.schema.verification</name>
        <value>false</value>
    </property>

    <property>
        <name>hive.metastore.uris</name>
        <value>thrift://esekilx5636.rnd.ki.sw.ericsson.se:9083,thrift://esekilx5637.rnd.ki.sw.ericsson.se:9083</value>
    </property>
    <!-- For hive server2 -->
    <property>
        <name>hive.server2.enable.doAs</name>
        <value>true</value>
```

```
    </property>
    <!-- For hive server2 and meta store -->
    <property>
        <name>hive.metastore.execute.setugi</name>
        <value>true</value>
    </property>

    <property>
        <name>hive.metastore.warehouse.dir</name>
        <value>/project/rdi/warehouse/hive</value>
        <description>location of default database for the warehouse</description>
</property>

 <property>
    <name>hive.metastore.try.direct.sql</name>
    <value>true</value>
    <description>
      Whether the Hive metastore should try to use direct SQL queries instead of the
      DataNucleus for certain read paths. This can improve metastore performance when
fetching many partitions or column statistics by orders of magnitude; however, it       is
not guaranteed to work on all RDBMS-es and all versions. In case of SQL failures,
the metastore will fall back to the DataNucleus, so it's safe even if SQL doesn't
work for all queries on your datastore. If all SQL queries fail (for example, your
metastore is backed by MongoDB), you might want to disable this to save the       try-and-
fall-back cost.
    </description>
        </property>
<property>
    <name>hive.metastore.client.socket.timeout</name>
    <value>1800s</value>
    <description>
      Expects a time value with unit (d/day, h/hour, m/min, s/sec, ms/msec, us/usec, ns/nsec), which is sec if not
specified.
      MetaStore Client socket timeout in seconds
    </description>
</property>

<property>
<name>hive.metastore.sasl.enabled </name>
<value>false</value>
</property>
```

```
</configuration>



[root@esekilxgp05 conf]# cat spark-env.sh

#!/usr/bin/env bash

#
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# contributor license agreements.  See the NOTICE file distributed with #
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# distributed under the License is distributed on an "AS IS" BASIS,
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limitations under the License.
#

# This file is sourced when running various Spark programs.
# Copy it as spark-env.sh and edit that to configure Spark for your site.

# Options read when launching programs locally with
# ./bin/run-example or ./bin/spark-submit
# - HADOOP_CONF_DIR, to point Spark towards Hadoop configuration files
# - SPARK_LOCAL_IP, to set the IP address Spark binds to on this node
# - SPARK_PUBLIC_DNS, to set the public dns name of the driver program #
- SPARK_CLASSPATH, default classpath entries to append

# Options read by executors and drivers running inside the cluster
# - SPARK_LOCAL_IP, to set the IP address Spark binds to on this node
# - SPARK_PUBLIC_DNS, to set the public DNS name of the driver program
# - SPARK_CLASSPATH, default classpath entries to append
# - SPARK_LOCAL_DIRS, storage directories to use on this node for shuffle and RDD data
# - MESOS_NATIVE_JAVA_LIBRARY, to point to your libmesos.so if you use Mesos
# Options read in YARN client mode
# - HADOOP_CONF_DIR, to point Spark towards Hadoop configuration files
```

```
# - SPARK_EXECUTOR_INSTANCES, Number of executors to start (Default: 2) #
- SPARK_EXECUTOR_CORES, Number of cores for the executors (Default: 1).
# - SPARK_EXECUTOR_MEMORY, Memory per Executor (e.g. 1000M, 2G) (Default: 1G)
# - SPARK_DRIVER_MEMORY, Memory for Driver (e.g. 1000M, 2G) (Default: 1G)
# Options for the daemons used in the standalone deploy mode
# - SPARK_MASTER_HOST, to bind the master to a different IP address or hostname
# - SPARK_MASTER_PORT / SPARK_MASTER_WEBUI_PORT, to use non-default ports for the master
# - SPARK_MASTER_OPTS, to set config properties only for the master (e.g. "-Dx=y")
# - SPARK_WORKER_CORES, to set the number of cores to use on this machine
# - SPARK_WORKER_MEMORY, to set how much total memory workers have to give executors (e.g. 1000m, 2g)
# - SPARK_WORKER_PORT / SPARK_WORKER_WEBUI_PORT, to use non-default ports for the worker
# - SPARK_WORKER_INSTANCES, to set the number of worker processes per node
# - SPARK_WORKER_DIR, to set the working directory of worker processes
# - SPARK_WORKER_OPTS, to set config properties only for the worker (e.g. "-Dx=y")
# - SPARK_DAEMON_MEMORY, to allocate to the master, worker and history server themselves (default: 1g). #
- SPARK_HISTORY_OPTS, to set config properties only for the history server (e.g. "-Dx=y")
# - SPARK_SHUFFLE_OPTS, to set config properties only for the external shuffle service (e.g. "-Dx=y")
# - SPARK_DAEMON_JAVA_OPTS, to set config properties for all daemons (e.g. "-Dx=y")
# - SPARK_PUBLIC_DNS, to set the public dns name of the master or workers
# Generic options for the daemons used in the standalone deploy mode
# - SPARK_CONF_DIR      Alternate conf dir. (Default: ${SPARK_HOME}/conf)
# - SPARK_LOG_DIR       Where log files are stored.  (Default: ${SPARK_HOME}/logs)
# - SPARK_PID_DIR       Where the pid file is stored. (Default: /tmp)
# - SPARK_IDENT_STRING  A string representing this instance of spark. (Default: $USER)
# - SPARK_NICENESS      The scheduling priority for daemons. (Default: 0)
# - SPARK_NO_DAEMONIZE  Run the proposed command in the foreground. It will not output a PID file.

########################################################################################################## #
Set MapR attributes and compute classpath
##########################################################################################################

# Set the spark attributes
if [ -d "/opt/mapr/spark/spark-2.1.0" ]; then
export SPARK_HOME=/opt/mapr/spark/spark-2.1.0 fi

# Load the hadoop version attributes
source /opt/mapr/spark/spark-2.1.0/mapr-util/hadoop-version-picker.sh
export HADOOP_HOME=$hadoop_home_dir export
HADOOP_CONF_DIR=$hadoop_conf_dir

# Enable mapr impersonation export
MAPR_IMPERSONATION_ENABLED=1
```

```
MAPR_HADOOP_CLASSPATH=`/opt/mapr/spark/spark-2.1.0/bin/mapr-classpath.sh`
MAPR_HADOOP_JNI_PATH=`hadoop jnipath`
MAPR_SPARK_CLASSPATH="$MAPR_HADOOP_CLASSPATH"

SPARK_MAPR_HOME=/opt/mapr

export SPARK_LIBRARY_PATH=$MAPR_HADOOP_JNI_PATH
export LD_LIBRARY_PATH="$MAPR_HADOOP_JNI_PATH:$LD_LIBRARY_PATH"

# Load the classpath generator script
source /opt/mapr/spark/spark-2.1.0/mapr-util/generate-classpath.sh

# Calculate hive jars to include in classpath generate_compatible_classpath
"spark" "2.1.0" "hive"
MAPR_HIVE_CLASSPATH=${generated_classpath} if
[ ! -z "$MAPR_HIVE_CLASSPATH" ]; then
  MAPR_SPARK_CLASSPATH="$MAPR_SPARK_CLASSPATH:$MAPR_HIVE_CLASSPATH"
fi
# Calculate hbase jars to include in classpath generate_compatible_classpath
"spark" "2.1.0" "hbase"
MAPR_HBASE_CLASSPATH=${generated_classpath} if
[ ! -z "$MAPR_HBASE_CLASSPATH" ]; then
  MAPR_SPARK_CLASSPATH="$MAPR_SPARK_CLASSPATH:$MAPR_HBASE_CLASSPATH"
  SPARK_SUBMIT_OPTS="$SPARK_SUBMIT_OPTS -Dspark.driver.extraClassPath=$MAPR_HBASE_CLASSPATH"
fi
# Set executor classpath for MESOS. Uncomment following string if you want deploy spark jobs on Mesos
#MAPR_MESOS_CLASSPATH=$MAPR_SPARK_CLASSPATH
SPARK_SUBMIT_OPTS="$SPARK_SUBMIT_OPTS -Dspark.executor.extraClassPath=$MAPR_HBASE_CLASSPATH:$MAPR_MESOS_CLASSPATH"

# Set SPARK_DIST_CLASSPATH
export SPARK_DIST_CLASSPATH=$MAPR_SPARK_CLASSPATH

# Security status source
/opt/mapr/conf/env.sh
if [ "$MAPR_SECURITY_STATUS" = "true" ]; then
  SPARK_SUBMIT_OPTS="$SPARK_SUBMIT_OPTS -Dhadoop.login=hybrid -Dmapr_sec_enabled=true" fi
 #
scala
export SCALA_VERSION=2.11
export SPARK_SCALA_VERSION=$SCALA_VERSION export
SCALA_HOME=/opt/mapr/spark/spark-2.1.0/scala export
SCALA_LIBRARY_PATH=$SCALA_HOME/lib
```

```
# Use a fixed identifier for pid files
export SPARK_IDENT_STRING="mapr"
########################################################################################################## #
:::CAUTION::: DO NOT EDIT ANYTHING ON OR ABOVE THIS LINE
##########################################################################################################


#
# MASTER HA SETTINGS
#
#export SPARK_DAEMON_JAVA_OPTS="-Dspark.deploy.recoveryMode=ZOOKEEPER  -Dspark.deploy.zookeeper.url=<zookeerper1:5181,zookeep
Djava.security.auth.login.config=/opt/mapr/conf/mapr.login.conf -Dzookeeper.sasl.client=false"


# MEMORY SETTINGS
export SPARK_DAEMON_MEMORY=1g
export SPARK_WORKER_MEMORY=16g
# Worker Directory
export SPARK_WORKER_DIR=$SPARK_HOME/tmp

# Environment variable for printing spark command everytime you run spark.Set to "1" to print. #
export SPARK_PRINT_LAUNCH_COMMAND=1


/opt/mapr/spark/spark-2.2.1/bin



>>>>>>>>>>>>>>>>>>>>>>>>>>> sparklyr<<<<<<<<<<<<<<<<<<<<<<<<<
```

Below are the instruction on how to install library for sparklyr incase asked in future.

- Go inside R as root.
- install.packages("sparklyr")
- choose 33 (for Sweden)
- it should work, incase dependencies not getting installed. We may need to do "yum install <>" for curl, xml, openssl, httr packages.

For "**sparklyr.nested**" library

- Go inside R as root.

```
Install.packages("devtools")
devtools::install_github("mitre/sparklyr.nested")
library(sparklyr.nested)
```

>>>>>>>>>>>>>>>> IMAPALA<<<<<<<<<<<<<<<<<

Whenever we will get the any impala connection issue please execute the below command from **esekilxgp01.**

clush -b -g prod "impala-shell -i localhost:21000 -q 'select 1 from bpn.summary'"

If you get "**clush: esekilx[5646-5647] (2): exited with exit code: 1**", it means on these two node there is no running impalad daemon.
If you get "**clush: esekilx[5639-5640] (2): exited with exit code: 255**", it means on these two node there are running impalad daemon, but it can't fetch data from the impala. So in that case you need to debug the impalad daemon issue on those nodes.

To test JDBC port, i.e port no: 21050 (HAPROXY port: 21051) you need to have any jdbc-database viewer like **DBeaver.**

Imapal installation steps:

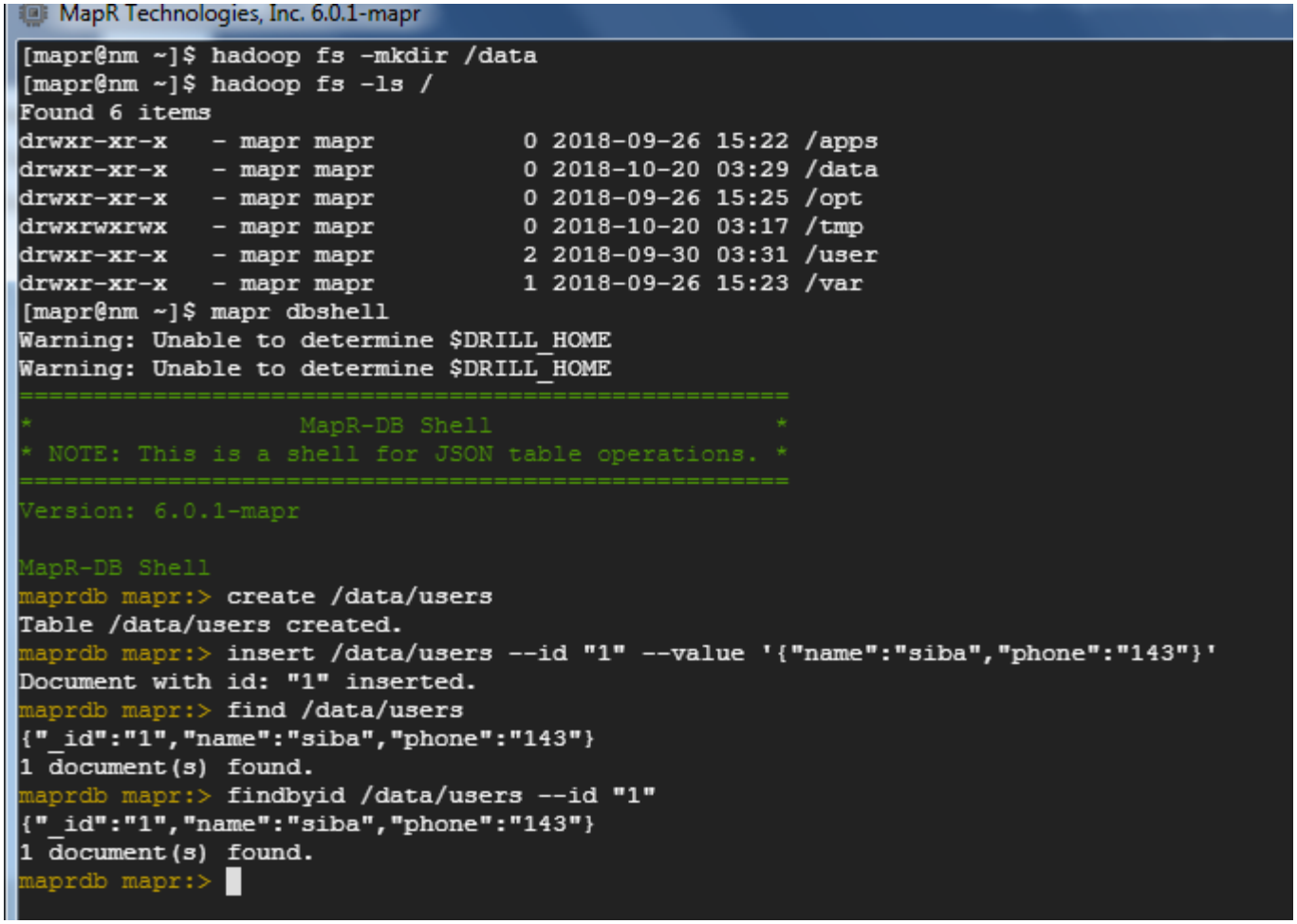
1. yum -y yum install mapr-impala mapr-impala-statestore mapr-impala-catalog mapr-impala-server
2. cd /opt/mapr/impala/impala-2.10.0/conf
3. cp /opt/mapr/hive/hive-2.3/conf/hive-site.xml .
4. chown mapr:mapr *
5. vi env.sh

```
# This MUST point to the node running statestore
IMPALA_STATE_STORE_HOST=z2.c.voltaic-racer-208109.internal
IMPALA_STATE_STORE_PORT=24000
CATALOG_SERVICE_HOST=z2.c.voltaic-racer-208109.internal

#Set the Shared Memory to 128 MB
export MAPR_CLIENT_SHMEM=16384

# These impact the impala server and can be optionally changed
IMPALA_BACKEND_PORT=22000
IMPALA_LOG_DIR=${IMPALA_HOME}/logs
IMPALA_SERVER_ARGS=" \
     -log_dir=${IMPALA_LOG_DIR} \
     -state_store_port=${IMPALA_STATE_STORE_PORT} \
     -use_statestore \
     -authorized_proxy_user_config=mapr=* \
     -state_store_host=${IMPALA_STATE_STORE_HOST} \
     -catalog_service_host=${CATALOG_SERVICE_HOST} \
     -be_port=${IMPALA_BACKEND_PORT} \
     -mem_limit=20% \
"
```

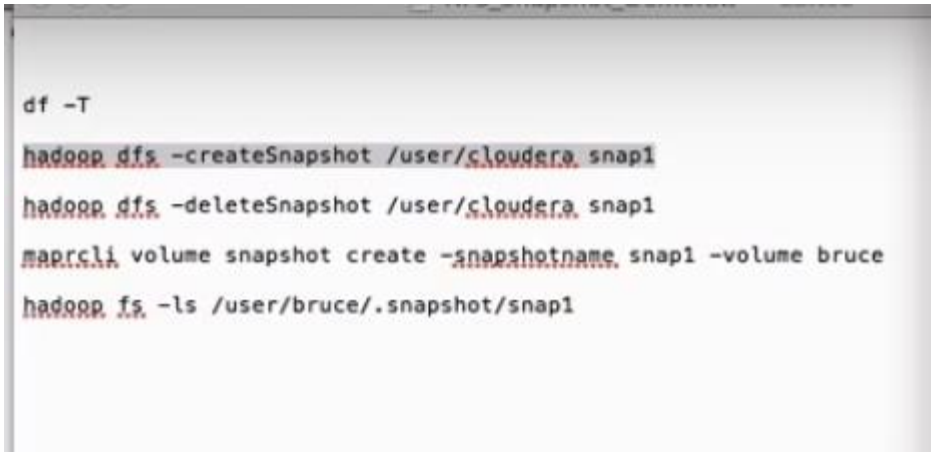
```
# /opt/mapr/server/configure.sh -R
```

```
[root@z2 conf]# /opt/mapr/server/configure.sh -R
Configuring Hadoop-2.7.0 at /opt/mapr/hadoop/hadoop-2.7.0
Done configuring Hadoop
Node setup configuration:  fileserver hbase hbinternal hive impalacatalog impalaserver impalastore nodemanager zookeeper
Log can be found at:  /opt/mapr/logs/configure.log
Configuring hive
Configuring hbase
[root@z2 conf]# su - mapr
Last login: Sat Dec 22 02:35:16 UTC 2018
[mapr@z2 ~]$ maprlogin password
[Password for user 'mapr' at cluster 'maprcluster': ]
MapR credentials of user 'mapr' for cluster 'maprcluster' are written to '/home/mapr/impersonation_ticket'
[mapr@z2 ~]$ impala-shell -i z2.c.voltaic-racer-208109.internal:21000
Starting Impala Shell without Kerberos authentication
Connected to z2.c.voltaic-racer-208109.internal:21000
Server version: impalad version 2.10.0 RELEASE (build 289c879964b9c57f0ca326992f078631bb59a29d)
***********************************************************************************
Welcome to the Impala shell.
(Impala Shell v2.10.0 (289c879) built on Tue Sep 25 21:08:08 UTC 2018)

When you set a query option it lasts for the duration of the Impala shell session.
***********************************************************************************
[z2.c.voltaic-racer-208109.internal:21000] > show databases;
Query: show databases
+------------------+----------------------------------------------+
| name             | comment                                      |
+------------------+----------------------------------------------+
| _impala_builtins | System database for Impala builtin functions |
| default          | Default Hive database                        |
| siba             |                                              |
+------------------+----------------------------------------------+
Fetched 3 row(s) in 0.33s
[z2.c.voltaic-racer-208109.internal:21000] >
```

MapR-DB


MapR Technologies, Inc. 6.0.1-mapr
[mapr@nm ~]$ hadoop fs -mkdir /data
[mapr@nm ~]$ hadoop fs -ls /
Found 6 items
drwxr-xr-x   - mapr mapr   0 2018-09-26 15:22 /apps
drwxr-xr-x   - mapr mapr   0 2018-10-20 03:29 /data
drwxr-xr-x   - mapr mapr   0 2018-09-26 15:25 /opt
drwxrwxrwx   - mapr mapr   0 2018-10-20 03:17 /tmp
drwxr-xr-x   - mapr mapr   2 2018-09-30 03:31 /user
drwxr-xr-x   - mapr mapr   1 2018-09-26 15:23 /var
[mapr@nm ~]$ mapr dbshell
Warning: Unable to determine $DRILL_HOME
Warning: Unable to determine $DRILL_HOME
MapR-DB Shell
* NOTE: This is a shell for JSON table operations. *
Version: 6.0.1-mapr
MapR-DB Shell
maprdb mapr:> create /data/users
Table /data/users created.
maprdb mapr:> insert /data/users --id "1" --value '{"name":"siba","phone":"143"}'
Document with id: "1" inserted.
maprdb mapr:> find /data/users
{"_id":"1","name":"siba","phone":"143"}
1 document(s) found.
maprdb mapr:> findbyid /data/users --id "1"
{"_id":"1","name":"siba","phone":"143"}
1 document(s) found.
maprdb mapr:>

Snapshot:




```
for i in {3..6}; do ssh 10.142.0.$i "hostname; echo -e '\n'";scp -r cldb.key ssl_keystore ssl_truststore maprserverticket
mapr@10.142.0.4:/tmp/;done

for i in {8..14}; do ssh 10.142.0.$i "hostname; echo -e '\n'";scp -r cldb.key ssl_keystore ssl_truststore maprserverticket
mapr@10.142.0.$i:/tmp/;done

scp -r cldb.key ssl_keystore ssl_truststore maprserverticket mapr@10.142.0.4:/tmp/

watch -n 1 ls -ltr

for i in {2..6}; do ssh mapr@10.142.0.$i "hostname;jps ;echo -e '\n'";done >> test.out


for i in {8..14}; do ssh mapr@10.142.0.$i "hostname;sudo systemctl start mapr-zookeeper;sudo systemctl status mapr-
zookeeper;sudo systemctl start mapr-warden;sudo systemctl status mapr-warden;echo -e '\n'";done >> service.out


rpm -qa | grep mapr | for i in `awk {'print$1'}`; do yum erase $i; done
rpm -qa | grep httpd | for i in `awk {'print$1'}`; do yum -y erase $i; done > test.txt
```

Vagrant

```
yum install gcc make kernel-devel -y
yum groupinstall " X Window System"
wget https://download.virtualbox.org/virtualbox/5.2.18/VirtualBox-5.2-5.2.18_124319_el7-1.x86_64.rpm
```

```
wget https://releases.hashicorp.com/vagrant/2.1.4/vagrant_2.1.4_x86_64.rpm

yum localinstall VirtualBox-5.2-5.2.18_124319_el7-1.x86_64.rpm
yum localinstall vagrant_2.1.4_x86_64.rpm
   /sbin/vboxconfig
   vagrant --version
    mkdir -p /siba/centos
    cd /siba/centos
   vagrant box add centos/7
   vagrant init centos/7
   vim Vagrantfile
   vagrant init centos/7
   vim Vagrantfile
   vagrant box add centos/7
   vim Vagrantfile
   vagrant box add centos/7
   vagrant ssh
   vagrant up
   vim Vagrantfile
   vagrant ssh-config
   vagrant box list
   vboxmanage stproperty machinefolder /siba/centos
   vboxmanage setproperty machinefolder /siba/centos
   vagrant up

 @@@@@@@
 #!/bin/bash
 for i in `cat prod-list`
 do echo "----$i----"
 ssh $i cp /etc/resolv.conf /etc/resolv.conf.org
 cat /root/resolv.conf | ssh root@$i 'cat > /etc/resolv.conf'
 done

 @@@@@@@@@@@@

[mapr@z2 bin]$ /opt/mapr/spark/spark-2.3.1/bin/run-example --master yarn --deploy-mode client SparkPi 10


  ./run-example --master yarn sql.hive.SparkHiveExample
 cp -p log4j.properties.template log4j.properties
 bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn ./examples/jars/spark-examples_2.11-2.1.0-mapr-
 1710.jar 10
```

```
./spark-shell --master="yarn"

Imp:
./spark-submit --class org.apache.spark.examples.SparkPi --master yarn ./examples/jars/spark-examples_2.11-2.1.0-mapr-1710.jar 10

[mapr@z2 bin]$ ./spark-submit --class org.apache.spark.examples.SparkPi --master yarn /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 10


/opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --deploy-mode cluster --driver-memory 4g --excutor-memory 2g -excutor-cores 1 /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 2


Runtime pass executor memory and cores:

/bin/spark-submit --class org.apache.spark.examples.SparkPi \
    --master yarn \
    --deploy-mode cluster \
    --driver-memory 4g \
    --executor-memory 2g \
    --executor-cores 1 \
    --queue thequeue \
    lib/spark-examples*.jar \
    10

#######$$$$

./run-example --master yarn SparkPi 20


@@@@@@@@@@@@ HAPROXY########

listen mariadb_cluster 0.0.0.0:3030
## MariaDB balance leastconn - the cluster listening on port 3030.
        mode tcp
```

```
        balance leastconn
        option httpchk
        server db1 192.168.1.11:3306 check port 9200
        server db2 192.168.1.12:3306 check port 9200

listen stats 0.0.0.0:9000
## HAProxy stats web gui running on port 9000 - username and password: test
        mode http
        stats enable
        stats uri /stats
        stats realm HAProxy\ Statistics
        stats auth test:test
        stats admin if TRUE


##########@@@@2222@@@@################

cat haproxy.cfg
#---------------------------------------------------------------------
# Example configuration for a possible web application.  See the
# full configuration options online.
#
#   http://haproxy.1wt.eu/download/1.4/doc/configuration.txt
#
#---------------------------------------------------------------------

#---------------------------------------------------------------------
# Global settings
#---------------------------------------------------------------------
global
    # to have these messages end up in /var/log/haproxy.log you will
    # need to:
    #
    # 1) configure syslog to accept network log events.  This is done
    #    by adding the '-r' option to the SYSLOGD_OPTIONS in
    #    /etc/sysconfig/syslog
    #
    # 2) configure local2 events to go to the /var/log/haproxy.log
    #   file. A line like the following can be added to
    #   /etc/sysconfig/syslog
```

```
    #
    #    local2.*                       /var/log/haproxy.log
    #
    log         127.0.0.1 local2

    chroot      /var/lib/haproxy
    pidfile     /var/run/haproxy.pid
    maxconn     4000
    user        haproxy
    group       haproxy
    daemon

    # turn on stats unix socket
    stats socket /var/lib/haproxy/stats

#---------------------------------------------------------------------
# common defaults that all the 'listen' and 'backend' sections will
# use if not designated in their block
#---------------------------------------------------------------------
defaults
    mode                    http
    log                     global
    option                  httplog
    option                  dontlognull
    option http-server-close
    option forwardfor       except 127.0.0.0/8
    option                  redispatch
    retries                 6
    timeout http-request    1m
    timeout queue           1m
    timeout connect         1m
    timeout client          1m
    timeout server          1m
    timeout http-keep-alive 1m
    timeout check           10s
    maxconn                 6000

#---------------------------------------------------------------------
# main frontend which proxys to the backends
#---------------------------------------------------------------------
```

```
frontend  main *:5000
    acl url_static       path_beg       -i /static /images /javascript /styleshe
ets
    acl url_static       path_end       -i .jpg .gif .png .css .js

    use_backend static          if url_static
    default_backend             app

#---------------------------------------------------------------------
# static backend for serving up images, stylesheets and such
#---------------------------------------------------------------------
backend static
    balance     roundrobin
    server      static 127.0.0.1:4331 check

#---------------------------------------------------------------------
# round robin balancing between the various backends
#---------------------------------------------------------------------
backend app
    balance     roundrobin
    server  app1 127.0.0.1:5001 check
    server  app2 127.0.0.1:5002 check
    server  app3 127.0.0.1:5003 check
    server  app4 127.0.0.1:5004 check


# ---------------------------------------------------------------------
# This is the setup for Impala. Impala client connect to load_balancer_host:2500
3.
# HAProxy will balance connections among the list of servers listed below.
# The list of Impalad is listening at port 21000 for beeswax (impala-shell) or o
riginal ODBC driver.
# For JDBC or ODBC version 2.x driver, use port 21050 instead of 21000.
# ---------------------------------------------------------------------
listen impala :25001
    mode tcp
    option tcplog
    balance leastconn

    server impala_ha_odbc_1 134.138.210.132:21000
```

```
    server impala_ha_odbc_2 134.138.210.133:21000
    server impala_ha_odbc_3 134.138.210.134:21000
    server impala_ha_odbc_4 134.138.210.135:21000
    server impala_ha_odbc_5 134.138.210.136:21000
    server impala_ha_odbc_6 134.138.210.137:21000
    server impala_ha_odbc_7 134.138.210.138:21000
    server impala_ha_odbc_8 134.138.210.139:21000
    server impala_ha_odbc_9 134.138.210.140:21000
    server impala_ha_odbc_10 134.138.210.141:21000
    server impala_ha_odbc_11 134.138.210.142:21000
    server impala_ha_odbc_12 134.138.210.143:21000
#    server impala_ha_odbc_13 134.138.210.144:21000
    server impala_ha_odbc_14 134.138.210.146:21000
    server impala_ha_odbc_15 134.138.210.147:21000
    server impala_ha_odbc_16 134.138.210.148:21000
    server impala_ha_odbc_17 134.138.210.149:21000
    server impala_ha_odbc_18 134.138.210.153:21000
    server impala_ha_odbc_19 134.138.210.154:21000
    server impala_ha_odbc_20 134.138.210.152:21000
    server impala_ha_odbc_21 134.138.210.155:21000
    server impala_ha_odbc_22 134.138.210.156:21000
    server impala_ha_odbc_23 134.138.210.157:21000
    server impala_ha_odbc_24 134.138.210.158:21000
    server impala_ha_odbc_25 134.138.210.151:21000
   #server impala_ha_odbc_14 134.138.210.145:21000 (server offline atm)

# --------------------------------------------------------------------
# Setup for Hue or other JDBC-enabled applications.
# In particular, Hue requires sticky sessions.
# The application connects to load_balancer_host:21051, and HAProxy balances
# connections to the associated hosts, where Impala listens for JDBC
# requests on port 21050.
# --------------------------------------------------------------------
listen impalajdbc :21051
    mode tcp
    option tcplog
    balance source
    server impala_ha_jdbc_1 134.138.210.132:21050
    server impala_ha_jdbc_2 134.138.210.133:21050
    server impala_ha_jdbc_3 134.138.210.134:21050
```

```
    server impala_ha_jdbc_4 134.138.210.135:21050
    server impala_ha_jdbc_5 134.138.210.136:21050
    server impala_ha_jdbc_6 134.138.210.137:21050
    server impala_ha_jdbc_7 134.138.210.138:21050
    server impala_ha_jdbc_8 134.138.210.139:21050
    server impala_ha_jdbc_9 134.138.210.140:21050
    server impala_ha_jdbc_10 134.138.210.141:21050
    server impala_ha_jdbc_11 134.138.210.142:21050
    server impala_ha_jdbc_12 134.138.210.143:21050
#    server impala_ha_jdbc_13 134.138.210.144:21050
    server impala_ha_jdbc_14 134.138.210.146:21050
    server impala_ha_jdbc_15 134.138.210.147:21050
    server impala_ha_jdbc_16 134.138.210.148:21050
    server impala_ha_jdbc_17 134.138.210.149:21050
    server impala_ha_jdbc_18 134.138.210.153:21050
    server impala_ha_jdbc_19 134.138.210.154:21050
    server impala_ha_jdbc_20 134.138.210.152:21050
    server impala_ha_jdbc_21 134.138.210.155:21050
    server impala_ha_jdbc_22 134.138.210.156:21050
    server impala_ha_jdbc_23 134.138.210.157:21050
    server impala_ha_jdbc_24 134.138.210.158:21050
    server impala_ha_jdbc_25 134.138.210.151:21050
   #server impala_ha_jdbc_14 134.138.210.145:21050 (server offline atm)


            sed -i -e 's/SELINUX=permissive/SELINUX=disabled/g' /etc/sysconfig/selinux

            firewall-cmd --permanent --add-port=3306/tcp

            firewall-cmd –reload


@@@@@@@@@@@@@ LUKENCRYPT########

#!/bin/bash

#yum -y install cryptsetup
#yum -y update device-mapper
# timestamp="$(date +%Y-%m-%d.%H:%M:%S)"
```

```
#mv -v /etc/crypto /etc/crypto."$timestamp"
mkdir -p /etc/crypto
chmod -R go-rw /etc/crypto

#mv -v /etc/crypttab /etc/crypttab."$timestamp"
#mv -v /opt/mapr/disks.txt /opt/mapr/disks.txt."$timestamp"
tr -dc '[:graph:]' < /dev/random | head -c "${1:-512}" > /etc/crypto/lukskey.bin
chmod go-rw /etc/crypto/lukskey.bin

disks="sda sdb sdc sdd sde sdf sdg sdh sdi sdj sdk sdl sdm sdn sdo sdp"
for f in $disks
do
#  rm -fv /etc/crypto/"$f"-key.bin
#   cryptsetup close luks-"$f"
  cryptsetup --batch-mode --use-random luksFormat /dev/"$f" /etc/crypto/lukskey.bin
  cryptsetup luksOpen /dev/"$f" luks-"$f" < /etc/crypto/lukskey.bin
  echo  luks-"$f" /dev/"$f" /etc/crypto/lukskey.bin >> /etc/crypttab
  echo  /dev/mapper/luks-"$f" >> /root/setup_files/disks.txt
done
#echo "Backup files created..."
#ls -l {/etc/crypto."$timestamp",/etc/crypttab."$timestamp",/opt/mapr/disks.txt."$timestamp"}
```

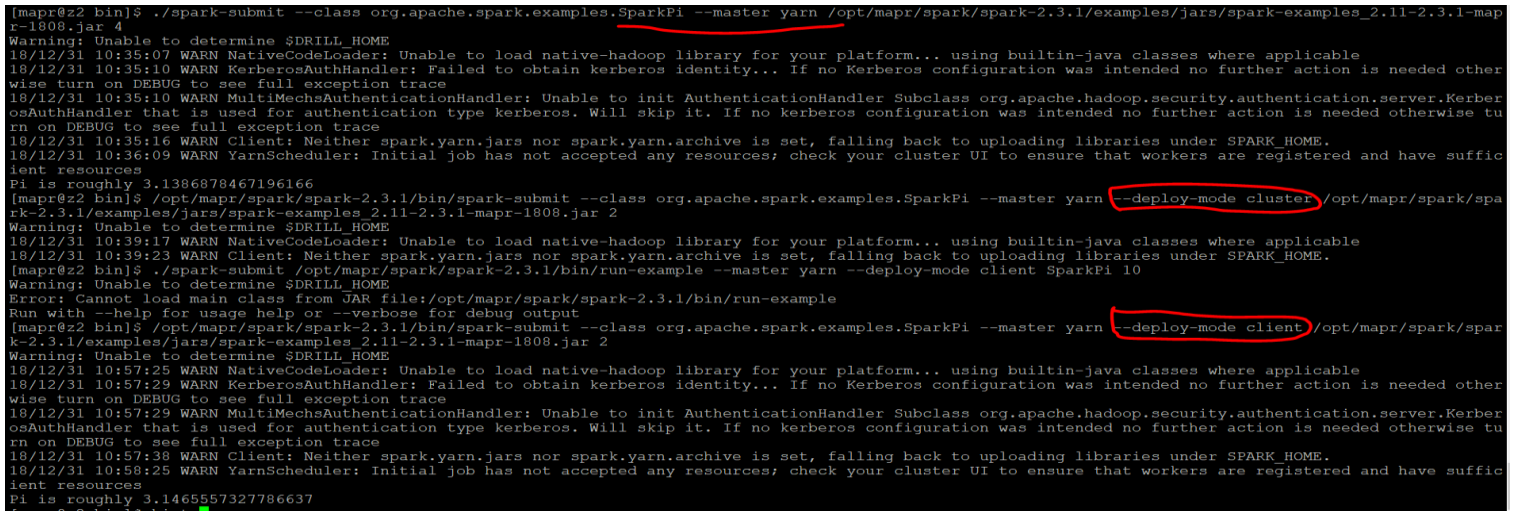
Troubleshooting Livy

```
curl -X POST --data '{"proxyUser":"ehasbja","kind": "pyspark"}' -H "Content-Type: application/json"
esekilxgp02.rnd.ki.sw.ericsson.se:8998/sessions
curl esekilxgp07.rnd.ki.sw.ericsson.se:8998/sessions/ | python -m json.tool
```

Run Yarn Job

```
[mapr@z2 bin]$ ./spark-submit --class org.apache.spark.examples.SparkPi --master yarn /opt/mapr/spark/spark-
2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 10

[mapr@z2 bin]$ /opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --
master yarn --deploy-mode cluster /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-
mapr-1808.jar 2
```

[mapr@z2 bin]$ /opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --deploy-mode **client** /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 2



/opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --deploy-mode cluster /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 2

```
[mapr@n5 hadoop-2.7.0]$ find . -name "*emaples*"
[mapr@n5 hadoop-2.7.0]$ find . -name "*examples*"
./share/hadoop/mapreduce/lib-examples
./share/hadoop/mapreduce/sources/hadoop-mapreduce-examples-2.7.0-mapr-1808-sources.jar
./share/hadoop/mapreduce/sources/hadoop-mapreduce-examples-2.7.0-mapr-1808-test-sources.jar
./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar
[mapr@n5 hadoop-2.7.0]$ yarn jar ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar
An example program must be given as the first argument.
Valid program names are:
  aggregatewordcount: An Aggregate based map/reduce program that counts the words in the input files.
  aggregatewordhist: An Aggregate based map/reduce program that computes the histogram of the words in the input files.
```

```
  bbp: A map/reduce program that uses Bailey-Borwein-Plouffe to compute exact digits of Pi.
  blocklocality: Checking Map job locality
  dbcount: An example job that count the pageview counts from a database.
  distbbp: A map/reduce program that uses a BBP-type formula to compute exact bits of Pi.
  grep: A map/reduce program that counts the matches of a regex in the input.
  join: A job that effects a join over sorted, equally partitioned datasets
  multifilewc: A job that counts words from several files.
  pentomino: A map/reduce tile laying program to find solutions to pentomino problems.
  pi: A map/reduce program that estimates Pi using a quasi-Monte Carlo method.
  randomtextwriter: A map/reduce program that writes 10GB of random textual data per node.
  randomwriter: A map/reduce program that writes 10GB of random data per node.
  secondarysort: An example defining a secondary sort to the reduce.
  sleep: A job that sleeps at each map and reduce task.
  sort: A map/reduce program that sorts the data written by the random writer.
  sudoku: A sudoku solver.
  teracheckѕum: Compute checksum of terasort output to compare with teragen checksum.
  teragen: Generate data for the terasort
  teragenwithcrc: Generate data for the terasort with CRC checksum
  terasort: Run the terasort
  terasortwithcrc: Run the terasort with CRC checksum
  teravalidate: Checking results of terasort
  teravalidaterecords: Checking results of terasort in terms of missing/duplicate records
  teravalidatewithcrc: Checking results of terasort along with crc verification
  wordcount: A map/reduce program that counts the words in the input files.
  wordmean: A map/reduce program that counts the average length of the words in the input files.
  wordmedian: A map/reduce program that counts the median length of the words in the input files.
  wordstandarddeviation: A map/reduce program that counts the standard deviation of the length of the
words in the input files.
[mapr@n5 hadoop-2.7.0]$  vi /tmp/a.txt
[mapr@n5 hadoop-2.7.0]$ hadoop fs -put /tmp/a.txt /tmp/a.txt
[mapr@n5 hadoop-2.7.0]$ ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount
/tmp/a.txt
bash: ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar: Permission denied
```

```
[mapr@n5 hadoop-2.7.0]$  vi /tmp/a.txt
[mapr@n5 hadoop-2.7.0]$ hadoop fs -put /tmp/a.txt /tmp/a.txt
[mapr@n5 hadoop-2.7.0]$ ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount
/tmp/a.txt
bash: ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar: Permission denied
[mapr@n5 hadoop-2.7.0]$ exit
[root@n5 conf]# cd /opt/mapr/hadoop/hadoop-2.7.0/
[root@n5 hadoop-2.7.0]# ll

[root@n5 hadoop-2.7.0]# ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount
/tmp/a.txt
-bash: ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar: Permission denied
[root@n5 hadoop-2.7.0]# su mapr
[mapr@n5 hadoop-2.7.0]$ maprlogin password
[Password for user 'mapr' at cluster 'maprcluster': ]
MapR credentials of user 'mapr' for cluster 'maprcluster' are written to '/tmp/maprticket_5000'
[mapr@n5 hadoop-2.7.0]$ ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount
/tmp/a.txt
bash: ./share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.0-mapr-1808.jar: Permission denied
[mapr@n5 hadoop-2.7.0]$ cd ./share/hadoop/mapreduce/
[mapr@n5 mapreduce]$ ls -lrt


[mapr@n5 mapreduce]$ chmod 777 hadoop-mapreduce-examples-2.7.0-mapr-1808.jar
chmod: changing permissions of ‘hadoop-mapreduce-examples-2.7.0-mapr-1808.jar’: Operation not permitted

[mapr@n5 mapreduce]$ exit
[root@n5 hadoop-2.7.0]# cd ./share/hadoop/mapreduce/
[root@n5 mapreduce]# chmod 777 hadoop-mapreduce-examples-2.7.0-mapr-1808.jar
[root@n5 mapreduce]# ./hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount /tmp/a.txt
invalid file (bad magic number): Exec format error
[root@n5 mapreduce]# ./hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount /tmp/a.txt /tmp/output
invalid file (bad magic number): Exec format error
[root@n5 mapreduce]# yarn jar /hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount /tmp/a.txt
/tmp/output
```

```
Not a valid JAR: /hadoop-mapreduce-examples-2.7.0-mapr-1808.jar
[root@n5 mapreduce]# yarn jar ./hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount /tmp/a.txt
/tmp/output

[root@n5 mapreduce]# su mapr
[mapr@n5 mapreduce]$ yarn jar ./hadoop-mapreduce-examples-2.7.0-mapr-1808.jar wordcount /tmp/a.txt
/tmp/output
18/11/15 09:50:11 INFO client.RMProxy: Connecting to ResourceManager at n1.us-east1-b.c.main-form-
217005.internal/10.142.0.3:8032
18/11/15 09:50:12 INFO input.FileInputFormat: Total input paths to process : 1
18/11/15 09:50:12 INFO mapreduce.JobSubmitter: number of splits:1
18/11/15 09:50:12 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1542263789247_0007
18/11/15 09:50:13 INFO security.ExternalTokenManagerFactory: Initialized external token manager class -
com.mapr.hadoop.yarn.security.MapRTicketManager
18/11/15 09:50:13 INFO impl.YarnClientImpl: Submitted application application_1542263789247_0007
18/11/15 09:50:13 INFO mapreduce.Job: The url to track the job: https://n1.us-east1-b.c.main-form-
217005.internal:8090/proxy/application_1542263789247_0007/
18/11/15 09:50:13 INFO mapreduce.Job: Running job: job_1542263789247_0007
18/11/15 09:50:25 INFO mapreduce.Job: Job job_1542263789247_0007 running in uber mode : false
18/11/15 09:50:25 INFO mapreduce.Job:  map 0% reduce 0%
18/11/15 09:50:45 INFO mapreduce.Job:  map 100% reduce 0%
18/11/15 09:50:58 INFO mapreduce.Job:  map 100% reduce 100%
18/11/15 09:50:59 INFO mapreduce.Job: Job job_1542263789247_0007 completed successfully
18/11/15 09:50:59 INFO mapreduce.Job: Counters: 46
        File System Counters
                FILE: Number of bytes read=0
                FILE: Number of bytes written=199163
                FILE: Number of read operations=0
                FILE: Number of large read operations=0
                FILE: Number of write operations=0
                MAPRFS: Number of bytes read=6482
                MAPRFS: Number of bytes written=5596
                MAPRFS: Number of read operations=595
                MAPRFS: Number of large read operations=0
                MAPRFS: Number of write operations=1605
```

```
Job Counters
        Launched map tasks=1




        MAPRFS: Number of bytes read=6482
        MAPRFS: Number of bytes written=5596
        MAPRFS: Number of read operations=595
        MAPRFS: Number of large read operations=0
        MAPRFS: Number of write operations=1605
Job Counters
        Launched map tasks=1
        Launched reduce tasks=1
        Data-local map tasks=1
        Total time spent by all maps in occupied slots (ms)=17773
        Total time spent by all reduces in occupied slots (ms)=31101
        Total time spent by all map tasks (ms)=17773
        Total time spent by all reduce tasks (ms)=10367
        Total vcore-seconds taken by all map tasks=17773
        Total vcore-seconds taken by all reduce tasks=10367
        Total megabyte-seconds taken by all map tasks=18199552
        Total megabyte-seconds taken by all reduce tasks=31847424
        DISK_MILLIS_MAPS=8887
        DISK_MILLIS_REDUCES=13788
Map-Reduce Framework
        Map input records=31
        Map output records=336
        Map output bytes=3560
        Map output materialized bytes=0
        Input split bytes=84
        Combine input records=336
        Combine output records=145
        Reduce input groups=145
        Reduce shuffle bytes=2044
```

```
                Reduce input records=145
                Reduce output records=145
                Spilled Records=290
                Shuffled Maps =1
                Failed Shuffles=0
                Merged Map outputs=2
                GC time elapsed (ms)=292
                CPU time spent (ms)=1010
                Physical memory (bytes) snapshot=777093120
                Virtual memory (bytes) snapshot=7567470592
                Total committed heap usage (bytes)=1013710848
        Shuffle Errors
                IO_ERROR=0
        File Input Format Counters
                Bytes Read=2274
        File Output Format Counters
                Bytes Written=1468
[mapr@n5 mapreduce]$
```

$$$$$$$$$$$$$$$$$$$$$$###### Hue #####$$$$$$$$$$$$$$$
1.cp -r /usr/lib/python2.7/site-packages/google_compute_engine /opt/mapr/hue/hue-4.2.0/build/env/lib/python2.7/site-packages/
2.yum install mapr-hue

Changed in the hue.init

```
[root@esekilx5638 conf]# diff --suppress-common-lines -y hue.ini hue.ini_16_11_2018
  hive_server_host=esekilx5636.rnd.ki.sw.ericsson.se          |
hive_server_host=esekilx5636.rnd.ki.sw.ericsson.se,esekilx5
  #hive_conf_dir=/opt/mapr/hive/hive-2.1/conf                 |   # hive_conf_dir=/opt/mapr/hive/hive-
2.1
```

```
  mechanism=none                                                  |   mechanism=${mechanism}
  server_host=esekilx5634.rnd.ki.sw.ericsson.se                   |   ## server_host=localhost
  server_port=21051                                               |   ## server_port=21050
```

For google cloud:

```
cp -r /usr/lib/python2.7/site-packages/google_compute_engine /opt/mapr/hue/hue-4.2.0/build/env/lib/python2.7/site-packages/
```

##########################dynamic allocation##############

#vi /opt/mapr/spark/spark-2.1.0/conf/spark-defaults.conf

 # END OF THE SECURITY CONFIGURATION BLOCK

```
##############################################
spark.dynamicAllocation.enabled  true
spark.shuffle.service.enabled  true
spark.dynamicAllocation.minExecutors 0
spark.executor.instances 0
spark.authenticate true
spark.executor.heartbeatInterval 1800s
spark.network.timeout 2400s
```

```
more spark-defaults.conf
# Default system properties included when running spark-submit.
# This is useful for setting default environmental settings.

