

# DEV-CDM Spark Cluster Install

June-27-17 10:19 AM

## Installing Spark

### Check OS Release

<pre>[administrator@dev-cdm-spark0* ~]\$ cat /etc/os-release NAME="CentOS Linux" VERSION="7 (Core)" ID="centos" ID_LIKE="rhel fedora" VERSION_ID="7" PRETTY_NAME="CentOS Linux 7 (Core)" ANSI_COLOR="0;31" CPE_NAME="cpe:/o:centos:centos:7" HOME_URL="https://www.centos.org/" BUG_REPORT_URL="https://bugs.centos.org/"  CENTOS_MANTISBT_PROJECT="CentOS-7" CENTOS_MANTISBT_PROJECT_VERSION="7" REDHAT_SUPPORT_PRODUCT="centos" REDHAT_SUPPORT_PRODUCT_VERSION="7"</pre>	Check what Operating System Was installed
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First we need to make sure we have Java installed:

### Install Java

<pre>[administrator@dev-cdm-spark0* ~]\$ yum list java-1.*openjdk.* Loaded plugins: fastestmirror, langpacks Loading mirror speeds from cached hostfile * base: mirror.gpmidi.net * extras: mirror.gpmidi.net * updates: mirror.gpmidi.net Available Packages java-1.6.0-openjdk.x86_64      1:1.6.0.41-1.13.13.1.el7_3      updates java-1.7.0-openjdk.x86_64      1:1.7.0.141-2.6.10.1.el7_3      updates java-1.8.0-openjdk.i686        1:1.8.0.131-3.b12.el7_3         updates java-1.8.0-openjdk.x86_64      1:1.8.0.131-3.b12.el7_3         updates</pre>	List available Java  Pick latest
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo yum install java-1.8.0-openjdk</pre>	Install 1.8
<pre>[administrator@dev-cdm-spark0* ~]\$ java -version openjdk version "1.8.0_131" OpenJDK Runtime Environment (build 1.8.0_131-b12) OpenJDK 64-Bit Server VM (build 25.131-b12, mixed mode)</pre>	Verify

## Configuration Check

### Basho Riak limitation

#### Compatibility

**Riak TS 1.3.1+**  
**Apache Spark 1.6+**  
**Scala 2.10 and 2.11**  
**Java 8**

From <<https://github.com/basho/spark-riak-connector>>

### Basho Riak Connector by Spark Version

**Version: 1.6.3 ( 84859a | zip | jar ) / Date: 2017-03-17 / License: Apache-2.0 / Scala version: 2.10**

Version: 1.6.2 ( 9970e7 | zip | jar ) / Date: 2017-01-02 / License: Apache-2.0 / Scala version: 2.10

Version: 1.6.0 ( 16d483 | zip | jar ) / Date: 2016-09-07 / License: Apache-2.0 / Scala version: 2.10

Version: 1.5.0 ( d42c36 | zip ) / Date: 2016-04-18 / License: Apache-2.0

<https://spark-packages.org/package/basho/spark-riak-connector>

### Spark Dependencies

**Java 7+**

**Python 2.6+**

**R 3.1+**

**Spark 1.6.3 uses Scala 2.10. You will need to use a compatible Scala version (2.10.x).**

## We need to install Scala

### Install Scala

Restricted to 2.10x so check latest version at <http://www.scala-lang.org/files/archive/> and we find 2.10.6

<pre>[administrator@dev-cdm-spark0* ~]\$ cd \$HOME [administrator@dev-cdm-spark0* ~]\$ pwd /home/administrator</pre>	Set HOME
<pre>[administrator@dev-cdm-spark0* ~]\$ wget http://www.scala-lang.org/files/archive/scala-2.10.6.rpm Saving to: 'scala-2.10.6.rpm' 100%[=====&gt;] 26,067,733 3.02MB/s in 7.3s 2017-06-27 12:23:05 (3.40 MB/s) - 'scala-2.10.6.rpm' saved [26067733/26067733]</pre>	Get the 2-10-6
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo yum install scala-2.10.6.rpm Loaded plugins: fastestmirror, langpacks Examining scala-2.10.6.rpm: scala-2.10.6-400.noarch Marking scala-2.10.6.rpm to be installed Resolving Dependencies --&gt; Running transaction check ---&gt; Package scala.noarch 0:2.10.6-400 will be installed --&gt; Finished Dependency Resolution  Dependencies Resolved  Installed:   scala.noarch 0:2.10.6-400  Complete!</pre>	Install it
<pre>[administrator@dev-cdm-spark0* ~]\$ wget http://www.scala-lang.org/files/archive/scala-2.11.11.rpm [administrator@dev-cdm-spark0* ~]\$ sudo yum install scala-2.11.11.rpm</pre>	Get the 2-11-11
<pre>[administrator@dev-cdm-spark0* ~]\$ scala Welcome to Scala version 2.10.6 (OpenJDK 64-Bit Server VM, Java 1.8.0_131). Type in expressions to have them evaluated. Type :help for more information.  scala&gt; 1+2 res0: Int = 3  scala&gt; exit warning: there were 1 deprecation warning(s); re-run with -deprecation for details [administrator@dev-cdm-spark01 ~]\$</pre>	Verify