# Log effective Spark configuration at startup on INFO level
spark.logConf                     true
```

```
# Enable event logs for HistoryServer
spark.eventLog.enabled             true
spark.eventLog.dir                 maprfs:///apps/spark/logs
spark.history.fs.logDirectory      maprfs:///apps/spark/logs

# Default location for Warehouse, if not using Hive
spark.sql.warehouse.dir /warehouse/spark

# Fix for SPARK-7819
spark.sql.hive.metastore.sharedPrefixes
com.mysql.jdbc,org.postgresql,com.microsoft.sqlserver,oracle.jdbc,com.mapr.fs.shim.LibraryLoader,com.map
r.security.
JNISecurity,com.mapr.fs.jni,com.mapr.fs.ShimLoader

spark.executor.memory              2g

spark.yarn.archive maprfs:///apps/spark/spark-jars.zip

spark.history.ui.port 18080
# SECURITY BLOCK
# ALL SECURITY PROPERTIES MUST BE PLACED IN THIS BLOCKG
# Security
# - ACLS

spark.acls.enable       true
spark.admin.acls        mapr
spark.admin.acls.groups maprg
spark.authenticate.secret       changeMe
spark.authenticate true
spark.ssl.enabled true
spark.io.encryption.enabled     true
spark.io.encryption.keySizeBits 128
spark.ssl.fs.enabled true
spark.ssl.keyPassword mapr123
spark.ssl.keyStore /opt/mapr/conf/ssl_keystore
```

```
spark.ssl.keyStorePassword mapr123
spark.ssl.trustStore /opt/mapr/conf/ssl_truststore
spark.ssl.trustStorePassword mapr123
spark.ssl.protocol tls
spark.ssl.enabledAlgorithms TLS_RSA_WITH_AES_128_CBC_SHA,TLS_RSA_WITH_AES_256_CBC_SHA
spark.authenticate.enableSaslEncryption true
spark.network.sasl.serverAlwaysEncrypt  true
##########################dynamic allocation##############
# END OF THE SECURITY CONFIGURATION BLOCK

##########################################
spark.dynamicAllocation.enabled  true
spark.shuffle.service.enabled  true
spark.dynamicAllocation.minExecutors 0
spark.executor.instances 0
spark.authenticate true
spark.executor.heartbeatInterval 1800s
spark.network.timeout 2400s

[root@esekilxgp01 ~/dynamic_alloction]# clush -b -g dev 'cp -p /opt/mapr/hadoop/hadoop-
2.7.0/etc/hadoop/yarn-env.sh /opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop/yarn-env.sh.14NOV2018.bak'

[root@esekilxgp01 ~/dynamic_alloction]# clush -b -g dev --copy yarn-env.sh --dest
/opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop/

[root@esekilxgp01 ~/dynamic_alloction]# clush -b -g dev 'cp -p /opt/mapr/hadoop/hadoop-
2.7.0/etc/hadoop/yarn-site.xml /opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop/yarn-site.xml.14NOV2018.bak'

[root@esekilxgp01 ~/dynamic_alloction]# clush -b -g dev --copy yarn-site.xml --dest
/opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop/

clush -b -g dev 'ls -lrt /opt/mapr/spark/spark-2.1.0/yarn/spark-2.1.0-mapr-1707-yarn-shuffle.jar'

clush -b -g dev 'cp /opt/mapr/spark/spark-2.1.0/yarn/spark-2.1.0-mapr-1710-yarn-shuffle.jar
/opt/mapr/hadoop/hadoop-2.7.0/share/hadoop/yarn/lib/'
```

$$$$$$$$#######yarn-site.xml########$$$$$

```
<property>
   <name>yarn.nodemanager.aux-services</name>
   <value>mapreduce_shuffle,mapr_direct_shuffle,spark_shuffle</value>
 </property>

 <property>
   <name>yarn.nodemanager.aux-services.spark_shuffle.class</name>
   <value>org.apache.spark.network.yarn.YarnShuffleService</value>
 </property>

    <property>
      <name>spark.authenticate</name>
      <value>true</value>
  </property>
```

--

```
<property>
<name>yarn.resourcemanager.webapp.address</name>
<value>8088</value>
</property>
```

```
#/opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --
deploy-mode cluster /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 2
```

```
# yarn logs -applicationId application_1638783255_7394792 > /tmp/application_1638783255_7394792.log

# grep -i spark-2.1.0-mapr-1710-yarn-shuffle.jar /tmp/application_1638783255_7394792.log
```

Mapr loglive ticket

```
maprlogin generateticket -type service -out /tmp/long_ticket -duration 3650:0:0 -renewal 3650:0:0 -user mapr
```


```
maprlogin generateticket -type service -out /tmp/long_ticket -duration 3650:0:0 -renewal 3650:0:0 -user mapr
```

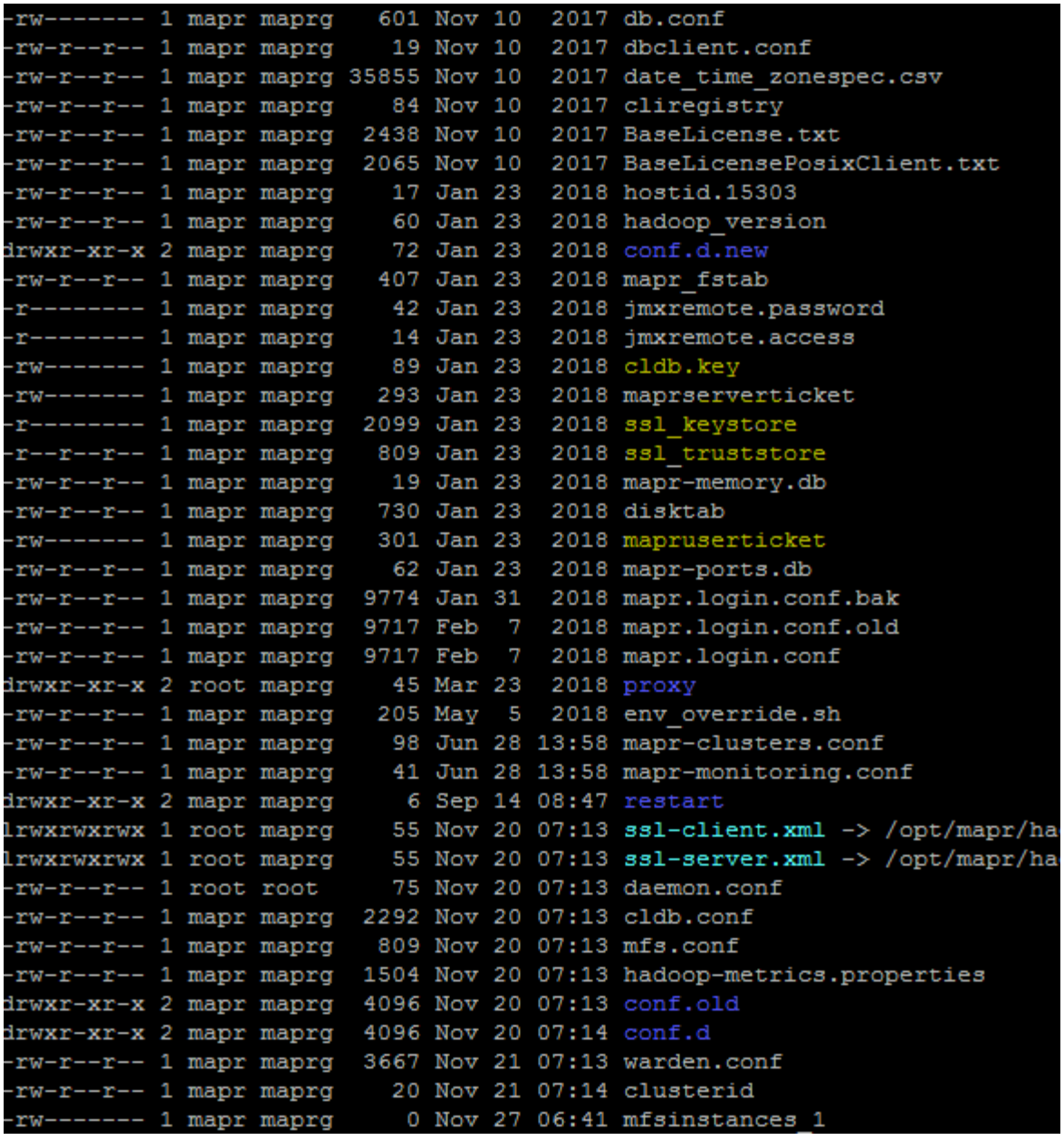

maprlogin generateticket -type servicewithimpersonation -user enaysib -out /var/tmp/impersonation_ticket -duration 9999:0:0 -renewal

or

maprlogin generateticket -type servicewithimpersonation -user mapr -out /var/tmp/impersonation_ticket -duration 30:0:0 -renewal 90:0:0

https://mapr.com/docs/52/SecurityGuide/GeneratingServiceWithImpersonationTicket.html

```
[root@master01 tmp]# su - mapr
Last login: Wed Dec 12 06:36:23 UTC 2018 on pts/0
[mapr@master01 ~]$ maprlogin password
[Password for user 'mapr' at cluster 'maprcluster': ]
MapR credentials of user 'mapr' for cluster 'maprcluster' are written to '/tmp/maprticket_5000'
[mapr@master01 ~]$ maprlogin generateticket -type servicewithimpersonation -user mapr -out /var/tmp/impersonation_ticket -duration 30:0:0 -renewal 90:0:0
MapR credentials of user 'mapr' for cluster 'maprcluster' are written to '/var/tmp/impersonation_ticket'
[mapr@master01 ~]$ cat /var/tmp/impersonation_ticket
maprcluster WZMQ23CL/jNVgIY60uGAZp/RIEXJn1Ij3J5B4ShwquxERJal3c1ErgPY2JWoqQXgPqqDYCiD/YB/HHqzQefudTvZdRIwzNGNBoxvNDa+cRTb6upRlX/wz9bIKiNDtnlfXG1yTf1hshdLr8Vfjd3TH7/
E1cfnrXi57vNF5X3qe4WLhYrWjSWHnTw3OYCqXIlb0N8V7rCsntmHFpTwN8eVIRpuW03WSeqoQCKZHWjXZ2yTsdiGcCcmLobDYQC4uMVFyHTckUwX/yh/xT/2ooAu1jqCsjhFjg=
[mapr@master01 ~]$
```


-rw------- 1 mapr maprg 601 Nov 10 2017 db.conf
-rw-r--r-- 1 mapr maprg 19 Nov 10 2017 dbclient.conf
-rw-r--r-- 1 mapr maprg 35855 Nov 10 2017 date_time_zonespec.csv
-rw-r--r-- 1 mapr maprg 84 Nov 10 2017 cliregistry
-rw-r--r-- 1 mapr maprg 2438 Nov 10 2017 BaseLicense.txt
-rw-r--r-- 1 mapr maprg 2065 Nov 10 2017 BaseLicensePosixClient.txt
-rw-r--r-- 1 mapr maprg 17 Jan 23 2018 hostid.15303
-rw-r--r-- 1 mapr maprg 60 Jan 23 2018 hadoop_version
drwxr-xr-x 2 mapr maprg 72 Jan 23 2018 conf.d.new
-rw-r--r-- 1 mapr maprg 407 Jan 23 2018 mapr_fstab
-r-------- 1 mapr maprg 42 Jan 23 2018 jmxremote.password
-r-------- 1 mapr maprg 14 Jan 23 2018 jmxremote.access
-rw------- 1 mapr maprg 89 Jan 23 2018 cldb.key
-rw------- 1 mapr maprg 293 Jan 23 2018 maprserverticket
-r-------- 1 mapr maprg 2099 Jan 23 2018 ssl_keystore
-r--r--r-- 1 mapr maprg 809 Jan 23 2018 ssl_truststore
-rw-r--r-- 1 mapr maprg 19 Jan 23 2018 mapr-memory.db
-rw-r--r-- 1 mapr maprg 730 Jan 23 2018 disktab
-rw------- 1 mapr maprg 301 Jan 23 2018 maprusertícket
-rw-r--r-- 1 mapr maprg 62 Jan 23 2018 mapr-ports.db
-rw-r--r-- 1 mapr maprg 9774 Jan 31 2018 mapr.login.conf.bak
-rw-r--r-- 1 mapr maprg 9717 Feb 7 2018 mapr.login.conf.old
-rw-r--r-- 1 mapr maprg 9717 Feb 7 2018 mapr.login.conf
drwxr-xr-x 2 root maprg 45 Mar 23 2018 proxy
-rw-r--r-- 1 mapr maprg 205 May 5 2018 env_override.sh
-rw-r--r-- 1 mapr maprg 98 Jun 28 13:58 mapr-clusters.conf
-rw-r--r-- 1 mapr maprg 41 Jun 28 13:58 mapr-monitoring.conf
drwxr-xr-x 2 mapr maprg 6 Sep 14 08:47 restart
lrwxrwxrwx 1 root maprg 55 Nov 20 07:13 ssl-client.xml -> /opt/mapr/ha
lrwxrwxrwx 1 root maprg 55 Nov 20 07:13 ssl-server.xml -> /opt/mapr/ha
-rw-r--r-- 1 root root 75 Nov 20 07:13 daemon.conf
-rw-r--r-- 1 mapr maprg 2292 Nov 20 07:13 cldb.conf
-rw-r--r-- 1 mapr maprg 809 Nov 20 07:13 mfs.conf
-rw-r--r-- 1 mapr maprg 1504 Nov 20 07:13 hadoop-metrics.properties
drwxr-xr-x 2 mapr maprg 4096 Nov 20 07:13 conf.old
drwxr-xr-x 2 mapr maprg 4096 Nov 20 07:14 conf.d
-rw-r--r-- 1 mapr maprg 3667 Nov 21 07:13 warden.conf
-rw-r--r-- 1 mapr maprg 20 Nov 21 07:14 clusterid
-rw------- 1 mapr maprg 0 Nov 27 06:41 mfsinstances_1

OTSDB-72

Issue: The memory allocated to OpenTSDB can be insufficient, resulting in empty graphs and out-of-memory or `GC overhead limit exceeded` errors.

Workaround: Increase the default memory for OpenTSDB by making the following changes on all OpenTSDB nodes:

1. Edit the `/opt/mapr/conf/conf.d/warden.opentsdb.conf` file to change:

```
2. service.heapsize.max=2000
```

```
service.heapsize.min=2000
```

to

```
service.heapsize.max=6000
service.heapsize.min=6000
```

3. Edit the `/opt/mapr/opentsdb/opentsdb-*/etc/init.d/opentsdb` file to change:

```
4. $
```

```
{JVMXMX:=-Xmx2000m -Xss1m -XX:MaxMetaspaceSize=128m}
```

to

```
$
{JVMXMX:=-Xmx6000m -Xss1m -XX:MaxMetaspaceSize=128m}
```

5. Restart the OpenTSDB service:

```
maprcli node services -name opentsdb -nodes <space-separated list of OpenTSDB nodes> -action restart
```

```
#################Hue #################

1.cp -r /usr/lib/python2.7/site-packages/google_compute_engine /opt/mapr/hue/hue-4.2.0/build/env/lib/python2.7/site-packages/
2.yum install mapr-hue
3. cd /opt/mapr/hue/hue-4.2.0/desktop/conf
 vi hue.ini



4./opt/mapr/server/configure.sh -R
```

----------R and sparkR and Spark and hive ----------

```
[root@esekilxgp05 ~]# yum install R

[root@esekilxgp05 ~]# which R
Set $HOME in /usr/bin and its show in env
[root@esekilxgp05 ~]# cat .bash_profile
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
. ~/.bashrc fi

# User specific environment and startup programs

PATH=$PATH:$HOME/bin

export PATH
```

```
[root@esekilxgp05 ~]# env

PATH=/usr/lib64/qt-
3.3/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/root/bin:/usr/java/jdk1.8.0_161//bin:/usr/java/
```

For sparkR and Spark and hive--------------------

```
[root@esekilxgp05 ~]# yum install -y mapr-spark mapr-hive
 00000
```

```
yum install mapr-spark mapr-spark-master mapr-spark-historyserver mapr-spark-thriftserver
```

```
[mapr@n2 bin]$ hadoop fs -mkdir /apps/spark
[mapr@n2 bin]$ hadoop fs -chmod 777 /apps/spark
 [mapr@n2 bin]$ logout
[root@n2 conf]# /opt/mapr/server/configure.sh -R

 00000
```

```
[root@esekilxgp05 ~]# cd  /opt/mapr/spark/spark-2.1.0/conf/
```

```
[root@esekilxgp05 ~]#ls -ltar

-rwxr-xr-x  1 mapr maprg 7191 Oct 11 07:51 spark-env.sh
-rw-r--r--  1 mapr maprg 3727 Oct 11 07:51 hive-site.xml
-rw-r--r--  1 mapr maprg 1749 Oct 11 07:52 spark-defaults.conf
```

```
[root@esekilxgp05 ~]# vi spark-defaults.conf

Add below files:

spark.yarn.dist.files = /opt/mapr/spark/spark-2.1.0/conf/hive-site.xml
```

```
spark.sql.hive.metastore.version = 1.2.0



[root@esekilxgp05 conf]# cat hive-site.xml
<?xml version="1.0"?>
<!--
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or more contributor license agreements.  See the NOTICE file
distributed with this work for additional information
regarding copyright ownership.  The ASF licenses this file   to
you under the Apache License, Version 2.0 (the
  "License"); you may not use this file except in compliance
with the License.  You may obtain a copy of the License at

       http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,   WITHOUT
WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.   See the
License for the specific language governing permissions and   limitations
under the License.
-->
<configuration>

            <property>
        <name>javax.jdo.option.ConnectionURL</name>
        <value>jdbc:mysql://esekilxgp06.rnd.ki.sw.ericsson.se:3306/hive?createDatabaseIfNotExist=true</value>
<description>JDBC connect string for a JDBC metastore</description>
    </property>

    <property>
        <name>javax.jdo.option.ConnectionDriverName</name>
        <value>com.mysql.jdbc.Driver</value>
        <description>Driver class name for a JDBC metastore</description>
</property>

    <property>
        <name>javax.jdo.option.ConnectionUserName</name>
        <value>hive</value>
        <description>username to use against metastore database</description>
</property>
```

```
    <property>
        <name>javax.jdo.option.ConnectionPassword</name>
        <value>CyT4cPPfwDs</value>
        <description>password to use against metastore database</description>

    </property>
        <property>
        <name>hive.metastore.schema.verification</name>
        <value>false</value>
    </property>

    <property>
        <name>hive.metastore.uris</name>
        <value>thrift://esekilx5636.rnd.ki.sw.ericsson.se:9083,thrift://esekilx5637.rnd.ki.sw.ericsson.se:9083</value>
    </property>
    <!-- For hive server2 -->
    <property>
        <name>hive.server2.enable.doAs</name>
        <value>true</value>
    </property>
    <!-- For hive server2 and meta store -->
    <property>
        <name>hive.metastore.execute.setugi</name>
        <value>true</value>
    </property>

    <property>
        <name>hive.metastore.warehouse.dir</name>
        <value>/project/rdi/warehouse/hive</value>
        <description>location of default database for the warehouse</description>
</property>

 <property>
    <name>hive.metastore.try.direct.sql</name>
    <value>true</value>
    <description>
      Whether the Hive metastore should try to use direct SQL queries instead of the
      DataNucleus for certain read paths. This can improve metastore performance when
fetching many partitions or column statistics by orders of magnitude; however, it       is
not guaranteed to work on all RDBMS-es and all versions. In case of SQL failures,
the metastore will fall back to the DataNucleus, so it's safe even if SQL doesn't
work for all queries on your datastore. If all SQL queries fail (for example, your
```

```
metastore is backed by MongoDB), you might want to disable this to save the       try-and-
fall-back cost.
    </description>
        </property>
<property>
    <name>hive.metastore.client.socket.timeout</name>
    <value>1800s</value>
    <description>
      Expects a time value with unit (d/day, h/hour, m/min, s/sec, ms/msec, us/usec, ns/nsec), which is sec if not
specified.
      MetaStore Client socket timeout in seconds
    </description>
</property>

<property>
<name>hive.metastore.sasl.enabled </name>
<value>false</value>
</property>


</configuration>



[root@esekilxgp05 conf]# cat spark-env.sh

#!/usr/bin/env bash

#
# Licensed to the Apache Software Foundation (ASF) under one or more
# contributor license agreements.  See the NOTICE file distributed with #
this work for additional information regarding copyright ownership.
# The ASF licenses this file to You under the Apache License, Version 2.0
# (the "License"); you may not use this file except in compliance with
# the License.  You may obtain a copy of the License at #
#    http://www.apache.org/licenses/LICENSE-2.0
#
# Unless required by applicable law or agreed to in writing, software
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and #
limitations under the License.
#
```

```
# This file is sourced when running various Spark programs.
# Copy it as spark-env.sh and edit that to configure Spark for your site.

# Options read when launching programs locally with
# ./bin/run-example or ./bin/spark-submit
# - HADOOP_CONF_DIR, to point Spark towards Hadoop configuration files
# - SPARK_LOCAL_IP, to set the IP address Spark binds to on this node
# - SPARK_PUBLIC_DNS, to set the public dns name of the driver program #
- SPARK_CLASSPATH, default classpath entries to append

# Options read by executors and drivers running inside the cluster
# - SPARK_LOCAL_IP, to set the IP address Spark binds to on this node
# - SPARK_PUBLIC_DNS, to set the public DNS name of the driver program
# - SPARK_CLASSPATH, default classpath entries to append
# - SPARK_LOCAL_DIRS, storage directories to use on this node for shuffle and RDD data
# - MESOS_NATIVE_JAVA_LIBRARY, to point to your libmesos.so if you use Mesos
# Options read in YARN client mode
# - HADOOP_CONF_DIR, to point Spark towards Hadoop configuration files
# - SPARK_EXECUTOR_INSTANCES, Number of executors to start (Default: 2) #
- SPARK_EXECUTOR_CORES, Number of cores for the executors (Default: 1).
# - SPARK_EXECUTOR_MEMORY, Memory per Executor (e.g. 1000M, 2G) (Default: 1G)
# - SPARK_DRIVER_MEMORY, Memory for Driver (e.g. 1000M, 2G) (Default: 1G)
# Options for the daemons used in the standalone deploy mode
# - SPARK_MASTER_HOST, to bind the master to a different IP address or hostname
# - SPARK_MASTER_PORT / SPARK_MASTER_WEBUI_PORT, to use non-default ports for the master
# - SPARK_MASTER_OPTS, to set config properties only for the master (e.g. "-Dx=y")
# - SPARK_WORKER_CORES, to set the number of cores to use on this machine
# - SPARK_WORKER_MEMORY, to set how much total memory workers have to give executors (e.g. 1000m, 2g)
# - SPARK_WORKER_PORT / SPARK_WORKER_WEBUI_PORT, to use non-default ports for the worker
# - SPARK_WORKER_INSTANCES, to set the number of worker processes per node
# - SPARK_WORKER_DIR, to set the working directory of worker processes
# - SPARK_WORKER_OPTS, to set config properties only for the worker (e.g. "-Dx=y")
# - SPARK_DAEMON_MEMORY, to allocate to the master, worker and history server themselves (default: 1g). #
- SPARK_HISTORY_OPTS, to set config properties only for the history server (e.g. "-Dx=y")
# - SPARK_SHUFFLE_OPTS, to set config properties only for the external shuffle service (e.g. "-Dx=y")
# - SPARK_DAEMON_JAVA_OPTS, to set config properties for all daemons (e.g. "-Dx=y")
# - SPARK_PUBLIC_DNS, to set the public dns name of the master or workers
# Generic options for the daemons used in the standalone deploy mode
# - SPARK_CONF_DIR      Alternate conf dir. (Default: ${SPARK_HOME}/conf)
# - SPARK_LOG_DIR       Where log files are stored.  (Default: ${SPARK_HOME}/logs)
# - SPARK_PID_DIR       Where the pid file is stored. (Default: /tmp)
# - SPARK_IDENT_STRING  A string representing this instance of spark. (Default: $USER)
```

```
# - SPARK_NICENESS      The scheduling priority for daemons. (Default: 0)
# - SPARK_NO_DAEMONIZE  Run the proposed command in the foreground. It will not output a PID file.