### Install Apache Spark

Navigate to <http://spark.apache.org/downloads.html> and select the 1.6.3 version Pre-Built for Hadoop 2.6


Copy the download URL <https://d3kbcqa49mib13.cloudfront.net/spark-1.6.3-bin-hadoop2.6.tgz>

<pre>[administrator@dev-cdm-spark0* ~]\$ cd \$HOME [administrator@dev-cdm-spark0* ~]\$ pwd /home/administrator</pre>	Set HOME
<pre>[administrator@dev-cdm-spark0* ~]\$ wget https://d3kbcqa49mib13.cloudfront.net/spark-1.6.3-bin-hadoop2.6.tgz --2017-06-27 12:50:54-- https://d3kbcqa49mib13.cloudfront.net/spark-1.6.3-bin-hadoop2.6.tgz Resolving d3kbcqa49mib13.cloudfront.net (d3kbcqa49mib13.cloudfront.net)... 52.84.139.173, 52.84.139.165, 52.84.139.240, ... Connecting to d3kbcqa49mib13.cloudfront.net (d3kbcqa49mib13.cloudfront.net) 52.84.139.173 :443... connected. HTTP request sent, awaiting response... 200 OK Length: 279470513 (267M) [application/x-tar] Saving to: 'spark-1.6.3-bin-hadoop2.6.tgz'  100%[=====&gt;] 279,470,513 5.92MB/s in 51s  2017-06-27 12:51:46 (5.25 MB/s) - 'spark-1.6.3-bin-hadoop2.6.tgz' saved [279470513/279470513]</pre>	Get based on the URL
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo mkdir /usr/local/spark [administrator@dev-cdm-spark0* ~]\$ ls -al /usr/local/   grep spark drwxr-xr-x 2 root root 4096 Jun 27 15:23 spark</pre>	Target folder
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo tar xzf spark-1.6.3-bin-hadoop2.6.tgz -C /usr/local/spark --strip-components 1</pre>	Unpack without leading folder
<pre>[administrator@dev-cdm-spark0* spark]\$ sudo useradd hadoop</pre>	Create hadoop