############################################################################################################ #
Set MapR attributes and compute classpath
############################################################################################################

# Set the spark attributes
if [ -d "/opt/mapr/spark/spark-2.1.0" ]; then
export SPARK_HOME=/opt/mapr/spark/spark-2.1.0 fi

# Load the hadoop version attributes
source /opt/mapr/spark/spark-2.1.0/mapr-util/hadoop-version-picker.sh
export HADOOP_HOME=$hadoop_home_dir export
HADOOP_CONF_DIR=$hadoop_conf_dir

# Enable mapr impersonation export
MAPR_IMPERSONATION_ENABLED=1

MAPR_HADOOP_CLASSPATH=`/opt/mapr/spark/spark-2.1.0/bin/mapr-classpath.sh`
MAPR_HADOOP_JNI_PATH=`hadoop jnipath`
MAPR_SPARK_CLASSPATH="$MAPR_HADOOP_CLASSPATH"

SPARK_MAPR_HOME=/opt/mapr

export SPARK_LIBRARY_PATH=$MAPR_HADOOP_JNI_PATH
export LD_LIBRARY_PATH="$MAPR_HADOOP_JNI_PATH:$LD_LIBRARY_PATH"

# Load the classpath generator script
source /opt/mapr/spark/spark-2.1.0/mapr-util/generate-classpath.sh

# Calculate hive jars to include in classpath generate_compatible_classpath
"spark" "2.1.0" "hive"
MAPR_HIVE_CLASSPATH=${generated_classpath} if
[ ! -z "$MAPR_HIVE_CLASSPATH" ]; then
  MAPR_SPARK_CLASSPATH="$MAPR_SPARK_CLASSPATH:$MAPR_HIVE_CLASSPATH"
fi
# Calculate hbase jars to include in classpath generate_compatible_classpath
"spark" "2.1.0" "hbase"
MAPR_HBASE_CLASSPATH=${generated_classpath} if
[ ! -z "$MAPR_HBASE_CLASSPATH" ]; then
  MAPR_SPARK_CLASSPATH="$MAPR_SPARK_CLASSPATH:$MAPR_HBASE_CLASSPATH"
```

```
  SPARK_SUBMIT_OPTS="$SPARK_SUBMIT_OPTS -Dspark.driver.extraClassPath=$MAPR_HBASE_CLASSPATH"
fi
# Set executor classpath for MESOS. Uncomment following string if you want deploy spark jobs on Mesos
#MAPR_MESOS_CLASSPATH=$MAPR_SPARK_CLASSPATH
SPARK_SUBMIT_OPTS="$SPARK_SUBMIT_OPTS -Dspark.executor.extraClassPath=$MAPR_HBASE_CLASSPATH:$MAPR_MESOS_CLASSPATH"

# Set SPARK_DIST_CLASSPATH
export SPARK_DIST_CLASSPATH=$MAPR_SPARK_CLASSPATH

# Security status source
/opt/mapr/conf/env.sh
if [ "$MAPR_SECURITY_STATUS" = "true" ]; then
  SPARK_SUBMIT_OPTS="$SPARK_SUBMIT_OPTS -Dhadoop.login=hybrid -Dmapr_sec_enabled=true" fi
 #
scala
export SCALA_VERSION=2.11
export SPARK_SCALA_VERSION=$SCALA_VERSION export
SCALA_HOME=/opt/mapr/spark/spark-2.1.0/scala export
SCALA_LIBRARY_PATH=$SCALA_HOME/lib

# Use a fixed identifier for pid files
export SPARK_IDENT_STRING="mapr"
################################################################################################################ #
:::CAUTION::: DO NOT EDIT ANYTHING ON OR ABOVE THIS LINE
################################################################################################################


#
# MASTER HA SETTINGS
#
#export SPARK_DAEMON_JAVA_OPTS="-Dspark.deploy.recoveryMode=ZOOKEEPER  -Dspark.deploy.zookeeper.url=<zookeerper1:5181,zookeep
Djava.security.auth.login.config=/opt/mapr/conf/mapr.login.conf -Dzookeeper.sasl.client=false"


# MEMORY SETTINGS
export SPARK_DAEMON_MEMORY=1g
export SPARK_WORKER_MEMORY=16g
# Worker Directory
export SPARK_WORKER_DIR=$SPARK_HOME/tmp

# Environment variable for printing spark command everytime you run spark.Set to "1" to print. #
export SPARK_PRINT_LAUNCH_COMMAND=1
```

/opt/mapr/spark/spark-2.2.1/bin

http://35.227.126.16:4040

```
[root@z2 jars]# pwd
/opt/mapr/spark/spark-2.3.1/jars
[root@z2 jars]# zip /opt/mapr/spark/spark-2.3.1/spark-jars.zip ./*
  adding: aircompressor-0.8.jar (deflated 8%)
  adding: ant-1.8.2.jar (deflated 8%)
  adding: ant-launcher-1.8.2.jar (deflated 8%)
  adding: antlr-2.7.7.jar (deflated 5%)
  adding: antlr4-runtime-4.7.jar (deflated 9%)
  adding: antlr-runtime-3.4.jar (deflated 9%)
  adding: aopalliance-repackaged-2.4.0-b34.jar (deflated 34%)
  adding: apache-log4j-extras-1.2.17.jar (deflated 10%)
  adding: arpack_combined_all-0.1.jar (deflated 9%)
  adding: arrow-format-0.8.0.jar (deflated 13%)
  adding: arrow-memory-0.8.0.jar (deflated 8%)
  adding: arrow-vector-0.8.0.jar (deflated 8%)
  adding: automaton-1.11-8.jar (deflated 12%)
  adding: avro-mapred-1.7.7-hadoop2.jar (deflated 10%)
```

```
[root@z2 ~]# cd /opt/mapr/spark/spark-2.3.1/jars/
[root@z2 jars]# ls -ltr
total 222180
-rw-r--r--. 1 mapr mapr    417620 Sep 23 01:59 spark-sql-kafka-0-10_2.11-2.3.1-mapr-1808.jar
-rw-r--r--. 1 mapr mapr      3142 Sep 23 01:59 macro-compat_2.11-1.1.1.jar
-rw-r--r--. 1 mapr mapr    589462 Sep 23 01:59 json4s-core_2.11-3.2.11.jar
-rw-r--r--. 1 mapr mapr    627814 Sep 23 01:59 joda-time-2.9.3.jar
-rw-r--r--. 1 mapr mapr     32612 Sep 23 01:59 jackson-module-jaxb-annotations-2.6.7.jar
-rw-r--r--. 1 mapr mapr   1671083 Sep 23 01:59 hppc-0.7.2.jar
-rw-r--r--. 1 mapr mapr    103547 Sep 23 01:59 hive-shims-common-1.2.0-mapr-spark-MEP-6.0.0-1808.jar
-rw-r--r--. 1 mapr mapr    241367 Sep 23 01:59 commons-compress-1.4.1.jar
-rw-r--r--. 1 mapr mapr     79150 Sep 23 01:59 arrow-memory-0.8.0.jar
-rw-r--r--. 1 mapr mapr     26514 Sep 23 01:59 stax-api-1.0.1.jar
-rw-r--r--. 1 mapr mapr    652640 Sep 23 01:59 spark-yarn_2.11-2.3.1-mapr-1808.jar
-rw-r--r--. 1 mapr mapr   8693606 Sep 23 01:59 spark-sql_2.11-2.3.1-mapr-1808.jar
-rw-r--r--. 1 mapr mapr   7739224 Sep 23 01:59 spark-mllib_2.11-2.3.1-mapr-1808.jar
-rw-r--r--. 1 mapr mapr   1305708 Sep 23 01:59 spark-hive_2.11-2.3.1-mapr-1808.jar
-rw-r--r--. 1 mapr mapr    671138 Sep 23 01:59 scala-xml_2.11-1.0.5.jar
-rw-r--r--. 1 mapr mapr   2796935 Sep 23 01:59 parquet-hadoop-bundle-1.6.0.jar
-rw-r--r--. 1 mapr mapr     19827 Sep 23 01:59 opencsv-2.3.jar
-rw-r--r--. 1 mapr mapr    120465 Sep 23 01:59 metrics-core-3.1.5.jar
-rw-r--r--. 1 mapr mapr    370119 Sep 23 01:59 lz4-java-1.4.0.jar
-rw-r--r--. 1 mapr mapr   7015233 Sep 23 01:59 kubernetes-model-2.0.0.jar
-rw-r--r--. 1 mapr mapr    764569 Sep 23 01:59 jtransforms-2.4.0.jar
-rw-r--r--. 1 mapr mapr    201124 Sep 23 01:59 jdo-api-3.0.1.jar
-rw-r--r--. 1 mapr mapr    258919 Sep 23 01:59 jackson-core-2.6.7.jar
-rw-r--r--. 1 mapr mapr      5603 Sep 23 01:59 hive-shims-scheduler-1.2.0-mapr-spark-MEP-6.0.0-1808.jar
-rw-r--r--. 1 mapr mapr   1908681 Sep 23 01:59 datanucleus-rdbms-4.1.19.jar
-rw-r--r--. 1 mapr mapr    366748 Sep 23 01:59 datanucleus-api-jdo-4.2.4.jar
-rw-r--r--. 1 mapr mapr     79845 Sep 23 01:59 compress-lzf-1.0.3.jar
-rw-r--r--. 1 mapr mapr     96221 Sep 23 01:59 commons-pool-1.5.4.jar
-rw-r--r--. 1 mapr mapr   2035066 Sep 23 01:59 commons-math3-3.4.1.jar
-rw-r--r--. 1 mapr mapr     60483 Sep 23 01:59 chill-java-0.8.4.jar
-rw-r--r--. 1 mapr mapr    224167 Sep 23 01:59 chill_2.11-0.8.4.jar
-rw-r--r--. 1 mapr mapr    144660 Sep 23 01:59 xbean-asm5-shaded-4.4.jar
-rw-r--r--. 1 mapr mapr     15071 Sep 23 01:59 transaction-api-1.1.jar
```

```
[root@z2 jars]# su - mapr
Last login: Sat Jan  5 14:40:24 UTC 2019
[mapr@z2 ~]$ maprlogin passwd
List of commands:

       password       authenticate to a mapr cluster using a valid password
       kerberos       authenticate to a mapr cluster using kerberos
       print          print information on your existing credentials
       authtest       test authentication as a generic client
       end / logout   logout of cluster
       renew   renew existing credentials for a mapr cluster
       generateticket  generate a ticket of particular type
[mapr@z2 ~]$ maprlogin password
[Password for user 'mapr' at cluster 'maprcluster': ]
MapR credentials of user 'mapr' for cluster 'maprcluster' are written to '/home/mapr/impersonation_ticket'
[mapr@z2 ~]$ hadoop fs -put /opt/mapr/spark/spark-2.3.1/spark-jars.zip /user/mapr/
[mapr@z2 ~]$ hadoop fs -ls /user/mapr/
Found 3 items
drwxr-xr-x   - mapr mapr          0 2019-01-02 09:13 /user/mapr/.sparkStaging
-rwxr-xr-x   3 mapr mapr  203313424 2019-01-05 14:55 /user/mapr/spark-jars.zip
drwxr-xr-x   - mapr mapr          1 2018-12-21 09:49 /user/mapr/tmp
[mapr@z2 ~]$ /opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --deploy-mode client /opt/mapr/spark/spa
2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 2
Warning: Unable to determine $DRILL_HOME
19/01/05 14:59:08 WARN NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
19/01/05 14:59:12 WARN KerberosAuthHandler: Failed to obtain kerberos identity... If no Kerberos configuration was intended no further action is needed ot
wise turn on DEBUG to see full exception trace
19/01/05 14:59:12 WARN MultiMechsAuthenticationHandler: Unable to init AuthenticationHandler Subclass org.apache.hadoop.security.authentication.server.Ker
osAuthHandler that is used for authentication type kerberos. Will skip it. If no kerberos configuration was intended no further action is needed otherwise
rn on DEBUG to see full exception trace
19/01/05 14:59:17 WARN Client: Neither spark.yarn.jars nor spark.yarn.archive is set, falling back to uploading libraries under SPARK_HOME.
Pi is roughly 3.140875704378522
[mapr@z2 ~]$
```

```
[mapr@z2 ~]$ maprlogin password
[Password for user 'mapr' at cluster 'maprcluster': ]
MapR credentials of user 'mapr' for cluster 'maprcluster' are written to '/home/mapr/impersc
[mapr@z2 ~]$ /opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.
xamples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 2
Warning: Unable to determine $DRILL_HOME
19/01/06 03:50:46 WARN NativeCodeLoader: Unable to load native-hadoop library for your platf
19/01/06 03:50:53 WARN KerberosAuthHandler: Failed to obtain kerberos identity... If no Kerb
rn on DEBUG to see full exception trace
19/01/06 03:50:53 WARN MultiMechsAuthenticationHandler: Unable to init AuthenticationHandler
andler that is used for authentication type kerberos. Will skip it. If no kerberos configura
 see full exception trace
Pi is roughly 3.140515702578513
[mapr@z2 ~]$ cd /opt/mapr/spark/spark-2.3.1/conf
[mapr@z2 conf]$ tail -f  spark-defaults.conf
spark.network.sasl.serverAlwaysEncrypt  true
# - IO Encryption
spark.io.encryption.enabled      true
spark.io.encryption.keySizeBits 128

# END OF THE SECURITY CONFIGURATION BLOCK
#Newly added spark context#####

spark.yarn.archive maprfs:///user/mapr/spark-jars.zip
```

```
# Enable event logs for HistoryServer
spark.eventLog.enabled                  true
spark.eventLog.dir                      maprfs:///apps/spark
spark.history.fs.logDirectory           maprfs:///apps/spark


spark.yarn.dist.files = /opt/mapr/spark/spark-2.3.1/conf/hive-site.xml
spark.sql.hive.metastore.version = 2.3

# Default location for Warehouse, if not using Hive
spark.sql.warehouse.dir                 maprfs:///user/${system:user.name}/spark-wa

# Fix for SPARK-7819
spark.sql.hive.metastore.sharedPrefixes  com.mysql.jdbc,org.postgresql,com.mic
ity,com.mapr.fs.jni,com.mapr.fs.ShimLoader

spark.executor.memory                   2g

spark.yarn.historyServer.address z2.c.voltaic-racer-208109.internal:18480
spark.history.ui.port 18080
# SECURITY BLOCK
# ALL SECURITY PROPERTIES MUST BE PLACED IN THIS BLOCK

# ssl
spark.ssl.historyServer.port 18480
spark.ssl.enabled true
spark.ssl.ui.enabled false
spark.ssl.fs.enabled true
spark.ssl.trustStore /opt/mapr/conf/ssl_truststore
spark.ssl.keyStore /opt/mapr/conf/ssl_keystore
spark.ssl.protocol TLSv1.2
```

>>>>>>>>>>>>>>>>>>>>>>>>>>>> sparklyr<<<<<<<<<<<<<<<<<<<<<<<<

Below are the instruction on how to install library for sparklyr incase asked in future.

- Go inside R as root.
- install.packages("sparklyr")
- choose 33 (for Sweden)
- it should work, incase dependencies not getting installed. We may need to do "yum install <>" for curl, xml, openssl, httr packages.

For "**sparklyr.nested**" library

- Go inside R as root.

```
Install.packages("devtools")
devtools::install_github("mitre/sparklyr.nested")
library(sparklyr.nested)
```

[root@z2 ~]# /opt/mapr/server/configure.sh -secure -Z master01.c.voltaic-racer-208109.internal:5181,z1.c.voltaic-racer-208109.internal:5181,z2.c.voltaic-racer-208109.internal:5181 -C master01.c.voltaic-racer-208109.internal:7222 -RM master01.c.voltaic-racer-208109.internal,z1.c.voltaic-racer-208109.internal -HS z1.c.voltaic-racer-208109.internal -N maprcluster -u mapr -g mapr -noDB

Disk Failure

Troubleshooting Steps: Disk Failure

```
udevadm control --reload-rules && udevadm trigger
```

1> Check disk status
Command :maprcli disk list -host 15.102.58.99
2> Check storage pool status
/opt/mapr/server/mrconfig sp list
if sp is offline then check which sp is offline and see the disk status of that sp.

3> If disk is failed then Check current disk state.(This command will show you the current state of the block device)
Command: cat /sys/block/<disk>/device/state
The required output will be: “running”
running
4> Check the “DMESG” command for issues on a specific disk.(This command is ideally helpful to determine whether there is an “I/O error” on any disks or any activity on the system generally.)
Command dmesg | grep <disk>
example: dmesg | grep -i sdd
sd 6:0:0:3: [sdd] Unhandled error code
sd 6:0:0:3: [sdd] Result: hostbyte=DID_OK driverbyte=DRIVER_TIMEOUT
sd 6:0:0:3: [sdd] CDB: Write(10): 2a 00 5e a2 9e 00 00 04 00 00
sd 6:0:0:3: [sdd] killing request
sd 6:0:0:3: [sdd] Unhandled error code
end_request: I/O error, dev sdd, sector 1587712512
end_request: I/O error, dev sdd, sector 1587711488
end_request: I/O error, dev sdd, sector 1587710464
end_request: I/O error, dev sdd, sector 1587709440
end_request: I/O error, dev sdd, sector 1587708416
sd 6:0:0:3: [sdd] Result: hostbyte=DID_NO_CONNECT driverbyte=DRIVER_OK
sd 6:0:0:3: [sdd] CDB: Read(10): 28 00 cf e2 64 40 00 00 10 00
end_request: I/O error, dev sdd, sector 3487720512
5>If there is a significant error such as “I/O error” or the state of the disks are not showing “running”, please do contact to Linux(Hardware Team) for more verification. Further checks will be done from UX/LX team.
6>If this appears to be a software failure, ask them to replace it with a new disk.
7> after replacement,Run the command "maprcli disk remove -host 127.0.0.1 -disks /dev/sdd" to remove /dev/sdd from MapR-FS.(better do it from MCS)
8> In addition to /dev/sdd, the above command removes all the disks that belong to the same storage pool, from MapR-FS.
(Note down the names of all removed disks.)
9> Add all the above removed disks (exclude /dev/sdd) and the new disk to MapR-FS by running the command:
(if the disk added by EITTE it will be a raw disk so, use the following)
cryptsetup --batch-mode --use-random luksFormat /dev/sdg /etc/crypto/lukskey.bin
cryptsetup luksOpen /dev/sdg luks-sdg < /etc/crypto/lukskey.bin
Command "maprcli disk add -host 127.0.0.1 -disks <comma separated list of disks>"
If there is no new disk, the command would just be:
"maprcli disk add -host 127.0.0.1 -disks /dev/sdy,/dev/sdz"

/opt/mapr/server/disksetup -F -W 4 disks.txt
/opt/mapr/server/mrconfig sp list
/opt/mapr/server/mrconfig sp list -v

10> Stop and Start the warden

Collectd

1. Install the following rpms for open source collectd (RPM can be downloaded from https://pkg.ci.collectd.org/rpm/collectd-5.8/epel-7-x86_64/)

```
collectd-5.8.0.74.g0c85475-8.el7.centos.x86_64.rpm
collectd-write_prometheus-5.8.0.74.g0c85475-8.el7.centos.x86_64.rpm
collectd-rrdtool-5.8.0.74.g0c85475-8.el7.centos.x86_64.rpm
collectd-disk-5.8.0.74.g0c85475-8.el7.centos.x86_64.rpm
```

2.Open collectd configuration file.

```
vi /etc/collectd.conf
```

3.Make sure that the following plugins are enabled in LoadPlugin section:

```
LoadPlugin cpu
LoadPlugin df
LoadPlugin disk
LoadPlugin interface
LoadPlugin load
LoadPlugin memory
LoadPlugin uptime
LoadPlugin users
LoadPlugin write_prometheus
```

There might be more enabled plugins, it is fine. But they will not be used by the monitor at the moment.

4.Update plugin configurations as described below.

For "disk" plugin:

```
<Plugin disk>
    Disk "/^[hs]d[a-f][0-9]?$/"
    IgnoreSelected false
</Plugin>
```

For "write_prometheus" plugin:

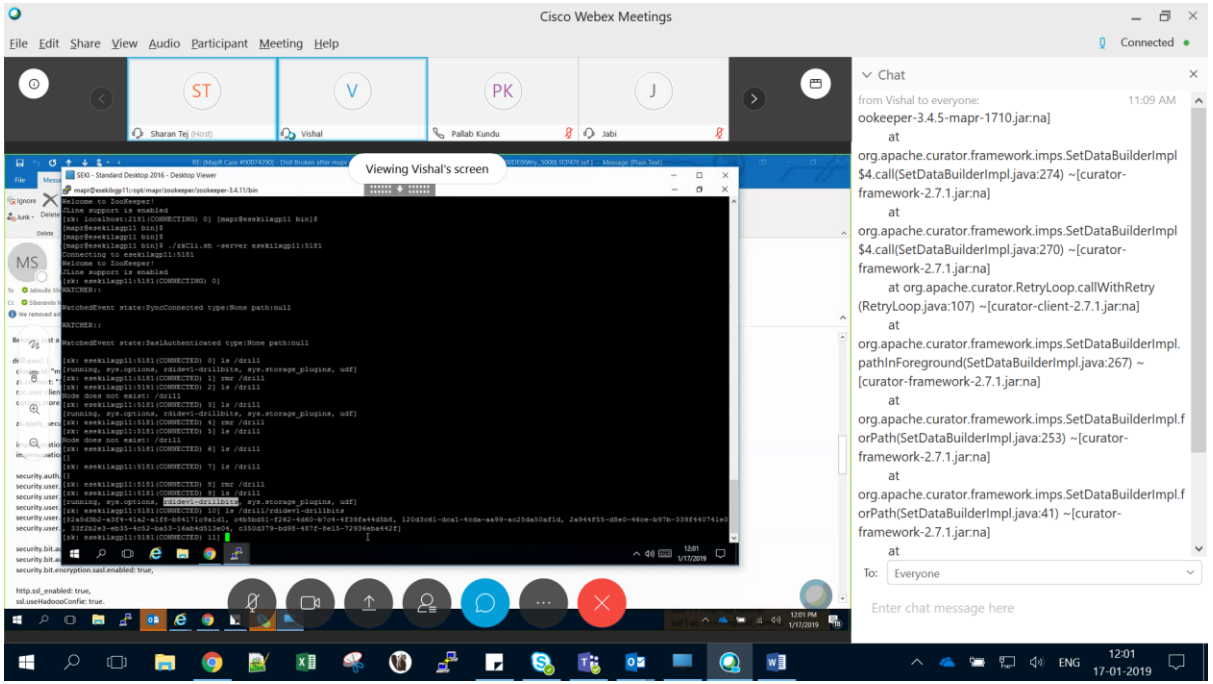
```
<Plugin write_prometheus>
    Port "9103"
</Plugin>
```

5.Restart collectd

```
systemctl restart collectd
```

6.Make sure that prometheus stats are available:
curl localhost:9103

Drillbit



1. **[root@esekilxgp09 conf]# cat drill-override.conf**

```
drill.exec: {
  cluster-id: "rdidev1-drillbits",
  zk.connect:
"esekilxgp11.rnd.ki.sw.ericsson.se:5181,esekilxgp12.rnd.ki.sw.ericsson.se:5181,esekilxgp01.rnd.ki.sw.ericsson.se:5181",
  rpc.user.client.threads: "4",
```

```
  options.store.parquet.block-size: "268435456",
  zk.apply_secure_acl: true,

  impersonation.enabled: true,
  impersonation.max_chained_user_hops: 3,

  security.auth.mechanisms: ["MAPRSASL", "PLAIN"],
  security.user.auth.enabled: true,
  security.user.auth.packages += "org.apache.drill.exec.rpc.user.security",
  security.user.auth.impl: "pam4j",
  security.user.auth.pam_profiles: ["sudo", "login"],
  security.user.encryption.sasl.enabled: true,

  security.bit.auth.enabled: true,
  security.bit.auth.mechanism: "MAPRSASL",
  security.bit.encryption.sasl.enabled: true,

  http.ssl_enabled: true,
  ssl.useHadoopConfig: true,

}
```

2. [root@esekilxgp09 conf]# cat distrib-env.sh

```
# This file is empty by default. Default Drill environment settings appear
# in drill-config.sh. Distributions can replace this file with a
# distribution-specific version that sets environment variables and options
# specific to that distribution. Users should not put anything in this file;
# put user options in drill-env.sh instead.

# MapR-specific environment settings for Drill

export HADOOP_VERSION=`cat /opt/mapr/hadoop/hadoopversion`
export HADOOP_HOME=${HADOOP_HOME:-"/opt/mapr/hadoop/hadoop-${HADOOP_VERSION}"}
#Enable JMX for MaprMonitoring
DRILL_JMX_OPTS="-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.authenticate=true -
Dcom.sun.management.jmxremote.password.file=/opt/mapr/conf/jmxremote.password -
Dcom.sun.management.jmxremote.access.file=/opt/mapr/conf/jmxremote.access -Dcom.sun.management.jmxremote.ssl=false -
Dcom.sun.management.jmxremote.port=6090"

export DRILL_JAVA_OPTS="${DRILL_JAVA_OPTS} ${DRILL_JMX_OPTS} -Djava.io.tmpdir=/tmp/drill -
Djava.security.auth.login.config=/opt/mapr/conf/mapr.login.conf -Dhadoop.login=hybrid_keytab -Dzookeeper.sasl.client=true"
export DRILL_LOG_DIR=${DRILL_LOG_DIR:-"/opt/mapr/drill/drill-1.14.0/logs"}
```

```
export DRILL_PID_DIR=${DRILL_PID_DIR:-"/opt/mapr/pid"}
export MAPR_IMPERSONATION_ENABLED=${MAPR_IMPERSONATION_ENABLED:-"true"}

# Only set MAPR_TICKETFILE_LOCATION when invoked in context of drillbit setup NOT sqlline. It is expected
# to generate a separate ticket when sqlline is used.
if [ "$DRILLBIT_CONTEXT" = "1" ]; then
    export MAPR_TICKETFILE_LOCATION=${MAPR_TICKETFILE_LOCATION:-"/opt/mapr/conf/maprserticket"}
fi
export SQLLINE_JAVA_OPTS="${SQLLINE_JAVA_OPTS} -
Ddrill.customAuthFactories=org.apache.drill.exec.rpc.security.maprsasl.MapRSaslFactory -Dzookeeper.sasl.client=true -
Djava.security.auth.login.config=/opt/mapr/conf/mapr.login.conf"
```

3. **[root@esekilxgp09 conf]# cat drill-env.sh**

```
#
# Licensed to the Apache Software Foundation (ASF) under one
# or more contributor license agreements.  See the NOTICE file
# distributed with this work for additional information
# regarding copyright ownership.  The ASF licenses this file
# to you under the Apache License, Version 2.0 (the
# "License"); you may not use this file except in compliance
# with the License.  You may obtain a copy of the License at
#
# http://www.apache.org/licenses/LICENSE-2.0
#
# Unless required by applicable law or agreed to in writing, software
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.
#

# This file provides a variety of site-specific settings to control Drill
# launch settings. These are settings required when launching the Drillbit
# or sqlline processes using Java. Some settings are for both, some for one
# or the other.
#
# Variables may be set in one of four places:
#
#   Environment (per run)
#   drill-env.sh (this file, per site)
#   distrib-env.sh (per distribution)
```

```
#   drill-config.sh (Drill defaults)
#
# Properties "inherit" from items lower on the list, and may be "overridden" by items
# higher on the list. In the environment, just set the variable:
#
#   export FOO=value
#
# To support inheritance from the environment, you must set values as shown below:
#
#   export FOO=${FOO:-"value"}
#
# or a more specialized form.

# Amount of total memory for the Drillbit process. This value is defined as the limit
# that the startup script will try to enforce on the Drill JVM. The values can be
# defined in terms of percentage of the available system memory, or in terms of actual
# values, similar to how we define the actual JVM memory parameters like Heap Size.
# There is no default and depends on how much can be allotted on a machine.
# This enables Drill's memory auto-configuration logic to kick in, and should be unset
# if the intent is to not use the auto-configuration.

#export DRILLBIT_MAX_PROC_MEM=${DRILLBIT_MAX_PROC_MEM:-"13G"}

# Amount of heap memory for the Drillbit process. Values are those supported by
# the Java -Xms option. The default is 4G.

#export DRILL_HEAP=${DRILL_HEAP:-"4G"}

# Maximum amount of direct memory to allocate to the Drillbit in the format
# supported by -XX:MaxDirectMemorySize. Default is 8G.

#export DRILL_MAX_DIRECT_MEMORY=${DRILL_MAX_DIRECT_MEMORY:-"8G"}

# Native library path passed to Java. Note: use this form instead
# of the old form of DRILLBIT_JAVA_OPTS="-Djava.library.path=<dir>"
# The old form is not compatible with Drill-on-YARN.

# export DRILL_JAVA_LIB_PATH="<lib1>:<lib2>"

# Value for the code cache size for the Drillbit. Because the Drillbit generates
# code, it benefits from a large cache. Default is 1G.

#export DRILLBIT_CODE_CACHE_SIZE=${DRILLBIT_CODE_CACHE_SIZE:-"1G"}
```

```
# Provide a customized host name for when the default mechanism is not accurate

#export DRILL_HOST_NAME=`hostname`

# Base name for Drill log files. Files are named ${DRILL_LOG_NAME}.out, etc.

# DRILL_LOG_NAME="drillbit"

# Location to place Drill logs. Set to $DRILL_HOME/log by default.

#export DRILL_LOG_DIR=${DRILL_LOG_DIR:-$DRILL_HOME/log}

# Location to place the Drillbit pid file when running as a daemon using
# drillbit.sh start.
# Set to $DRILL_HOME by default.

#export DRILL_PID_DIR=${DRILL_PID_DIR:-$DRILL_HOME}

# Default (Standard) CGroup Location: /sys/fs/cgroup
# Specify the cgroup location if it is different from the default
#export SYS_CGROUP_DIR=${SYS_CGROUP_DIR:-"/sys/fs/cgroup"}

# CGroup to which the Drillbit belongs when running as a daemon using drillbit.sh start .
# Drill will use CGroup for CPU enforcement only.

# Unset $DRILLBIT_CGROUP by default
#export DRILLBIT_CGROUP=${DRILLBIT_CGROUP:-"drillcpu"}

# Custom JVM arguments to pass to the both the Drillbit and sqlline. Typically
# used to override system properties as shown below. Empty by default.

#export DRILL_JAVA_OPTS="$DRILL_JAVA_OPTS -Dproperty=value"

# As above, but only for the Drillbit. Empty by default.

#export DRILLBIT_JAVA_OPTS="$DRILLBIT_JAVA_OPTS -Dproperty=value"

# Process priority (niceness) for the Drillbit when running as a daemon.
# Defaults to 0.

#export DRILL_NICENESS=${DRILL_NICENESS:-0}
```

```
# Custom class path for Drill. In general, you should put your custom libraries into
# your site directory's jars subfolder ($DRILL_HOME/conf/jars by default, but can be
# customized with DRILL_CONF_DIR or the --config argument. But, if you must reference
# jar files in other locations, you can add them here. These jars are added to the
# Drill classpath after all Drill-provided jars. Empty by default.

# custom="/your/path/here:/your/second/path"
# if [ -z "$DRILL_CLASSPATH" ]; then
#   export DRILL_CLASSPATH=${DRILL_CLASSPATH:$custom}
# else
#   export DRILL_CLASSPATH="$custom"
# fi

# Extension classpath for things like HADOOP, HBase and so on. Set as above.

# EXTN_CLASSPATH=...

# Note that one environment variable can't be set here: DRILL_CONF_DIR.
# That variable tells Drill the location of this file, so this file can't
# set it. Instead, you can set it in the environment, or using the
# --config option of drillbit.sh or sqlline.

#------------------------------------------------------------------------------
# The following are "advanced" options seldom used except when diagnosing
# complex issues.
#
# The prefix class path appears before any Drill-provided classpath entries.
# Use it to override Drill jars with specialized versions.

#export DRILL_CLASSPATH_PREFIX=...

# Enable garbage collection logging in the Drillbit. Logging goes to
# $DRILL_LOG_DIR/drillbit.gc. A value of 1 enables logging, all other values
# (including the default unset value) disables logging.

#export SERVER_LOG_GC=${SERVER_LOG_GC:-1}

# JVM options when running the sqlline Drill client.
# These are used ONLY in non-embedded mode; these
# are client-only settings. (The Drillbit settings are used when Drill
# is embedded.)

#export SQLLINE_JAVA_OPTS=""
```

```
# Arguments passed to sqlline (the Drill shell) at all times: whether
# Drill is embedded in Sqlline or not.

#export DRILL_SHELL_JAVA_OPTS="..."

# Location Drill should use for temporary files, such as downloaded dynamic UDFs jars.
# Set to "/tmp" by default.
#
# export DRILL_TMP_DIR="..."

# Block to put environment variable known to both Sqlline and Drillbit, but needs to be
# differently set for both. OR set for one and unset for other.
#
# if [ "$DRILLBIT_CONTEXT" = "1" ]; then
#   Set environment variable value to be consumed by Drillbit
# else
#   Set environment variable value to be consumed by Sqlline
# fi
#

export MAPR_IMPERSONATION_ENABLED=true
export MAPR_TICKETFILE_LOCATION=/opt/mapr/conf/maprserticket
export DRILLBIT_JAVA_OPTS="-Djava.library.path=/opt/JPam-1.1/"
export DRILL_JAVA_OPTS="$DRILL_JAVA_OPTS -Djava.security.auth.login.config=/opt/mapr/conf/mapr.login.conf -
Dzookeeper.sasl.client=true"
export DRILL_JAVA_OPTS="$DRILL_JAVA_OPTS -Dmapr_sec_enabled=true -Dhadoop.login=maprsasl_keytab -
Dzookeeper.saslprovider=com.mapr.security.maprsasl.MaprSaslProvider -Dmapr.library.flatclass"
[root@esekilxgp09 conf]#
```

Description

Initially, issue was with the properties defined in drill-override.conf file.
After the file is modified as suggested, new property was added which enabled secure acl's on drill znodes.
Due to which there was permission issue in creating a znode under /drill/sys.options because the initial znodes were created without any acl's.

We have set zk.apply_secure_acl: true in drill-override.conf and zookeeper.sasl.client=true in drill-env.sh and distrib-env.sh, deleted the /drill znode and restarted the drillbits.
Now the znodes got created with proper acl's and the issue got resolved.

@Vishal Regarding your question about the zk acl property :

- without zk.apply_secure_acl, znodes are created with below acl.

[zk: sharan61:5181(CONNECTED) 4] getAcl /drill/demo.mapr.com-drillbits 'world,'anyone
: cdrwa
[zk: sharan61:5181(CONNECTED) 5] getAcl /drill/demo.mapr.com-drillbits/bead46af-41bd-40d3-8fe8-d97f6d1ee5a8
'world,'anyone
: cdrwa

Here, everyone was write access on the znode.

- with zk.apply_secure_acl, znodes are created with below acl.

[zk: sharan02.tej.com:5181(CONNECTED) 2] getAcl /drill/me.sharantej.com-drillbits 'world,'anyone
: r
'sasl,'mapr
: cdrwa
[zk: sharan02.tej.com:5181(CONNECTED) 3] getAcl /drill/sys.options
'sasl,'mapr
: cdrwa

Here, only the super user(mapr) has the write privilige.
That is the difference.

Livy issue :

It seems a step in upgrade process is missed. Please see below document.

https://mapr.com/docs/61/UpgradeGuide/RestartingClusterServices.html#RestartingClusterServices

It seems step 2 to 6 are missed or may be other also. Can you please review that you have performed all steps here.

Step 2 talks about removing /opt/mapr/conf/mapruserticket . In 6.0.1 impersonation is set to false for this ticket and in 6.1 it needs to be true. Once you perform above steps, new ticket should get created with impersonation true.

I was able to reproduce this issue on my internal environment while upgrading from 6.0.1 to 6.1.

This will fix issue. I tested it my environment.

Finally all issues related to Spark jobs are fixed in DEV cluster. During the investigation, we come across some other unexpected issues as well. To add on top of Vishal's already mentioned points

Problem Statement:

1. Spark jobs fails which are submitted using livy from gp02
2. In DEV posix node all maprfs directories/files ownership changes to mapr

Both the case is tracked from JIRA ticket
https://wcdma-jira.rnd.ki.sw.ericsson.se/browse/RDIOP-222
https://wcdma-jira.rnd.ki.sw.ericsson.se/browse/RDIOP-230

Intermediate Solution:

1. export KRB5CCNAME property addition mentioned by Vishal already
2. mfs -setace permission change mentioned by Vishal already

Permanent Solution:

1. Regenerate of mapr service ticket with impersonation in POSIX client node (mentioned by Vishal already). We need to make sure that maprservice ticket has impersonation "true".
2. Follow the post upgrade steps of MapR core (Ref - https://mapr.com/docs/61/UpgradeGuide/RestartingClusterServices.html). Because at MapR 6.1 /opt/mapr/conf/mapruserticket ticket require impersonation "true".
3. At DEV cluster, we did following at esekilxgp08
   a. systemctl stop mapr-warden
   b. rm /opt/mapr/conf/mapruserticket
   c. /opt/mapr/server/configure.sh -R
   d. systemctl start mapr-warden
   e. Copied the newly generated mapruserticket to all other nodes except esekilxgp02
   f. Make sure the file owner is mapr:maprg

--

Hive 2.3 and spark 2.3.1

Parameters need to be added: in hive-site.xml

```
<property>
   <name>hive.metastore.sasl.enabled</name>
   <value>true</value>
</property>

<property>
   <name>hive.server2.authentication</name>
   <value>PAM</value>
</property>
```

for Hive 2.3 and spark 2.3.1

Pem generate command

/opt/mapr/server/manageSSLKeys.sh convert -N rdidev1 ssl_truststore ssl_truststore.pem

Scandry index/Secondary index

https://mapr.com/support/s/article/Secondary-index-creates-operation-failed-with-error-Cluster-Gateways-are-not-configured?language=en_US

Secondary index creates operation failed with error "Cluster Gateways are not configured"

Secondary indexes can be created only on MapR-DB JSON tables to provide efficient access to a wider range of queries on data in MapR-DB. Secondary index creates operation failing for manually installed cluster.

Jan 10, 2018·Generic - Issue Resolution

Environment

E.g.: MapR 4.0.1, Hbase 0.98, Redhat 5.5 etc

MapR v6.0 and above

Symptom

1. Below error messages are shown in </var/log/messages>: <Error Messages if appropriate> 2. MCS shows alerts "xxx is down" 3. Spark jobs are hung.

The general sympton is creating SI for a table will fail with error "Cluster Gateways are not configured"

```
maprcli table index add -path /apps/my_users -index newIndex -indexedfields name
ERROR (22) -  Failed to add index for table: /apps/my_users : Cluster Gateways are not configured
2017-12-19 21:38:34,0634 ERROR Client fs/client/fileclient/cc/dbclient.cc:686 Thread: 24742 AddTableIndex failed,
```

Solution

Root Cause

Examples: 1. Jobtracker configuration is incorrect in /opt/mapr/hue/hue-<version>/desktop/conf/hue.ini 2. No active Jobtracker for the cluster.

When you create secondary index on a table this internally requires replication gateway to replicated data between the table and the secondary index. If the installation of cluster done manually we often do not install gateway on local cluster which could lead this issue.

Solutions

<Clarify whether this is a work-around or a solution that may not apply. Where possible, provide for the customer a way to cross-check whether they implemented your solution correctly>. Code format in Courier New 1. Code xxx 2. Code yyy 3. Code zzz

You need to install the replication gateways. Since the source JSON table and the secondary index are on the same volume within a cluster, configure an intra-cluster gateway.

```
$ yum install mapr-gateway
$ /opt/mapr/server/configure.sh -R
$  maprcli cluster gateway set -dstcluster <local_cluster> -gateways <gateway_hostname>

Or

maprcli cluster gateway set -dstcluster rdidev1 -gateways exekilxgp07.rnd.ki.sw.ericsson.se
```

creating Index

maprcli table index add -path /mapr/rdidev1/user/e/metadata3 -index rnsTime -indexedfields Subnetwork:ASC,Date:ASC

maprcli table index add -path /mapr/rdidev1/user/mapr/test022 -index ind01 -indexedfields name:ASC,Date:ASC

maprcli cluster gateway set -dstcluster rdidev1 -gateways esekilxgp07.rnd.ki.sw.ericsson

Spark Cache

Spark not using local discs for cache on all datanodes on rdiprod1

We have noticed significantly worse performance on the mapr cluster for some of our larger spark jobs compared to the cloudera cluster used by other teams, we are not expecting this to be the case since this cluster has better capabilities.

Upon investigation, we have noticed that datanodes that have been added later than the original nodes for rdiprod1 have not been set up so that spark uses local discs for caching, but instead they use mapr root volume.

The task is to set upp all datanodes such that spark is using local discs for caching.

Solution

```
Spark Volume
1. Shutdown NM on the faulty node.
2. remove from spark volume from MCS.
3. Clean up the directory structure for spark under local volumes for the node.
4. maprcli volume create -name mapr.$(hostname -f).local.spark -path /var/mapr/local/$(hostname -f)/spark -replication 1 -
localvolumehost $(hostname -f)
5. Check the volume for mount and size from MCS.
6. Restart NM

@Anju:- please follow the steps and implement node by node. Once done on all nodes we need to restart RM in a failover mode.
Please bear in mind it's a 0 down time ticket.
```

```
maprcli volume create -name mapr.$(hostname -f).local.spark -path /var/mapr/local/$(hostname -f)/spark -replication 1 -
localvolumehost $(hostname -f)

hadoop fs -ls /var/mapr/local/esekilx5539.rnd.ki.sw.ericsson.se/spark

hadoop fs -rmr /var/mapr/local/esekilx5539.rnd.ki.sw.ericsson.se/spark
```

Reading Cores

gdb -ex 'set confirm off' -ex 'set pagination off' -ex 'thread apply all bt' -ex 'quit' -c <core_file> /opt/mapr/server/mfs > /tmp/gdb_`hostname`.out

Queue setup in Fair Scheduler

Jira Ticket - https://wcdma-jira.rnd.ki.sw.ericsson.se/browse/RDIOP-296

Changes in DEV Cluster:
Added the following block in file
/opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop/fair-scheduler.xml
<queue name="dataexport">
  <maxResources>479423 mb,50 vcores,0 disks</maxResources>
</queue>
Affected Nodes: All DEV cluster nodes (esekilxgp[01-02,07-12].rnd.ki.sw.ericsson.se)

Changes in PROD Cluster:

Added the following block in file
/opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop/fair-scheduler.xml
<queue name="dataexport">
  <maxResources> 1024000 mb,150 vcores,0 disks</maxResources>
</queue>
Affected Nodes: All PROD cluster nodes (esekilx[5517-5520,5530-5533,5537-5540,5634-5638,5640-5647].rnd.ki.sw.ericsson.se)

Test Steps:
The queue changes can be seen from RM's web interface, at https://*ResourceManager URL*/cluster/scheduler
Example Spark Job –
/opt/mapr/spark/spark-2.3.1/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --queue dataexport /opt/mapr/spark/spark-2.3.1/examples/jars/spark-examples_2.11-2.3.1-mapr-1808.jar 4

YARN performance improvement

We have added below parameters in yarn-site.xml for YARN performance improvement.

```
<property>
    <name>yarn.scheduler.minimum-allocation-mb</name>
    <value>2048</value>
    <description>Every contianer will get a minimum of 2GB memory</description>
</property>

<property>
    <name>yarn.scheduler.maximum-allocation-mb</name>
    <value>24576</value>
    <description>Every contianer can get a maximum of 24GB memory to ensure at max 3 containers can run on 1
node</description>
</property>

<property>
    <name>yarn.scheduler.minimum-allocation-vcores</name>
    <value>1</value>
    <description>Every contianer will get a minimum of 1 vcore</description>
</property>

<property>
    <name>yarn.scheduler.maximum-allocation-vcores</name>
```

```
    <value>8</value>
    <description>Every contianer can get a maximum of 8 vcores to ensure at max 2 containers using 8 vcores each can run on 1
node</description>
</property>

<property>
    <name>yarn.nodemanager.pmem-check-enabled</name>
    <value>false</value>
    <description>Container will be killed if it uses more than allocated physical memory</description>
</property>

<property>
    <name>yarn.nodemanager.vmem-check-enabled</name>
    <value>false</value>
    <description>Container will be killed if it uses more than allocated virtual memory based on vmem-pmem ratio.Currently
disabled</description>
</property>

<property>
    <name>yarn.nodemanager.vmem-pmem-ratio</name>
    <value>2.1</value>
    <description>Ratio of Virtual memory to be allocated to container wrt Physical memory</description>
</property>

<property>
    <name>yarn.nodemanager.resource.memory-mb</name>
    <value>49152</value>
    <description>Total memory in MB at max provided for Nodemanager to assign to containers. Assigned it to 50 percent with
the assumption that no custom scripts are executed by developers on cluster nodes.</description>
</property>




<property>
    <name>yarn.nodemanager.resource.cpu-vcores</name>
    <value>16</value>
    <description>Total vcores at max provided for Nodemanager to assign to containers. Assigned it to 50 percent with the
assumption that no custom scripts are executed by developers on cluster nodes.</description>
</property>
```

Enable Spark Dynamic Allocation

We have added below parameters in spark-default.conf

```
#Dynamic Allocation
spark.dynamicAllocation.enabled         true
spark.shuffle.service.enabled           true
spark.dynamicAllocation.minExecutors    0
spark.dynamicAllocation.maxExecutors    50
spark.executor.instances                2
```

We have added below parameters in yarn-site.xml

```
<property>
   <name>yarn.nodemanager.aux-services</name>
   <value>mapreduce_shuffle,mapr_direct_shuffle,spark_shuffle</value>
</property>

<property>
   <name>yarn.nodemanager.aux-services.spark_shuffle.class</name>
   <value>org.apache.spark.network.yarn.YarnShuffleService</value>
</property>
```

Copy the file to yarn lib

```
cp -p /opt/mapr/spark/spark-2.2.1/yarn/spark-2.2.1-mapr-1901-r2-yarn-shuffle.jar /opt/mapr/hadoop/hadoop-2.7.0/share/hadoop/yarn/lib
```

HUE metadata migration to MySQL

1. **yum install MySQL-python.x86_64 mysql-connector-python.noarch**
2. **Install pip**

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

3. **Install mysql-python moudule**

```
pip install --upgrade pip
pip install ConfigParser MySQL MySQL-python mysqlclient --no-cache-dir
```

4. **Add below parameters in hue.ini**

```
engine=mysql
 host=hadoop-c02n09.ss.sw.ericsson.se
 port=3306
 user=hue
 password=Hue@12345
 name=hue
```

5. **Perform the initial data migration:**

```
cd /opt/mapr/hue/hue-<version>
source ./build/env/bin/activate
hue syncdb --noinput
hue migrate
deactivate
```

Local MapR Repository Creation

1. **Download MapR Packages**

```
url : http://stage.mapr.com/ericsson/
 User id: ericsson
 pass: **********

 wget/download the MapR core and MEP packages from above mentioned URL.
```

CORE: mapr-v6.1.0GA.rpm.tgz
MEP: mapr-mep-v6.0.0.201810030946.rpm.tgz

2. **Untar the two packages to get all the RPMs.**

Copy the two packages to /var/www/html/yum/base
tar -xzf mapr-v6.1.0GA.rpm.tgz
tar -xzf mapr-mep-v6.0.0.201810030946.rpm.tgz

3. **Create softlink**

Create softlink under /var/www/html/yum/base directory
ln -s /var/www/html/yum/base/v6.1.0 mapr_core
ln -s /var/www/html/yum/base/MEP/MEP-6.0 mapr_eco

4. **Create repository**

```
createrepo /var/www/html/yum/mapr_eco
createrepo /var/www/html/yum/mapr_core
```

5. **Install and start httpd(apache) service**

```
yum install httpd
systemctl start httpd
```

6. **Crete repo file under /etc/yum.repos.d**

```
[mapr_core]
   name=MapR Technologies, Inc.
   baseurl=http://10.142.0.5/yum/mapr_core/
   enabled=1
   gpgcheck=0
   proxy=_none_

   [mapr_ecosystem]
   name=MapR Technologies, Inc.
   baseurl=http://10.142.0.5/yum/mapr_eco/
   enabled=1
   gpgcheck=0
   proxy=_none_
```

Drill Memory

I have modified the below memory parameters in warden.drillbit.conf

```
DRILL_MAX_DIRECT_MEMORY:-"16G"
service.env=DRILLBIT_MAX_PROC_MEM=25G
service.heapsize.min=20480
service.heapsize.max=25600
```

And below parameters have been updated in /opt/mapr/drill/drill-1.13.0/conf/drill-env.sh

```
export DRILL_MAX_DIRECT_MEMORY=${DRILL_MAX_DIRECT_MEMORY:-"16G"}
export DRILL_HEAP=${DRILL_HEAP:-"8G"}
export DRILLBIT_CODE_CACHE_SIZE=${DRILLBIT_CODE_CACHE_SIZE:-"1G"}
```

HIVE-TEZ

We have added below parameters in hive-site.xml for HIVE performance improvement

```
<property>
<name>hive.tez.container.size</name>
<value>24576</value>
<description> TEZ application master size has been set to 24GB, so that at least 2 TEZ contains can run per node
</description>
</property>