	user if needed
<pre>[administrator@dev-cdm-spark0* spark]\$ cd /usr/local/spark [administrator@dev-cdm-spark0* spark]\$ sudo chown hadoop.hadoop . -R</pre>	Chown root.root ownership
<pre>[administrator@dev-cdm-spark0* ~]\$ ll /usr/local/spark/ total 1412 drwxr-xr-x 2 hadoop hadoop  4096 Nov  2  2016 bin -rw-r--r-- 1 hadoop hadoop 1343562 Nov  2  2016 CHANGES.txt drwxr-xr-x 2 hadoop hadoop  4096 Jun 27 17:00 conf drwxr-xr-x 3 hadoop hadoop  4096 Nov  2  2016 data drwxr-xr-x 3 hadoop hadoop  4096 Nov  2  2016 ec2 drwxr-xr-x 3 hadoop hadoop  4096 Nov  2  2016 examples drwxr-xr-x 2 hadoop hadoop  4096 Nov  2  2016 lib -rw-r--r-- 1 hadoop hadoop  17352 Nov  2  2016 LICENSE drwxr-xr-x 2 hadoop hadoop  4096 Nov  2  2016 licenses drwxr-xr-x 2 hadoop hadoop  4096 Jun 28 10:33 logs -rw-r--r-- 1 hadoop hadoop  23529 Nov  2  2016 NOTICE drwxr-xr-x 6 hadoop hadoop  4096 Nov  2  2016 python drwxr-xr-x 3 hadoop hadoop  4096 Nov  2  2016 R -rw-r--r-- 1 hadoop hadoop  3359 Nov  2  2016 README.md -rw-r--r-- 1 hadoop hadoop   120 Nov  2  2016 RELEASE drwxr-xr-x 2 hadoop hadoop  4096 Nov  2  2016 sbin</pre>	Verify
<pre>vi \$HOME/.bashrc &lt;&lt;append&gt;&gt; # Spark HOME export SPARK_HOME=/usr/local/spark  # Spark PATH PATH=\$PATH:\$SPARK_HOME/bin export PATH</pre>	Add variables
<pre>[administrator@dev-cdm-spark0* ~]\$ . .bashrc [administrator@dev-cdm-spark0* ~]\$ echo \$PATH /usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/home/administrator/.local/bin:/home/administrator/bin:/home/administrator/.local/bin:/home/administrator/bin:/usr/local/spark/bin</pre>	Check
<pre>[administrator@dev-cdm-spark0* ~]\$ spark-shell log4j:WARN No appenders could be found for logger (org.apache.hadoop.metrics2.lib.MutableMetricsFactory). log4j:WARN Please initialize the log4j system properly. log4j:WARN See <a href="http://logging.apache.org/log4j/1.2/faq.html#noconfig">http://logging.apache.org/log4j/1.2/faq.html#noconfig</a> for more info. Using Spark's repl log4j profile: org/apache/spark/log4j-defaults-repl.properties To adjust logging level use sc.setLogLevel("INFO") Welcome to    _ _ _ _ _  _V_V_`V_`_`_`_ /_/_.._/_/_/_/_/_ version 1.6.3 /_/_  Using Scala version 2.10.5 (OpenJDK 64-Bit Server VM, Java 1.8.0_131) Type in expressions to have them evaluated. Type :help for more information. Spark context available as sc. 17/06/27 15:49:35 WARN Connection: BoneCP specified but not present in CLASSPATH (or one of dependencies) 17/06/27 15:49:36 WARN Connection: BoneCP specified but not present in CLASSPATH (or one of dependencies) 17/06/27 15:49:38 WARN ObjectStore: Version information not found in metastore. hive.metastore.schema.validation is not enabled so recording the schema version 1.2.0 17/06/27 15:49:38 WARN ObjectStore: Failed to get database default, returning NoSuchObjectException 17/06/27 15:49:39 WARN Connection: BoneCP specified but not present in CLASSPATH (or one of dependencies) 17/06/27 15:49:39 WARN Connection: BoneCP specified but not present in CLASSPATH (or one of dependencies) SQL context available as sqlContext.  scala&gt; val file=sc.textFile("/usr/local/spark/README.md") file: org.apache.spark.rdd.RDD[String] = /usr/local/spark/README.md MapPartitionsRDD[1] at textFile at &lt;console&gt;:27  scala&gt; file.count(); res0: Long = 95</pre>	Validate Spark
Failed to create database 'metastore_db' error?	Must have rwx

cd \$HOME spark-shell	privs to current directory
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## Check Installation

[administrator@dev-cdm-spark01 ~]\$ <b>sudo /usr/local/spark/sbin/start-master.sh</b> starting org.apache.spark.deploy.master.Master, logging to /usr/local/spark/logs/spark-root-org.apache.spark.deploy.master.Master-1-dev-cdm-spark01.nexjqa.local.out	Start spark01 as the <b>MASTER</b>
<a href="http://dev-cdm-spark01.nexjqa.local:8080/">http://dev-cdm-spark01.nexjqa.local:8080/</a>	Check URL
 <b>Spark Master at spark://dev-cdm-spark01.nexjqa.local:7077</b>  <b>URL:</b> spark://dev-cdm-spark01.nexjqa.local:7077 <b>REST URL:</b> spark://dev-cdm-spark01.nexjqa.local:6066 (cluster mode) <b>Alive Workers:</b> 0 <b>Cores in use:</b> 0 Total, 0 Used <b>Memory in use:</b> 0.0 B Total, 0.0 B Used <b>Applications:</b> 0 Running, 0 Completed <b>Drivers:</b> 0 Running, 0 Completed <b>Status:</b> ALIVE	