<property>
<name>hive.tez.java.opts</name>
<value>-Xmx18432m</value>
</description> HEAP seize for TEZ application master </description>
</property>
```

Streamsets Installation and configuration

1. **Download Streamset Datacollector full RPM from https://streamsets.com/opensource.**

   wget https://s3-us-west-2.amazonaws.com/archives.streamsets.com/datacollector/3.6.1/rpm/el7/streamsets-datacollector-3.6.1-el7-all-rpms.tar

2. **Untar all the RPMs**

tar -xf streamsets-datacollector-3.6.0-el7-all-rpms.tar

3. **Install RPMs and Install JAVA**

   For our solution we need below RPMs
   streamsets-datacollector-3.6.0-1.noarch.rpm
   streamsets-datacollector-hdp_2_6-hive2-lib-3.6.0-1.noarch.rpm
   streamsets-datacollector-mapr_6_0-mep5-lib-3.6.0-1.noarch.rpm
   streamsets-datacollector-mapr_6_0-lib-3.6.0-1.noarch.rpm
   streamsets-datacollector-mysql-binlog-lib-3.6.0-1.noarch.rpm

   Download Java
   wget --no-check-certificate --no-cookies --header "Cookie: oraclelicense=accept-securebackup"
   https://download.oracle.com/otn-pub/java/jdk/8u191-b12/2787e4a523244c269598db4e85c51e0c/jdk-8u191-linux-x64.rpm

4. **Configure Streamset to run as mapr user**

By default streamsets runs unser sdc user, which will be created automaticaaly during rpm installtation. We need to change this, otherwise streamset will not be able to write to MapR.

a. update User & Group as mapr in /usr/lib/systemd/system/sdc.service file
b. chown -R mapr:mapr /var/log/sdc
   c. chown -R mapr:mapr /var/lib/sdc
   d. mkdir -p /opt/streamsets-datacollector/streamsets-libs-extras/
   e. mkdir -p /opt/streamsets-datacollector/streamsets-libs-extras/
   f. chown -R mapr:mapr /etc/sdc

5. **Install MapR-client 6.0.0**

```
export SDC_HOME=/opt/streamsets-datacollector
   export SDC_CONF=/etc/sdc
   export MAPR_MEP_VERSION=5

   /opt/streamsets-datacollector/bin/streamsets setup-mapr
   Please enter the MapR version (default 6.0.0): 6.0.0
   Please enter the absolute path of MapR Home (default /opt/mapr): /opt/mapr
```

6. **Upload mysql java connector and mysql binlog connector.**

7. **Change mysql binlog property in /etc/my.cnf**

```
mysqld]
   server-id=1
   log-bin=mysql-bin
   binlog_format = Row
```

8. **Open streamset from http://ip_address:18630**

Monitoring Using Telegraf & InfluxDB

Downdoal the required package:

```
wget https://dl.influxdata.com/telegraf/releases/telegraf-1.7.1-1.x86_64.rpm
wget https://dl.influxdata.com/influxdb/releases/influxdb-1.6.0.x86_64.rpm
```

Install the package:

```
yum install telegraf-1.7.1-1.x86_64.rpm influxdb-1.6.0.x86_64.rpm -y
```

Generate telegraf.conf file:

```
telegraf --output-filter influxdb config >/etc/telegraf/telegraf.conf
```

Edit the telegraf.conf file for influxdb output plugin

```
[[outputs.influxdb]]
  urls = ["http://esekilxgp02.rnd.ki.sw.ericsson.se:8086"]
  database = "telegraf_metrics"
  retention_policy = ""
  write_consistency = "any"
  timeout = "5s"
```

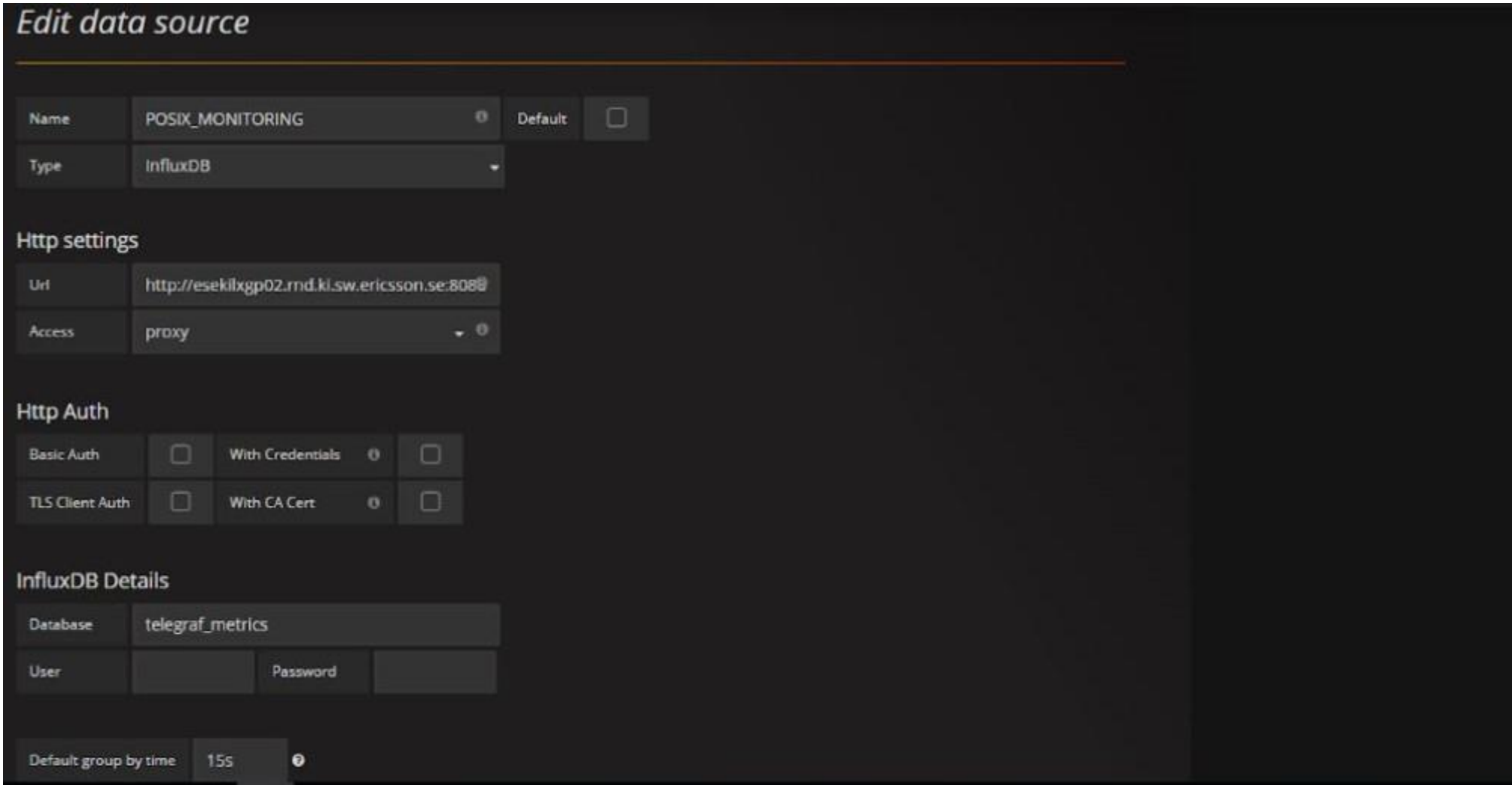
Don't change other parameter and hashout any other parameter, if enabled.

Start services for telegraf and Influxdb:

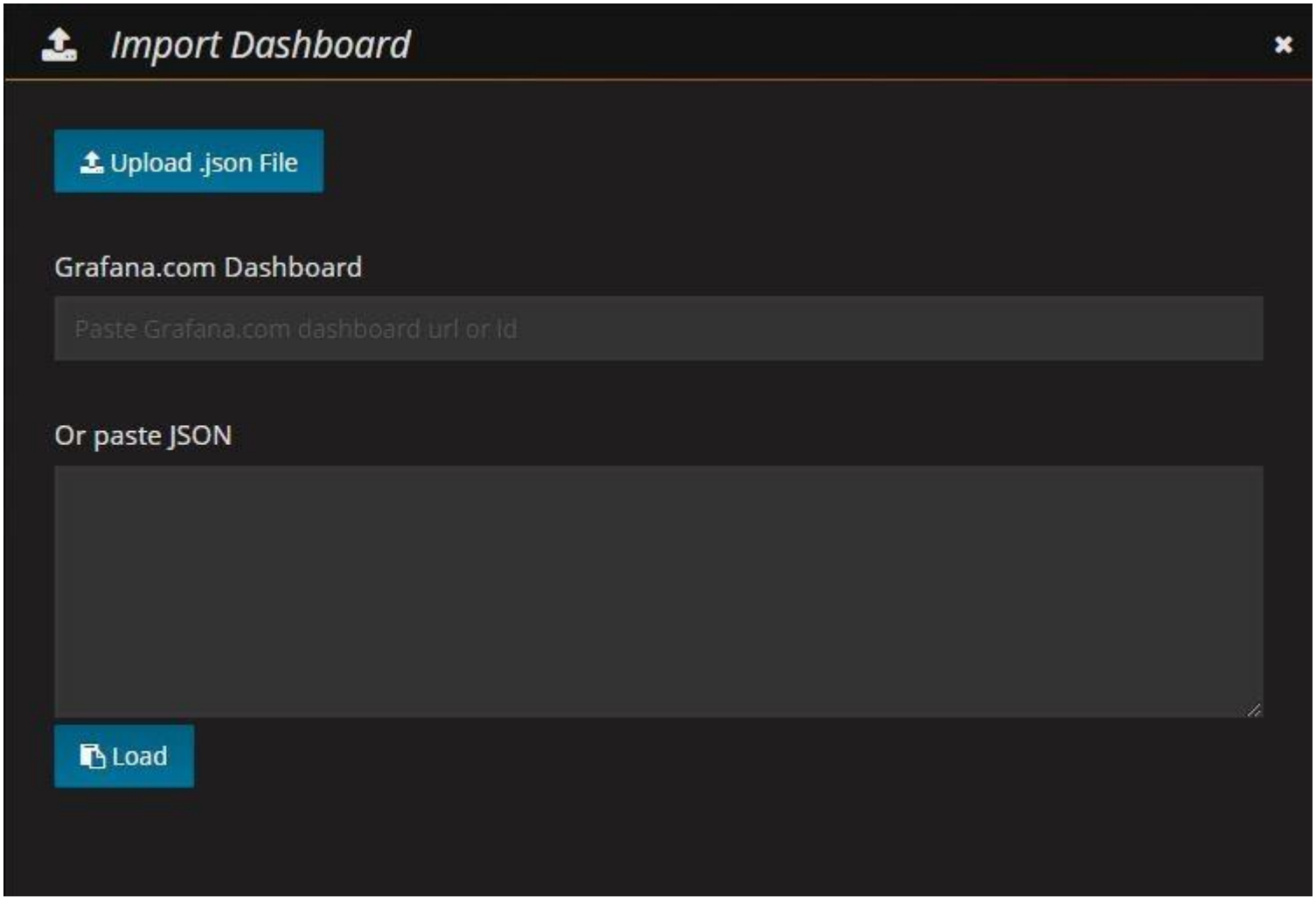
```
systemctl start telegraf
systemctl start influxdb
```

Add DataSource to Grafana:

The url for influxDB will be : http://esekilxgp02.rnd.ki.sw.ericsson.se:8086
Database name will be: telegraf_metrics (Same as in telegraf.conf)



Import DashBoard to Grafana for this Monitoring:



MARIADB HIGH AVAILIBILITY

In Server1 do the following steps

1. **Edit /etc/my.cnf in server1:**

[mysqld]
server-id=1

```
log-bin=mysql-bin
binlog_format = MIXED
```

2. **Restart the database**

```
systemctl stop mariadb
systemctl start mariadb
```

3. **User creation for replication**

```
create user 'mapr'@'server1' identified by 'Had00p!';
create user 'mapr'@'server2' identified by 'Had00p!';
```

4. **Grant access to the databases**

```
grant all privileges on *.* to 'mapr'@'server1';
grant all privileges on *.* to 'mapr'@'server2';
grant replication slave on *.* to 'mapr'@server2' identified by 'Had00p!';
flush privileges;
```

5. **Check the binlog_format:**

```
MariaDB [(none)]> show variables like 'binlog_format';
+---------------+-------+
| Variable_name | Value |
+---------------+-------+
| binlog_format | MIXED |
+---------------+-------+
```

6. **Flush the tables for read only access.**

```
flush tables with read lock;
```

7. **Check current log status**

```
MariaDB [(none)]> show master status\G
*************************** 1. row ***************************
File: mysql-bin.000002
Position: 1474
Binlog_Do_DB:
Binlog_Ignore_DB:
1 row in set (0.00 sec)
```

8. **Backup all the existing databases**

```
mysqldump -u mapr -p --database mysql > /home/mapr/mysql.mysql
```

```
mysqldump -u mapr -p --database hive > /home/mapr/hive.mysql
mysqldump -u mapr -p --database hue > /home/mapr/hue.mysql
mysqldump -u mapr -p --database oozie > /home/mapr/oozie.mysql
```

9. **scp all these backup file to server2.**

```
scp -p /home/mapr/*.mysql mapr@server2:/home/mapr/
```

In Server2 do the following steps

1. **Edit /etc/my.cnf in server1:**

```
[mysqld]
server-id=2
log-bin=mysql-bin
binlog_format = MIXED
```

2. **Restart the database**

```
systemctl stop mariadb
systemctl start mariadb
```

3. **User creation for replication**

```
create user 'mapr'@'server1' identified by 'Had00p!';
create user 'mapr'@'server2' identified by 'Had00p!';
```

4. **Grant access to the databases**

```
grant all privileges on *.* to 'mapr'@'server1';
grant all privileges on *.* to 'mapr'@'server2';
grant replication slave on *.* to 'mapr'@server1' identified by 'Had00p!';
flush privileges;
```

5. **Check the binlog_format:**

```
MariaDB [(none)]> show variables like 'binlog_format';
+---------------+-------+
| Variable_name | Value |
+---------------+-------+
| binlog_format | MIXED |
```

```
+---------------+-------+
```

6. **Restore all the databases.**

```
mysql mysql -u mapr -p < mysql.mysql
mysql mysql -u hive -p < hive.mysql
mysql mysql -u hue -p < hue.mysql
mysql mysql -u oozie -p < oozie.mysql
```

7. **Flush the tables for read only access.**

```
flush tables with read lock;
```

8. **Check current log status**

```
MariaDB [(none)]> show master status\G
   *************************** 1. row ***************************
               File: mysql-bin.000003
           Position: 518215
       Binlog_Do_DB:
   Binlog_Ignore_DB:
   1 row in set (0.00 sec)
```

9. **Sync server1 log**

```
change master to master_host='server1', master_user='mapr', master_password='Had00p!', master_log_file='mysql-bin.000002', master_log_pos=1474;
```

10. **Convert the current instance to act as slave.**

```
MariaDB [(none)]> start slave;
   Query OK, 0 rows affected (0.00 sec)
```

11. **Check the slave status for any error**

```
MariaDB [(none)]> show slave status\G
```

12. **Unlock all the tables:**

```
MariaDB [(none)]> unlock table;
   Query OK, 0 rows affected (0.00 sec)
```

In Server1 do the following steps

1. **Sync server1 log**

```
change master to master_host='server2', master_user='mapr', master_password='Had00p!', master_log_file='mysql-bin.000003', master_log_pos=518215;
```

2. **Convert the current instance to act as slave.**

```
MariaDB [(none)]> start slave;
   Query OK, 0 rows affected (0.00 sec)
```

3. **Check the slave status for any error**

```
MariaDB [(none)]> show slave status\G
```

4. **Unlock all the tables:**

```
MariaDB [(none)]> unlock table;
   Query OK, 0 rows affected (0.00 sec)
```

PostgreSQL Installation

Add Postgres Yum Repository :

- Adding PostgreSQL yum repository in our Red hat Linux distribution
- `# yum install https://download.postgresql.org/pub/repos/yum/10/redhat/rhel-7-x86_64/pgdg-redhat10-10-2.noarch.rpm`

Install PostgreSQL Server :

- After adding PostgreSQL yum repository in our Red hat Linux distribution, use the following command to install PostgreSQL server and client packages.

```
# yum install postgresql10 postgresql10-libs postgresql10-contrib postgresql10-server
```

Initialize PostgreSQL Database :

- Due to some policies for Red Hat based distributions, the PostgreSQL installation will not be active for automatic start or have the database initialized automatically. To complete your database installation, we need to initialize your database before using it for first time.

```
# /usr/pgsql-10/bin/postgresql-10-setup initdb
```

Start and Enable PostgreSQL Server :

- After database initialize completes, start PostgreSQL service and enable PostgreSQL service to auto start on system boot.

For RHEL 7

```
# systemctl start postgresql-10
# systemctl enable postgresql-10
# systemctl status postgresql-10
```

For RHEL 6

```
# service postgresql-10 start
# chkconfig postgresql-10 on
```

Verify PostgreSQL Installation :

- After completing above steps, you have installed PostgreSQL 10 on your server, Let's log in to postfix to verify that installation completed successfully.

```
# su - postgres -c "psql"

psql (10.0)
Type "help" for help.
postgres=#
```

- You may create password for user postgres for security purpose.

```
postgres=# \password postgres
```

STREAMING REPLICATION (HIGH AVAILABILITY)

Master Server Configuration :-

Begin with master server configuration updates that we need to make in-order to enable replication.

```
root@esekilx5916# vi /var/lib/pgsql/10/data/postgres.conf      /*Edit configuration file*/
Update the following parameters :
wal_level = hot_standby            /* to enable streaming replication */
archive_mode = on /* to enable archive process */
archive_command = 'cp %p /var/lib/pgsql/10/archive/%f'          /* create myarchive folder and give postgres permission */
max_wal_senders = 10                              /* number of parallel wal senders to be initiated */
wal_keep_segments = 50                             /* maintining 50 xlog files in pg_xlog directory */
==================================
root@esekilx5916#  /etc/init.d/postgresql-10 restart   /* Restart database engine to get all the changes into effect in Master server */
==================================
root@esekilx5916# . /psql -d postgres                /* login to postgres primary server */
Next thing we need to do is take data snapshot of data from master and later move that to slave server
postgres# select pg_start_backup('streaming');    /* we need to initiate the base backup */
postgres#\!
root@esekilx5916# tar cfP /tmp/db_file_backup.tar /var/lib/pgsql/10/data/
postgres# select pg_stop_backup();  /* after taking base backup login back to primary server and stop the backup */
=====================================================================
Now we need to grant access to read Master servers WAL logs from standby server.
Edit host base auth configuration file:
root@esekilx5916# vi /var/lib/pgsql/10/data/pg_hba.conf
host    replication     postgres      134.138.193.181/32  trust     /*  uncomment and add the standby host name or its IP address */
root@esekilx5916# scp  /tmp/db_file_backup.tar ezchast@esekilx5915:/var/lib/pgsql/10/data  /* Copy data from Master to Standby*/
root@esekilx5916# /etc/init.d/postgresql-10 restart   /* Restart database engine to get all the changes into effect in Master server*/
```

Slave server configuration:

If PostgreSQL is running Stop the Standby Server and make the changes

```
 --Unzip master server data snapshot file that is copied into this server
root@esekilx5915# tar xvfP /tmp/db_file_backup.tar
 --Remove postmaster.pid so standby server does not see the primary server's pid as its own
root@esekilx5915# rm -rf  /var/lib/pgsql/10/data/postmaster.pid
```

--Now edit configuration file and tweak hot_standby variable.

root@esekilx5915# vi /var/lib/pgsql/10/data/postgresql.conf /* open standby server postgresql.conf file and make the changes */
hot_standby = on /* change this parameter to make standby server as recovery server */
==========
--Now we need to create a recovery.conf file for this slave server to start receiving logs from master.
root@esekilx5915# create recovery.conf /* create recovery.conf file inside standby server and add these parameters*/
-- Edit this recovery.conf file and update standby server settings
root@esekilx5915# vi /var/lib/pgsql/10/data/recovery.conf
standby_mode = 'on'/* when standby parameter is enabled,the PostgreSQL server will work as standby. It will continuously wait for the XLOG records, Using restore_command or Primary_conninfo */
primary_conninfo = 'host=esekilx5916.rnd.ki.sw.ericsson.se port=5432' /*when primary server connection information is set PostgreSQl will try to connect to master server using this connection string and receive XLOG records continuously*/
trigger_file = '/tmp/trigger.5432' /* trigger.5432 file we need to create if primary goes down and standby server will come up*/
restore_command = 'cp /var/lib/pgsql/10/archive/%f %p'/* we need to specify the archive path to restore the transaction from Master server */
==========
root@esekilx5915# chown postgres.postgres /var/lib/pgsql/10/data/recovery.conf /* Update permissions on recovery.conf file */
--After making above changes in standby server we need to start the standby server--
root@esekilx5915# /etc/init.d/postgresql-10 start
root@esekilx5915# ./psql -d postgres
postgres# \dt/* execute to list the tables and you should be seeing the tables which was in primary server */
Now we have successfully started our streaming replication hot-standby server. It may take few minutes for the server to be fully up and running as it needs to sync logs with master.
---To test replication, simple add/insert into a table on master server and query the same from slave server—

RDI Dev Cluster Upgrade IM Plan.

1. Create repos pointing to MapR 6.1 and MEP 6.0. Turn on the repos only the night of 9th.

2. Backup of all nodes must be taken three days prior to upgrade.

clush -b -g dev ‘cp /opt/mapr /root/backup’

3. Bring down the cluster on 10th morning

a. yarn application -list

b. yarn application kill

c. stop services from MCS (mapr-nfs,NM,RM)

d. Shut down all the POSIX nodes

e. Shut down the warden

f. Shut down the zookeepers

g. ps -ef | grep v1funcr | awk '{print $2}' | xargs kill -9

h. ps -ef | grep mapr | awk '{print $2}' | xargs kill -9

4. remove all the MAPR patches

a. clush -b -g dev ‘yum erase -y mapr-patch’

b. For edge node this need to be done by logging to individual nodes.

5. Update the cluster with MapR Core 6.1 and MEP 6.0

a. clush -b -g dev ‘ yum update -y mapr-*’

b. upgrade the POSIX the same way

c. /opt/mapr/server/configure.sh -R

6. Configure the Ecosystem components especially Spark, Livy, Hive, Impala, Hue, Oozie. Gp02 should be given special care for R libraries. We need to test Log Monitoring and Metrics Monitoring Modules. Let us copy the .xml of respective node to the newly created conf.

RDI Production Cluster Upgrade IM Plan.

1. Create repos pointing to MapR 6.1 and MEP 6.0. Turn on the repos only the night of 25th.

2. Backup of all nodes must be taken three days prior to upgrade.

clush -b -g prod “ mkdir /root/backup”

clush -b -g prod “ chmod 755 /root/backup”

clush -b -g prod "find /opt/mapr -type d -name conf* -exec cp --parent -r \{\} /root/backup \;"

clush -b -g prod "find /opt/mapr -type d -name hue* -exec cp --parent -r \{\} /root/backup \;"

clush -b -w esekilx5645.rnd.ki.sw.ericsson.se esekilx5645.rnd.ki.sw.ericsson.se "find /opt/mapr -type d -name elasticsearch* -exec cp --parent -r \{\} /root/backup \;"

clush -b -g prod "find /opt/mapr -type d -name fluentd* -exec cp --parent -r \{\} /root/backup \;"

clush -b -w esekilx5645.rnd.ki.sw.ericsson.se esekilx5646.rnd.ki.sw.ericsson.se "find /opt/mapr -type d -name kibana* -exec cp --parent -r \{\} /root/backup \;"

3. Bring down the cluster on 26th morning using mapr user.

a. yarn application -list

b. yarn application -kill <app ID>

c. stop services from MCS (mapr-nfs,NM,RM)

d. Shut down all the POSIX nodes

e. Shut down the warden

f. Shut down the zookeepers

g. ps -ef | grep v1funcr | awk '{print $2}' | xargs kill -9

h. ps -ef | grep mapr | awk '{print $2}' | xargs kill -9

4. remove all the MAPR patches

a. clush -b -g prod ‘yum erase -y mapr-patch’

b. For edge node this need to be done by logging to individual nodes.

5. Update the cluster with MapR Core 6.1 and MEP 6.0

a. clush -b -g prod ‘ yum update -y mapr-*’

6. ################EBF ####################

clush -b -g prod “ mkdir -p /root/patch/ebf/”

clush -b -g prod “ chmod 755 /root/patch/ebf/”

clush -bg pord –copy /root/patch/05Feb2019 –dest /root/patch/ebf/

yum local install /root/patch/ebf/<filename>.rpm

· rm /opt/mapr/conf/mapruserticket

· /opt/mapr/server/configure.sh -R

· systemctl start mapr-warden

· Copied the newly generated mapruserticket to all other nodes except edge nodes

· Make sure the file owner is mapr:maprg

· /opt/mapr/server/configure.sh -R

· Regenerate of mapr service ticket with impersonation in POSIX client. We need to make sure that map service ticket has impersonation “true”. Then run the below configure. Also update the fuse.conf with new ticket.

maprlogin generateticket -type servicewithimpersonation -user mapr -out /opt/mapr/conf/mapr_impersonation

/opt/mapr/server/configure.sh -N rdiprod1 -u mapr -g maprg -C esekilx5643.rnd.ki.sw.ericsson.se:7222,esekilx5644.rnd.ki.sw.ericsson.se:7222,esekilx5645.rnd.ki.sw.ericsson.se:7222 -Z esekilx5640.rnd.ki.sw.ericsson.se:5181,esekilx5641.rnd.ki.sw.ericsson.se:5181,esekilx5642.rnd.ki.sw.ericsson.se:5181 -c -secure

https://mapr.com/docs/61/UpgradeGuide/RestartingClusterServices.html

7. Configure the Ecosystem components especially Spark, Livy, Hive, Impala, Hue, Oozie. Gp02 should be given special care for R libraries. We need to test Log Monitoring and Metrics Monitoring Modules. Let us copy the .xml of respective node to the newly created conf.

- ##################EBF ######################

clush -b -g prod “ mkdir -p /root/patch/ebf/”

clush -b -g prod “ chmod 755 /root/patch/ebf/”

clush -bg pord –copy /root/patch/05Feb2019 –dest /root/patch/ebf/

yum local install /root/patch/ebf/<filename>.rpm

MIGRATION OF MAPR NODES FROM ORACLE JAVA TO OPENJDK

Effective Environment: Production Cluster (butters)

Issue which led to this action: The production cluster was facing Drill Issue where Drill was crashing due to OutOfMemory error dumping lots of Core Files in almost each node. MapR Support Team recommended to have same Java Version on all nodes throughout the cluster.
Completion Date: 17th May 2019 (JIRA Ticket: https://wcdma-jira.rnd.ki.sw.ericsson.se/browse/MC-468)
Priority in which the Java requires to be upgraded:

1. Data Nodes (butters01-23, butters31-48)
2. Data Node with Running ResourceManager (butters30)
3. Data Node with Standby ResourceManager (butters29)
4. Management Node with Running Ecosystem Components (cartman05)
5. Management Node with Standby Ecosystem Components (cartman04)
6. Slave CLDB & Follower Zookeeper Node (cartman01 & cartman03)
7. Master CLDB & Leader Zookeeper Node (cartman02)

** Perform manual CLDB failover to get the cldbmaster to another node. Perform zookeeper restart to get the zookeeper leader to another node.

8. Edge nodes (kenny01 and kenny02)
9. Client nodes (kenny05 and kenny06)

Process/Steps Taken in each node:

Case1: Node currently installed with Oracle Java (java-1.8.0_144)

1. Check the current version of java and java processes running:
   - [root@cartman05 ~]# java -version
     java version "1.8.0_144"
     Java(TM) SE Runtime Environment (build 1.8.0_144-b01)
     Java HotSpot(TM) 64-Bit Server VM (build 25.144-b01, mixed mode)
   - [root@cartman05 ~]# ps -ef | grep java
     (Output should show process running with java-1.8.0_144 version)

2. Install OpenJDK at the node:
   [root@cartman05 ~]# yum install -y java-1.8.0-openjdk-devel.x86_64

3. Now check the java version (which should have updated with new OpenJDK version):
   [root@cartman05 ~]# java -version
   openjdk version "1.8.0_212"
   OpenJDK Runtime Environment (build 1.8.0_212-b04)
   OpenJDK 64-Bit Server VM (build 25.212-b04, mixed mode)
   **But java processes will be running with the old java version at present.

4. Check the file: /etc/profile
   The file should be appended with/updated with following 3 statements:
   export JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk
   export JRE_HOME=/usr/lib/jvm/java-1.8.0-openjdk/jre
   export PATH=$JAVA_HOME/bin:$PATH

** If not updated automatically, kindly add above 3 statements manually to the file /etc/profile.

5. (Optional: If req) For the zookeeper nodes, restart zookeeper service:
[root@cartman05 ~]# systemctl restart mapr-zookeeper

6. Restart warden, so that Java process picks up the new java version:
[root@cartman05 ~]# systemctl restart mapr-warden

7. Check if the Java process reflects the new version of Java:
[root@kenny02 ~]# ps -ef | grep java
mapr 20659 1 0 05:20 ? 00:00:16 /usr/lib/jvm/java-1.8.0-openjdk-1.8.0.212.b04-0.el7_6.x86_64/jre/bin/java -XX:ErrorFile.....

Case2: Node currently installed with OpenJDK Java (java-1.8.0_181/191)
In the nodes, which are already installed with lower version of OpenJDK, an extra step is required before the zookeeper and warden restart, which is (**Select the option with the latest installed package):
[root@cartman01 ~]# update-alternatives --config java
There are 2 programs which provide 'java'.
Selection Command
---
1 /usr/java/jdk1.8.0_144/jre/bin/java
*+ 2 java-1.8.0-openjdk.x86_64 (/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.212.b04-0.el7_6.x86_64/jre/bin/java)

Enter to keep the current selection[+], or type selection number: 2
[OPTIONAL] We can also remove the Oracle Java from the nodes: "rm -rf /usr/java" (But, we have not performed this step and the Oracle Java still resides in all the nodes at /usr/java/jdk1.8.0_144 which is not functional)

UPGRADATION OF MANA SANDBOX CLUSTER
(from MapR6.0.1 TO MapR6.1.0)

Method used: Offline Manual Upgrade (Offline)
Date of Upgradation: 15th November 2018
CONSIDERATIONS BEFORE UPGRADATION:

- After upgrading MapR Core to MapR 6.1.0, upgrade ecosystem components to a MEP6.0.0. This must be done before enabling MapR 6.1.0 features.
- The offline upgrade procedure requires an outage of the entire cluster.

UPGRADATION STEPS:

1. **Understand MapR Core/MEP Dependencies:**

1.a. Operating System Support Matrix (MapR 6.x) -

OS Version / MapR Version	MapR 6.1.0	MapR 6.0.1	MapR 6.0.0	MapR 5.2.2
CentOS7.3.1611 (64bit)	Yes	Yes	Yes	No

**Check cluster's OS version at file /etc/redhat-release

This MapR Core Version	Supports These MEPs
6.1.0	6.0.0
6.0.1	5.0.1, 5.0.0

1.b. MEP Support by MapR Core Version –

1.c. Component Versions for Released MEPs –

** Refer to the excel made: Matrix for components in Sandbox (Tab MapR6.0.1)

2. **Plan for MapR Core Upgrade:**

2.a. Upgrading and Your License –

If upgrading from MapR version 5.0 or earlier, the Base License file must be manually updated on all nodes in cluster: skip the step as we are upgrading from version 6.0.1 to 6.1.0.

Current Licenses in cluster:

- MapR M7 Edition
- MapR Enterprise Edition
- MapR Base Edition
- Base MapR POSIX Client for fast secure file access

NOTE: ** **MapR Metering Feature:** Beginning with the MapR 6.1 release, MapR software supports metering. Annual subscriptions will continue to be offered, but metering gives you the option of purchasing a variable consumption plan that is based on usage.

Ref: https://mapr.com/docs/61/UpgradeGuide/License-upgrade.html#license-upgrade

2.b. Upgradation & Installation Considerations –

Ref: https://mapr.com/docs/61/ReleaseNotes/install_upgrade_notes.html

Upgrading to MapR 6.1.0 Might Require an OS Upgrade	Our cluster use OS as CentOS7.3.1611 which supports MapR6.1.0
Data-on-wire-encryption	Beginning with MapR 6.1, data-on-wire encryption is enabled by default for newly created volumes on secure clusters. Data-on-wire encryption is *not* supported for non-secure clusters.
MapR 6.1.0 and MEP 6.0.0	MapR 6.1.0 requires MEP 6.0.0. MEP 3.0.1 or later can coexist with MapR 6.1.0 only temporarily in the context of an upgrade.
Metrics Monitoring	MapR 6.1.0 requires a minimal level of metrics monitoring to be configured to support metering. If metrics monitoring is already configured before the upgrade, you must upgrade it as part of the MapR Expansion Pack upgrade.
Regenerating the mapruserticket File	There is no "mapruser" file at /opt/mapr/conf to be regenerated.

2.c. Planning Your MapR Core Upgrade –

JDK version present: 1.8.0_161 (this is compatible with MapR6.1.0)

**Volume mirroring from a lower MapR version to higher MapR version is supported. For example, you can mirror volumes from a MapR 4.0.1 cluster to a MapR 5.2 cluster.

3. **Plan for the MEP Upgrade:**

Install ecosystem components as part of a MEP. You will be offered packs to install that contain selected component versions. After upgrading, you may want to upgrade to a more recent MEP to get the latest patch releases or newer versions of ecosystem components.
Most MapR core versions support multiple MEPs, but the set of ecosystem components that you run in the cluster must all belong to the same MEP. When you upgrade a MEP, all components are replaced with the versions contained in the newly selected MEP.

4. **Perform Pre-upgrade steps for MapR Core:**

Ref - https://mapr.com/docs/61/UpgradeGuide/Preparing-to-Upgrade.html#PreparingtoUpgrade

4.a. Verify System Requirements for All nodes:

- Software dependencies – We are using package manager, where we specify a repository that contains the dependency package(s), and allow the package manager to automatically install them when you upgrade the MapR packages.
- Hardware requirements –

  CPU: x86_64 (checked) [command: uname -m]

  OS: CentOS Linux release 7.3.1611 (checked) [command: lsb_release -a]

Memory: minimum req 16GB (checked) [command: free -g]
Disk: space to /tmp & /opt directory
DNS: hostname (checked) [command: hostname -f & ping]
Users: common users (checked) [same UID of "mapr" user across the cluster]
Java: 1.8.0_161 (checked) [command: java -version]
Others: NTP running, No syslog enabled (all checked)

4.b. Design Health Checks:

- Check for alerts in the cluster –
  Command: maprcli node list -columns svc (checked; all OK)
- Non-trivial test – not required as we have no data in Sandbox Cluster

4.d. Backup Configuration Files:

Creation of env_override.sh file to store custom settings for environmental variables not required as no custom settings done in env.sh. Upgrading to a new MapR release causes the env.sh file to be replaced and removes any custom settings.
Ref: https://mapr.com/docs/61/ReferenceGuide/env_override.sh.html#concept_hnz_4yd_mdb

4.e. Migrate from Apache Hbase: (not required)
Ref: https://mapr.com/docs/61/UpgradeGuide/Preparing-to-Upgrade.html#PreparingtoUpgrade

5. **Prepare to Upgrade MEP Components:**

5.a. Pre-Upgrade Steps for Drill: (ike01-05)

- Backup taken: (at /root/mapr_6.0.1_backup/drill_1.13.0_backup/)
  /opt/mapr/drill/drill-1.13.0/conf
  /opt/mapr/drill/drill-1.13.0/jars
- Backup of Storage Plugins: done

5.b. Pre-Upgrade Steps for HBase Client (ike01 & 02): backup of /opt/mapr/hbase/hbase-1.1.8/conf taken at /root/mapr_6.0.1_backup/hbase_1.1.8_backup/.

5.c. Pre-Upgrade Steps for Hive: (ike04 & 05)

- Backup the metastore database: mysqldump -u root -p hive -r hive_dump.sql (done)
- Backup taken of: /opt/mapr/hive/hive-2.1/conf/ & /opt/mapr/hive/hive-2.1/lib/ at

*For a major version update (for example, Hive-2.1-1803 to Hive-2.3-1808), user configuration from a previous version is **only** copied to a folder with an old version timestamp but not copied to a new version conf folder.

5.d. Pre-Upgrade Steps for HttpFS: (ike04 & 05)

Backup taken of: /opt/mapr/httpfs/httpfs-1.0/etc/hadoop/ & /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/

5.e. Pre-Upgrade Steps for Hue: (ike04 & 05)

- Create a Hue database dump as a JSON object:
  source /opt/mapr/hue/hue-3.12.0/build/env/bin/activate

(env)[root@ike04 ~]# hue dumpdata > ~/dump-hue-3.12.0.json

- Backup taken of: /opt/mapr/hue/hue-3.12.0/desktop/conf
- Backup taken of: /opt/mapr/livy/ livy-0.3.0/conf

5.f. Pre -Upgrade Steps for MapR Monitoring:

- Backup taken of:

All nodes
/opt/mapr/conf/conf.d/warden.collectd.conf
/opt/mapr/collectd/collectd-5.7.2/etc/collectd.conf
/etc/logrotate.d/collectd
ike01
/opt/mapr/conf/conf.d/warden.grafana.conf
/opt/mapr/grafana/grafana-4.6.1/etc/grafana/grafana.ini
/opt/mapr/grafana/grafana-4.6.1/etc/grafana/ldap.toml
ike02
/opt/mapr/conf/conf.d/warden.opentsdb.conf
/opt/mapr/opentsdb/opentsdb-2.4.0/etc/opentsdb/opentsdb.conf
/opt/mapr/opentsdb/opentsdb-2.4.0/etc/opentsdb/logback.xml
opt/mapr/opentsdb/opentsdb-2.4.0/bin/tsdb_cluster_mgmt.sh

5.g. Pre-Upgrade Steps for Oozie: (ike04 & 05)

- Stop any jobs or coordinators that are in a RUNNING or SUSPENDED state.
- Backup taken of: /opt/mapr/oozie/oozie-4.3.0/conf
- Backup taken of oozie database: mysqldump -u root -p oozie -r oozie_dump.sql (done)
- Backup of the old share libraries and examples from the following directories: (done)
  - maprfs:///oozie/share

5.h. Pre-Upgrade Steps for Spark: (all nodes)

- Backup taken of: /opt/mapr/spark/spark-2.2.1/conf

** Backup taken of: /etc/my.cnf

6. **Setting up Repositories:**

This has been already done in Sandbox Cluster.
Ref: https://mapr.com/docs/61/UpgradeGuide/SetUpInternetRepoRHEL.html

7. **Offline & Manual Upgrade Procedure:**

7.a. Send mail to stakeholders about upgrade.
Disable Puppet: clush -w ike[01-05] puppet agent –disable

7.b. CLDB nodes: ike01 & ike02(master)
Zookeeper nodes: ike01(follower), ike02(leader) & ike03(follower)

7.c. Ensure no MapR processes are running:

ps -ef | grep mapr | grep -v grep | awk '{print $2}' | xargs kill

pkill -u mapr (Check using ps -ef|grep mapr)

7.d. Upgrade MapR core packages by installing the appropriate MapR package key.

rpm --import http://package.mapr.com/releases/pub/maprgpg.key

7.e. Stop Warden on CLDB nodes, then remaining & also zookeeper:

clush -w ike[01-02] systemctl stop mapr-warden

clush -w ike[03-04] systemctl stop mapr-warden

clush -w ike[01-03] systemctl stop mapr-zookeeper

7.f. Remove existing patches: rpm -e mapr-patch (Check using rpm -qa mapr-patch)

7.g. ike01:

yum update mapr-cldb mapr-core mapr-core-internal mapr-fileserver mapr-hadoop-core mapr-mapreduce2 mapr-nfs mapr-nodemanager mapr-zookeeper mapr-zk-internal mapr-ericsson

ike02:

yum update mapr-cldb mapr-core mapr-core-internal mapr-fileserver mapr-hadoop-core mapr-mapreduce2 mapr-nfs mapr-nodemanager mapr-zookeeper mapr-zk-internal mapr-ericsson

ike03:

yum update mapr-core mapr-core-internal mapr-fileserver mapr-hadoop-core mapr-mapreduce2 mapr-nfs mapr-nodemanager mapr-resourcemanager mapr-webserver mapr-apiserver mapr-zookeeper mapr-zk-internal mapr-ericsson

ike04:

yum update mapr-core mapr-core-internal mapr-fileserver mapr-hadoop-core mapr-historyserver mapr-mapreduce2 mapr-nfs mapr-nodemanager mapr-resourcemanager mapr-webserver mapr-apiserver mapr-ericsson

ike05:

yum update mapr-core mapr-core-internal mapr-fileserver mapr-hadoop-core mapr-historyserver mapr-mapreduce2 mapr-nfs mapr-nodemanager mapr-ericsson

7.h. Check /opt/mapr/MapRBuildVersion contains the expected value:6.0.1.20180404222005.GA(now)

8. **Upgrade the MEP Components:**

8.a. ike01:

yum update mapr-drill mapr-hbase mapr-collectd mapr-grafana mapr-kafka mapr-spark mapr-asynchbase

ike02:
yum update mapr-drill mapr-hbase mapr-collectd mapr-opentsdb mapr-kafka mapr-spark mapr-asynchbase
ike03:
yum update mapr-drill mapr-collectd mapr-spark
ike04:
yum update mapr-drill mapr-hive mapr-hiveserver2 mapr-hivemetastore mapr-hivewebhcat mapr-hue mapr-livy mapr-collectd mapr-oozie mapr-oozie-internal mapr-spark mapr-spark-historyserver

ike05:
yum update mapr-drill mapr-hive mapr-hiveserver2 mapr-hivemetastore mapr-hivewebhcat mapr-hue mapr-livy mapr-collectd mapr-kafka mapr-oozie mapr-oozie-internal mapr-spark mapr-spark-historyserver mapr-fluentd

****HttpFS:** (Do not upgrade httpfs using yum update, as it will create 2 folders within /opt/mapr/httpfs which can cause ambiguity in which folder to pick up. Hence, remove the httpfs package and reinstall it on respective node which will create only 1 folder name "httpfs-1.0" under /opt/mapr/httpfs)
yum remove mapr-httpfs
rm -rf /opt/mapr/httpfs/
yum install mapr-httpfs
https://mapr.com/docs/61/UpgradeGuide/Upgrading-HttpFS.html

9. **Perform Post-Upgrade Steps for MEP**

9.a. Drill: (all nodes)
i. Reapply custom changes: (/opt/mapr/drill/drill-<version>/conf)
- drill-override.conf
- drill-env.sh
- drill-distrib.conf

ii. Run /opt/mapr/server/configure.sh -R
iii. Issue "jps" command to check Drillbit running
iv. Check in MCS if Drill is running
v. Verify storage plugin configurations at https://192.4.25.203:7047/storage
Can access the logs at: /opt/mapr/drill/drill-<version>/logs/drillbit.log.

9.b. Hbase Client: (ike01 & 02)
Merge HBase Client configuration files from with the new default files in /opt/mapr/hbase/hbase-<version>/conf/. Be sure not to simply copy over the configuration files: to avoid overwriting the default files, conduct a merge.

9.c. Hive: (ike04 & 05)
i. Migrate any custom conf to /opt/mapr/hive/hive-2.3/conf/

ii. Update Hive Metastore: /opt/mapr/hive/hive-2.3/bin/schematool -dbType mysql -upgradeSchema
iii. Run /opt/mapr/server/configure.sh -R
iv. Verify metastore database update completed successfully. Run the show tables command in Hive and make sure it returns a complete list of all your Hive tables.

9.d. HttpFS: (ike04 & 05)

i. Migrate any custom configuration settings in:

- /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/webapps/webhdfs/WEB-INF/web.xml
- /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/conf/server.xml
- /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/conf/tomcat-users.xml
- /opt/mapr/httpfs/httpfs-1.0/etc/hadoop/httpfs-site.xml

9.e. Hue: (ike04 & 05)

i. Migrate required changes to /opt/mapr/hue/hue-<version>/desktop/conf/hue.ini
ii. Update database schema:
source /opt/mapr/hue/hue-4.2.0/bin/activate
hue syncdb --noinput
hue migrate --merge
deactivate
iii. maprcli node services -name hue -action restart -nodes 192.4.25.204 192.4.25.205
iv. Transfer custom configuration for Livy at /opt/mapr/livy/livy-<version>/conf/
iii. Re-check the number of tables in Hue

9.f. MapR Monitoring:

Add customized properties from the configuration files backed up before the upgrade to the files in the new installation directories. Run /opt/mapr/server/configure.sh -R

9.g. Oozie: (ike04 & 05)

i. Add customized configuration at /opt/mapr/oozie/oozie-<version>/conf/
ii. If Oozie installation is configured to use MySQL database and upgrading to a new Oozie version, copy the JDBC driver jar file for MySQL to following directory: /opt/mapr/oozie/oozie-<oozie version>/libext
iii. If it is present, remove the old warden.oozie.conf under the /opt/mapr/conf/conf.d/ directory before running the configure.sh -R command.
iv. Run /opt/mapr/server/configure.sh -R
v. Stop the Oozie service: maprcli node services -name oozie -action stop -nodes ike04 ike05
vi. Upgrade database schema: /opt/mapr/oozie/oozie-<version>/bin/ooziedb.sh upgrade -run
vii. Start the Oozie service: maprcli node services -name oozie -action start -nodes ike04 ike05
viii. If needed, update oozie shared libraries
(Ref: https://mapr.com/docs/61/Oozie/UpdatingOozieSharedLibs.html#task_erj_jyr_3z)

9.h. Spark: (all nodes)

i. Migrate any custom configuration settings to /opt/mapr/spark/spark-<version>/conf

ii. If previously configured Spark to use the Spark JAR file from a location on the MapR Filesystem, you need to copy the latest JAR file to the MapR Filesystem and reconfigure the path to the JAR file in the spark-defaults.conf file (https://mapr.com/docs/61/Spark/ConfigureSparkJARLocation.html#ConfigureSparkJARLocation)

iii. If Spark SQL is configured to work with Hive, copy hive-site.xml file into the conf directory (/opt/mapr/spark/spark-<version>/conf).

iv. Run configure.sh -R.

v. Delete the old Spark directory from /opt/mapr/spark.

10. **Perform Post-Upgrade Steps for MapR Core:**

Step 1-

10.a. clush -w ike[01-03] service mapr-zookeeper start

10.b. clush -w ike[01-02] service mapr-warden start

10.c. clush -w ike[03-05] service mapr-warden start

10.d. Set new cluster version: maprcli config save -values {mapr.targetversion:"`cat /opt/mapr/MapRBuildVersion`"}

10.e. Verify new cluster version: maprcli config load -keys mapr.targetversion

10.f. Check all services working:

maprcli node list -columns hostname,csvc

maprcli node cldbmaster

/opt/mapr/initscripts/zookeeper qstatus

Step 2 –

1. On all nodes, manually merge new configuration settings from the /opt/mapr/conf.new/warden.conf file into the /opt/mapr/conf/warden.conf file.
2. On all nodes, manually merge new configuration settings from the files in the /opt/mapr/conf/conf.d.new/ directory to the files in the /opt/mapr/conf/conf.d/ directory. /opt/mapr/conf/conf.d.new/ directory only had warden.nodemanager.conf which matched as same present at /opt/mapr/conf/conf.d/ directory.
3. Manually merge the port and authentication configuration information in the /opt/mapr/conf/web.conf directory from the pre-6.0 MapR version to the /opt/mapr/apiserver/conf/properties.cfg file of the upgraded MapR version. (for ike03 & ike04)
4. To update the Base License, copy the new Base License file from the /opt/mapr/conf.new/ directory to the /opt/mapr/conf/ directory on every node in your cluster.
5. Enable new features: Check the new features using **maprcli cluster feature list** command and enable it using **maprcli cluster feature enable -all**
6. Enable Puppet: clush -w ike[01-05] puppet agent --enable

Post Upgrade Steps for MapR Core

Step 1 (Restart and Check Cluster Services)

1. No custom edits present at /opt/mapr/conf/env.sh file (tallied /opt/mapr/conf/env.sh and /opt/mapr/conf/env.sh.2018-11-15.02-15). Hence no merge was required. **Checked for ike01/**
2. Set new cluster version:
   maprcli config save -values {mapr.targetversion:"`cat /opt/mapr/MapRBuildVersion`"}
   Check using:
   maprcli config load -keys mapr.targetversion

Step 2 (Manually Update Configuration Files)

1. Manually merge new configuration settings from the /opt/mapr/conf.new/warden.conf file into the /opt/mapr/conf/warden.conf file.

Step 3 (Manually Update your License)

Copy the new Base License file from the /opt/mapr/conf.new/ directory to the /opt/mapr/conf/ directory on every node in your cluster.
(cp /opt/mapr/conf.new/BaseLicense.txt /opt/mapr/conf/
)

UPGRADATION OF MANA PRODUCTION CLUSTER
(from MapR6.0.1 TO MapR6.1.0)

Method used: Manual Rolling Upgrade (Online)
Date of Upgradation: 11th December 2018

CONSIDERATIONS BEFORE UPGRADATION:

- In rolling upgrade, the ecosystem components will continue to work as long as the ecosystem components are not updated. After upgrading MapR Core to MapR 6.1.0, you must upgrade ecosystem components to MEP 6.0.0 or later, and this must be done before you enable MapR 6.1 features.
- In a manual rolling upgrade, you upgrade the MapR software one node at a time so that the cluster remains operational throughout the process.

UPGRADATION STEPS:

1. **Understand MapR Core/MEP Dependencies:**

1.a. Operating System Support Matrix (MapR 6.x) -

OS Version / MapR Version	MapR 6.1.0	MapR 6.0.1	MapR 6.0.0	MapR 5.2.2
CentOS7.3.1611 (64bit)	Yes	Yes	Yes	No

**Check cluster's OS version at file /etc/redhat-release

This MapR Core Version	Supports These MEPs
6.1.0	6.0.0
6.0.1	5.0.1, 5.0.0

1.b. MEP Support by MapR Core Version –

1.c. Component Versions for Released MEPs –

** Refer to the excel made: Matrix for components in Sandbox (Tab MapR6.0.1)

2. **Plan for MapR Core Upgrade:**

2.a. Upgrading and Your License –

If upgrading from MapR version 5.0 or earlier, the Base License file must be manually updated on all nodes in cluster: skip the step as we are upgrading from version 6.0.1 to 6.1.0.

Current Licenses in cluster:

- MapR M7 Edition
- MapR Enterprise Edition
- MapR Base Edition
- Base MapR POSIX Client for fast secure file access
- MapR POSIX Client for fast secure file access

NOTE: ** **MapR Metering Feature:** Beginning with the MapR 6.1 release, MapR software supports metering. Annual subscriptions will continue to be offered, but metering gives you the option of purchasing a variable consumption plan that is based on usage.

Ref: https://mapr.com/docs/61/UpgradeGuide/License-upgrade.html#license-upgrade

2.b. Upgradation & Installation Considerations –

Ref: https://mapr.com/docs/61/ReleaseNotes/install_upgrade_notes.html

Upgrading to MapR 6.1.0 Might Require an OS Upgrade	Our cluster use OS as CentOS7.3.1611 which supports MapR6.1.0
Data-on-wire-encryption	Beginning with MapR 6.1, data-on-wire encryption is enabled by default for newly created volumes on secure clusters. Data-on-wire encryption is *not* supported for non-secure clusters.
MapR 6.1.0 and MEP 6.0.0	MapR 6.1.0 requires MEP 6.0.0. MEP 3.0.1 or later can coexist with MapR 6.1.0 only temporarily in the context of an upgrade.

Metrics Monitoring	MapR 6.1.0 requires a minimal level of metrics monitoring to be configured to support metering. If metrics monitoring is already configured before the upgrade, you must upgrade it as part of the MapR Expansion Pack upgrade.
Regenerating the maprusertickt File	There is no “mapruser” file at /opt/mapr/conf to be regenerated.

2.c. Planning Your MapR Core Upgrade –

JDK version present: 1.8.0_161 (this is compatible with MapR6.1.0)

**Volume mirroring from a lower MapR version to higher MapR version is supported. For example, you can mirror volumes from a MapR 4.0.1 cluster to a MapR 5.2 cluster.

3. **Plan for the MEP Upgrade:**

Install ecosystem components as part of a MEP. You will be offered packs to install that contain selected component versions. After upgrading, you may want to upgrade to a more recent MEP to get the latest patch releases or newer versions of ecosystem components.

Most MapR core versions support multiple MEPs, but the set of ecosystem components that you run in the cluster must all belong to the same MEP. When you upgrade a MEP, all components are replaced with the versions contained in the newly selected MEP.

4. **Perform Pre-upgrade steps for MapR Core:**

Ref - https://mapr.com/docs/61/UpgradeGuide/Preparing-to-Upgrade.html#PreparingtoUpgrade

4.a. Verify System Requirements for All nodes:

- Software dependencies – We are using package manager, where we specify a repository that contains the dependency package(s), and allow the package manager to automatically install them when you upgrade the MapR packages.
- Hardware requirements –

  CPU: x86_64 (checked) [command: uname -m]

  OS: CentOS Linux release 7.3.1611 (checked) [command: lsb_release -a]

  Memory: minimum req 16GB (checked) [command: free -g]

  Disk: space to /tmp & /opt directory

  DNS: hostname (checked) [command: hostname -f & ping]

  Users: common users (checked) [same UID of “mapr” user across the cluster]

  Java: 1.8.0_161 (checked) [command: java -version]

  Others: NTP running, No syslog enabled (all checked)

4.b. Design Health Checks:

- Check for alerts in the cluster –

  Command: maprcli node list -columns svc (kept the output as backup at butters01）

- Non-trivial test – done

4.c. Pause Cross-Cluster Operations:
Check for kenny01

4.d. Backup Configuration Files:
Creation of env_override.sh file to store custom settings for environmental variables not required as no custom settings done in env.sh. Upgrading to a new MapR release causes the env.sh file to be replaced and removes any custom settings.
Fuse.conf backup is not required as fuse.conf.backup file gets created during upgradation.
Ref: https://mapr.com/docs/61/ReferenceGuide/env_override.sh.html#concept_hnz_4yd_mdb

4.e. Migrate from Apache Hbase: (not required)
Ref: https://mapr.com/docs/61/UpgradeGuide/Preparing-to-Upgrade.html#PreparingtoUpgrade

5. **Prepare to Upgrade MEP Components:**

**Create folder to keep backup:
clush -w butters[01-23] mkdir /root/mapr_6.0.1_backup
clush -w butters[29-38] mkdir /root/mapr_6.0.1_backup
clush -w butters[40-48] mkdir /root/mapr_6.0.1_backup
clush -w cartman[01-05] mkdir /root/mapr_6.0.1_backup
clush -w kenny[01-02] mkdir /root/mapr_6.0.1_backup
clush -w kenny[05-06] mkdir /root/mapr_6.0.1_backup

5.a. Pre-Upgrade Steps for Drill: (butters01-23, 29-38, 40-48)
- Backup taken: (at /root/mapr_6.0.1_backup/drill_1.13.0_backup/)
  /opt/mapr/drill/drill-1.13.0/conf
  /opt/mapr/drill/drill-1.13.0/jars
- Backup of Storage Plugins: done

5.b. Pre-Upgrade Steps for HBase Client (butters01-03, butters29, butters46-48, cartman05 & kenny02): backup of /opt/mapr/hbase/hbase-1.1.8/conf taken at /root/mapr_6.0.1_backup/hbase_backup/.

5.c. Pre-Upgrade Steps for Hive: (butters29, cartamn04 & 05)
- Backup the metastore database: mysqldump -u root -p hive -r hive_dump.sql (done at cartman05 /root)
- Backup taken of: /opt/mapr/hive/hive-2.1/conf/ at /root/mapr_6.0.1_backup/hive_conf.

*For a major version update (for example, Hive-2.1-1803 to Hive-2.3-1808), user configuration from a previous version is **only** copied to a folder with an old version timestamp but not copied to a new version conf folder.

5.d. Pre-Upgrade Steps for HttpFS: (cartman04 & 05)
Backup taken of: /opt/mapr/httpfs/httpfs-1.0/etc/hadoop/ at /root/mapr_6.0.1_backup/httpfs_conf

5.e. Pre-Upgrade Steps for Hue: (cartman04 & 05)

- Create a Hue database dump as a JSON object: (done at cartman04 & 05 /root)

source /opt/mapr/hue/hue-3.12.0/build/env/bin/activate
(env)[root@ike04 ~]# hue dumpdata > ~/dump-hue-3.12.0.json

- Backup taken of: /opt/mapr/hue/hue-3.12.0/desktop/conf at /root/mapr_6.0.1_backup/hue_conf
- Backup taken of: /opt/mapr/livy/ livy-0.3.0/conf

5.f. Pre -Upgrade Steps for MapR Monitoring:

- Backup taken of:

All nodes except kenny05&kenny06
/opt/mapr/conf/conf.d/warden.collectd.conf
/opt/mapr/collectd/collectd-5.7.2/etc/collectd.conf
/etc/logrotate.d/collectd
butters48
/opt/mapr/conf/conf.d/warden.grafana.conf
/opt/mapr/grafana/grafana-4.6.1/etc/grafana/grafana.ini
/opt/mapr/grafana/grafana-4.6.1/etc/grafana/ldap.toml
butters01-03
/opt/mapr/conf/conf.d/warden.opentsdb.conf
/opt/mapr/opentsdb/opentsdb-2.4.0/etc/opentsdb/opentsdb.conf
/opt/mapr/opentsdb/opentsdb-2.4.0/etc/opentsdb/logback.xml
opt/mapr/opentsdb/opentsdb-2.4.0/bin/tsdb_cluster_mgmt.sh

5.g. Pre-Upgrade Steps for Oozie: (cartman04 & 05)

- Stop any jobs or coordinators that are in a RUNNING or SUSPENDED state.
- Backup taken of: /opt/mapr/oozie/oozie-4.3.0/conf at /root/mapr_6.0.1_backup/Oozie_conf
- Backup taken of oozie database: mysqldump -u root -p oozie -r oozie_dump.sql (done)
- Backup of the old share libraries and examples from the following directories:
  - maprfs:///oozie/share

5.h. Pre-Upgrade Steps for Spark: (butters01-23, 29-38, 40-48, cartman04-05, kenny02)

- Backup taken of: /opt/mapr/spark/spark-2.2.1/conf

** Backup taken of: /etc/my.cnf (etc_my_cnf)
**Backup taken of : /etc/Hadoop (Hadoop_backup)

6. **Setting up Repositories:**

Ref: https://mapr.com/docs/61/UpgradeGuide/SetUpLocalRepoRHEL.html

** Repository was already downloaded from internet at /var/www/html/yum/base
Updated the symlinks of mapr_core & mapr_eco:
ln -sfn /var/www/html/yum/base/v6.1.0 mapr_core
ln -sfn /var/www/html/yum/base/MEP/MEP-6.0 mapr_eco

a. Run yum clean all in all nodes of cluster.
b. Take note of current and upgraded version of all services from all nodes (use yum info)

7. **Perform the Manual Rolling Upgrade:**

Manual Rolling Upgrade Description:

Group Upgrade Order: -
1 – cartman01,03(slave CLDB) & 02(master CLDB)
2 – cartman04 (to maintain zookeeper quorum)
2 – butters40,41,42 & cartman05 (upgrade mapr-gateway nodes before fileserver)
3 – upgrade butters29(standby resourcemanger) before butters30(active resourcemanager)
4 – butters[01-23], butters[31-38], butters[43-48] (upgrade fileserver nodes)

Manual Rolling Upgrade Procedure:

7.a. Send mail to stakeholders about upgrade.
7.b. Disable Puppet:
clush -g dnall puppet agent --disable
7.c. Kill the yarn applications:
yarn application -list
yarn application -kill <ApplicationId>
7.d. Stop posix-client service on Posix nodes (kenny01,05,06)
Stop NFS on all nodes (from MCS)
Stop RM on all nodes (from MCS)
Stop NM on all nodes (from MCS)
7.e. Stop Warden on all nodes, CLDB nodes & also zookeeper:
clush -w butters[01-23] systemctl stop mapr-warden
clush -w butters[29-38] systemctl stop mapr-warden
clush -w butters[40-48] systemctl stop mapr-warden
clush -w cartman[04-05] systemctl stop mapr-warden
clush -w kenny02 systemctl stop mapr-warden
clush -w cartman[01-03] systemctl stop mapr-warden (CLDB nodes last)

clush -w cartman[02-04] systemctl stop mapr-zookeeper

7.f. Ensure no MapR processes are running:

clush -ab 'ps -ef | grep mapr | grep -v grep |wc -l'

clush -g dnall ps -ef | grep mapr | grep -v grep | awk '{print $2}' | xargs kill

ps -ef | grep mapr| grep -v grep | awk '{system("kill -9 "$2)}'

7.g. Remove existing patches: rpm -e mapr-patch (Check using rpm -qa mapr-patch)

**Patch present on all nodes (except cartman01); kenny05 & 06 has mapr-patch-client

clush -ab 'yum erase -y <mapr-patch-name>'

7.h. Upgrade the MapR core and MEP components:

clush -g dnall "yum update mapr-*"

7.i. Configure the node:

clush -g dnall /opt/mapr/server/configure.sh -R

7.j. Start Zookeeper:

clush -w cartman[02-04] systemctl stop mapr-zookeeper

clush -w cartman[02-04] systemctl daemon-reload

clush -w cartman[02-04] 'jps' (check with this command)

7.k. Update the configuration change for Drill and Spark in Puppet for upgradation (done by Avijit)

7.l. Enable Puppet: clush -g dnall puppet agent --enable

7.m. Applied patches from MapR SFTP location: core, patch-client, patch-posix-client-basic (v6.1)

clush -ab "yum localinstall -y /root/patch_11122018/mapr-patch-6.1.0.20180926230239.GA-20181129115411.x86_64.rpm"

7.n. Start Warden:

clush -w cartman[01-03] systemctl start mapr-warden (CLDB nodes)

clush -g dnall systemctl start mapr-warden

clush -w kenny[05-06] service mapr-posix-client-basic start

7.o. Check that the CLDB is running. If output is displayed, the CLDB is running. If not, start CLDB.

maprcli node list

7.p. Wait for the containers to synchronize, run the following command, and check that there is no output:

/opt/mapr/server/mrconfig info containers resync local

No output signifies that the containers are synchronized.

8. **Perform Post-Upgrade Steps for MEP**

8.a. Drill:

i. Reapply custom changes: (/opt/mapr/drill/drill-<version>/conf)

- drill-override.conf
- drill-env.sh
- drill-distrib.conf

ii. Run /opt/mapr/server/configure.sh -R
iii. Issue “jps” command to check Drillbit running
iv. Check in MCS if Drill is running
v. Verify storage plugin configurations at https://192.4.25.203:7047/storage
Can access the logs at: /opt/mapr/drill/drill-<version>/logs/drillbit.log.

8.b. Hbase Client:

Merge HBase Client configuration files from with the new default files in /opt/mapr/hbase/hbase-<version>/conf/. Be sure not to simply copy over the configuration files: to avoid overwriting the default files, conduct a merge.

8.c. Hive:

i. Migrate any custom conf to /opt/mapr/hive/hive-2.3/conf/
ii. Update Hive Metastore: /opt/mapr/hive/hive-2.3/bin/schematool -dbType mysql -upgradeSchema
iii. Run /opt/mapr/server/configure.sh -R
iv. Verify metastore database update completed successfully. Run the show tables command in Hive and make sure it returns a complete list of all your Hive tables.

8.d. HttpFS:

i. Migrate any custom configuration settings in:

- /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/webapps/webhdfs/WEB-INF/web.xml
- /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/conf/server.xml
- /opt/mapr/httpfs/httpfs-1.0/share/hadoop/httpfs/tomcat/conf/tomcat-users.xml
- /opt/mapr/httpfs/httpfs-1.0/etc/hadoop/httpfs-site.xml

8.e. Hue:

i. Migrate required changes to /opt/mapr/hue/hue-<version>/desktop/conf/hue.ini
ii. Update database schema:
source /opt/mapr/hue/hue-4.2.0/bin/activate
hue syncdb --noinput
hue migrate --merge
deactivate
iii. maprcli node services -name hue -action restart -nodes 192.4.25.204 192.4.25.205
iv. Transfer custom configuration for Livy at /opt/mapr/livy/livy-<version>/conf/
iii. Re-check the number of tables in Hue

8.f. MapR Monitoring:

Add customized properties from the configuration files backed up before the upgrade to the files in the new installation directories. Run /opt/mapr/server/configure.sh -R

8.g. Oozie:

i. Add customized configuration at /opt/mapr/oozie/oozie-<version>/conf/

ii. If Oozie installation is configured to use MySQL database and upgrading to a new Oozie version, copy the JDBC driver jar file for MySQL to following directory: /opt/mapr/oozie/oozie-<oozie version>/libext
iii. If it is present, remove the old warden.oozie.conf under the /opt/mapr/conf/conf.d/ directory before running the configure.sh -R command.
iv. Run /opt/mapr/server/configure.sh -R
v. Stop the Oozie service: maprcli node services -name oozie -action stop -nodes ike04 ike05
vi. Upgrade database schema: /opt/mapr/oozie/oozie-<version>/bin/ooziedb.sh upgrade -run
vii. Start the Oozie service: maprcli node services -name oozie -action start -nodes ike04 ike05
viii. If needed, update oozie shared libraries
(Ref: https://mapr.com/docs/61/Oozie/UpdatingOozieSharedLibs.html#task_erj_jyr_3z)

8.h. Spark:
i. Migrate any custom configuration settings to /opt/mapr/spark/spark-<version>/conf
ii. If previously configured Spark to use the Spark JAR file from a location on the MapR Filesystem, you need to copy the latest JAR file to the MapR Filesystem and reconfigure the path to the JAR file in the spark-defaults.conf file (https://mapr.com/docs/61/Spark/ConfigureSparkJARLocation.html#ConfigureSparkJARLocation)
iii. If Spark SQL is configured to work with Hive, copy hive-site.xml file into the conf directory (/opt/mapr/spark/spark-<version>/conf).
iv. Run configure.sh -R.
v. Delete the old Spark directory from /opt/mapr/spark.

9. **Perform Post-Upgrade Steps for MapR Core:**

Step 1-

9.a. clush -w ike[01-03] service mapr-zookeeper start
9.b. clush -w ike[01-02] service mapr-warden start
9.c. clush -w ike[03-05] service mapr-warden start
9.d. Set new cluster version: maprcli config save -values {mapr.targetversion:"`cat /opt/mapr/MapRBuildVersion`"}
9.e. Verify new cluster version: maprcli config load -keys mapr.targetversion
9.f. Check all services working:
maprcli node list -columns hostname,csvc
maprcli node cldbmaster
/opt/mapr/initscripts/zookeeper qstatus

Step 2 –

1. On all nodes, manually merge new configuration settings from the /opt/mapr/conf.new/warden.conf file into the /opt/mapr/conf/warden.conf file.

2. On all nodes, manually merge new configuration settings from the files in the /opt/mapr/conf/conf.d.new/ directory to the files in the /opt/mapr/conf/conf.d/ directory. /opt/mapr/conf/conf.d.new/ directory only had warden.nodemanager.conf which matched as same present at /opt/mapr/conf/conf.d/ directory.
3. Manually merge the port and authentication configuration information in the /opt/mapr/conf/web.conf directory from the pre-6.0 MapR version to the /opt/mapr/apiserver/conf/properties.cfg file of the upgraded MapR version. (for ike03 & ike04)
4. To update the Base License, copy the new Base License file from the /opt/mapr/conf.new/ directory to the /opt/mapr/conf/ directory on every node in your cluster.
5. Enable new features: Check the new features using **maprcli cluster feature list** command and enable it using **maprcli cluster feature enable -all**

Set RM logs in MapR NFS

https://mapr.com/support/s/article/How-to-change-Nodemanager-local-dirs-to-MAPR-NFS?language=en_US

```
<property>
<name>yarn.nodemanager.local-dirs</name>
<value>/mapr/MapRDev/var/mapr/local/${mapr.host}/nm-local-dir</value>
</property>
```

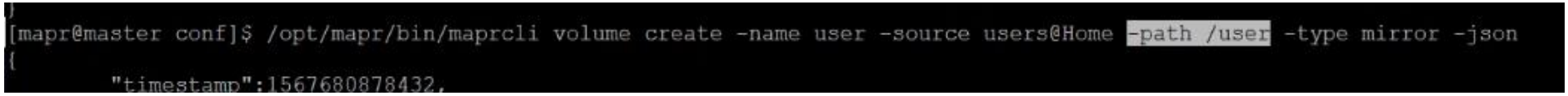
Installation spark `2.4.0 & spark 2.3.3`

I have used the below command to install spark:

rpm -ivh --replacefiles --force --prefix=/ mapr-spark-2.3.3.100.201905170600-1.noarch.rpm
after this please execute configure.sh -R to integrate the new spark with MapR core.

You can now submit spark-job using below command:
2.3.3:
=======
/opt/mapr/spark/spark-2.3.3/bin/spark-submit --master yarn --deploy-mode client --class org.apache.spark.examples.SparkPi
/opt/mapr/spark/spark-2.3.3/examples/jars/spark-examples_2.11-2.3.3.100-mapr-611.jar

2.4.0:
=======
/opt/mapr/spark/spark-2.4.0/bin/spark-submit --master yarn --deploy-mode client --class org.apache.spark.examples.SparkPi
/opt/mapr/spark/spark-2.4.0/examples/jars/spark-examples_2.11-2.4.0.0-mapr-620.jar



MAPR-NFS

====

#clush -bg dsldev 'cp /opt/mapr/conf/mapr_fstab.sample /opt/mapr/conf/mapr_fstab'
#clush -bg dsldev 'chown mapradmin:mapr /opt/mapr/conf/mapr_fstab'
#clush -bg dsldev 'echo localhost:/mapr /mapr nolock,nfsvers=3 >> /opt/mapr/conf/mapr_fstab'
#clush -bg dsldev 'mkdir /mapr'

Mapr-Spark installation without MEP

****

1. Install spark-2.4

```
rpm -ivh --replacefiles --force --prefix=/ mapr-spark-2.4.0.0.201905170634-1.noarch.rpm
```

2.

Create a zip archive containing all the JARs from the SPARK_HOME/jars directory.
For example:

```
cd /opt/mapr/spark/spark-2.4.0/jars/
zip /opt/mapr/spark/spark-2.4.0/spark-jars.zip ./*
```

Copy the zip file from the local file system to a world-readable location on MapR-FS. You can upload it to the home of the current user:

```
hadoop fs -put /opt/mapr/spark/spark-2.4.0/spark-jars.zip
```

For example:

```
hadoop fs -put /opt/mapr/spark/spark-2.4.0/spark-jars.zip /user/mapr/
```

3.

a.

Chown the spark-2.4

b.

modify the spark.env.sh to version spark.2.4

c.

Set the spark.yarn.archive property in the spark-defaults.conf file to point to the world-readable location where you added the zip file. Apply this setting on the node where you will be submitting your Spark jobs.

```
spark.yarn.archive maprfs:///<path to zip>
```

For example:

```
spark.yarn.archive maprfs:///user/mapr/spark-jars.zip
```

4. Testing

```
/opt/mapr/spark/spark-2.4.0/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --deploy-mode client  /opt/mapr/spark/spark-2.4.0/examples/jars/spark-examples_2.11-2.4.0.0-mapr-620.jar 10

/opt/mapr/spark/spark-2.4.0/bin/spark-submit --class org.apache.spark.examples.SparkPi --master yarn --deploy-mode cluster  /opt/mapr/spark/spark-2.4.0/examples/jars/spark-examples_2.11-2.4.0.0-mapr-620.jar 10
```

$$$$$$$$$$$$$$$
RStudio
========
URL: https://rstudio.com/products/rstudio/download-server/redhat-centos/

wget https://download2.rstudio.org/server/centos6/x86_64/rstudio-server-rhel-1.2.5001-x86_64.rpm
sudo yum install rstudio-server-rhel-1.2.5001-x86_64.rpm

Set parameter in Conf file
----
vi /etc/rstudio/rserver.conf

Server Configuration File
www-port=8788
www-address=esekilx5571.rnd.ki.sw.ericsson.se

To access with PAM user
===============
#cd /etc/pam.d/

->make symlink to login to rstudio

ls -s login rstudio or ls -s /etc/pam.d/login /etc/pam.d/rstudio

Start rstudio

#/usr/sbin/rstudio-server start
#/usr/sbin/rstudio-server status
rstudio-server restart

Now access in browser:
----

http://esekilxgp02.rnd.ki.sw.ericsson.se:8788/auth-sign-in

==

1.Need to add below parametter:

/opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop

```
<property>
    <name>yarn.resourcemanager.webapp.address</name>
    <value>esekilx5642.rnd.ki.sw.ericsson.se:8090</value>
  </property>
<property>
    <name>yarn.resourcemanager.webapp.address</name>
    <value>esekilx5642.rnd.ki.sw.ericsson.se:8090,esekilx5641.rnd.ki.sw.ericsson.se:8090,esekilx5640.rnd.ki.sw.ericsson.se:8
090</value>
  </property>
```

2.To connect with spark through Rstudio

install and set the below commands:

```
library(sparklyr)
Sys.setenv("SPARK_HOME" = "/opt/mapr/spark/spark-2.3.1")
Sys.setenv(YARN_CONF_DIR = "/opt/mapr/hadoop/hadoop-2.7.0/etc/hadoop")
config <- spark_config()
sc <- spark_connect(master = "yarn-client", app_name = "SparklyR_RL_Returners", config = config)
spark_disconnect(sc)
```