## Prepare & Validate Slave

[administrator@dev-cdm-spark02 ~]\$ <b>cd \$SPARK_HOME/conf</b> [administrator@dev-cdm-spark02 conf]\$ <b>sudo cp spark-env.sh.template spark-env.sh</b> [administrator@dev-cdm-spark02 conf]\$ <b>ls -al spark-env.sh</b> -rwxr-xr-x 1 root root 4209 Jun 27 16:58 spark-env.sh	Copy the template shell
[administrator@dev-cdm-spark02 ~]\$ <b>sudo vi \$SPARK_HOME/conf/spark-env.sh</b> <<update>> <b>export SPARK_MASTER_HOST=dev-cdm-spark01.nexjqa.local:7077</b>	Edit the conf shell and add the Master variable
[administrator@dev-cdm-spark02 ~]\$ <b>. \$SPARK_HOME/conf/spark-env.sh</b> [administrator@dev-cdm-spark02 ~]\$ <b>echo \$SPARK_MASTER_HOST</b> dev-cdm-spark01.nexjqa.local:7077	Register the variable
[administrator@dev-cdm-spark02 ~]\$ <b>cd \$HOME</b> [administrator@dev-cdm-spark02 ~]\$ <b>sudo /usr/local/spark/sbin/start-slave.sh \$SPARK_MASTER_HOST</b> starting org.apache.spark.deploy.worker.Worker, logging to /usr/local/spark/logs/spark-root-org.apache.spark.deploy.worker.Worker-1-dev-cdm-spark02.nexjqa.local.out	Start the worker slave
[administrator@dev-cdm-spark02 ~]\$ <b>cat /usr/local/spark/logs/spark-root-org.apache.spark.deploy.worker.Worker-1-dev-cdm-spark02.nexjqa.local.out</b> Spark Command: /usr/lib/jvm/java-1.8.0-openjdk-1.8.0.131-3.b12.el7_3.x86_64/jre/bin/java -cp /usr/local/spark/conf:/usr/local/spark/lib/spark-assembly-1.6.3-hadoop2.6.0.jar:/usr/local/spark/lib/datanucleus-rdbms-3.2.9.jar:/usr/local/spark/lib/datanucleus-core-3.2.10.jar:/usr/local/spark/lib/datanucleus-api-jdo-3.2.6.jar -Xms1g -Xmx1g org.apache.spark.deploy.worker.Worker --webui-port 8081 dev-cdm-spark01.nexjqa.local:7077 ===== Using Spark's default log4j profile: org/apache/spark/log4j-defaults.properties 17/06/28 09:57:42 INFO Worker: Registered signal handlers for [TERM, HUP, INT] 17/06/28 09:57:47 WARN NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable 17/06/28 09:57:47 INFO SecurityManager: Changing view acls to: root 17/06/28 09:57:47 INFO SecurityManager: Changing modify acls to: root 17/06/28 09:57:47 INFO SecurityManager: SecurityManager: authentication disabled; ui acls disabled; users with view permissions: Set(root); users with modify permissions: Set(root) 17/06/28 09:57:47 INFO Utils: Successfully started service 'sparkWorker' on port 41091. 17/06/28 09:57:47 INFO Worker: Starting Spark worker 10.10.20.92:41091 with 4 cores, 6.6 GB RAM 17/06/28 09:57:47 INFO Worker: Running Spark version 1.6.3 17/06/28 09:57:47 INFO Worker: Spark home: /usr/local/spark 17/06/28 09:57:47 INFO Utils: Successfully started service 'WorkerUI' on port 8081. 17/06/28 09:57:47 INFO WorkerWebUI: Started WorkerWebUI at <a href="http://10.10.20.92:8081">http://10.10.20.92:8081</a> 17/06/28 09:57:47 INFO Worker: Connecting to master dev-cdm-spark01.nexjqa.local:7077... 17/06/28 09:57:47 INFO Worker: Successfully registered with master spark://dev-cdm-spark01.nexjqa.local:7077	Check that it started
<a href="http://dev-cdm-spark01.nexjqa.local:8080/">http://dev-cdm-spark01.nexjqa.local:8080/</a>	Check URL - you should see a Worker
 <b>Spark Master at spark://dev-cdm-spark01.nexjqa.local:7077</b>  <b>URL:</b> spark://dev-cdm-spark01.nexjqa.local:7077	

## Spark Master at spark://dev-cdm-spark01.nexjqa.local:7077

URL: spark://dev-cdm-spark01.nexjqa.local:7077

REST URL: spark://dev-cdm-spark01.nexjqa.local:6066 (cluster mode)

Alive Workers: 1

Cores in use: 4 Total, 0 Used

Memory in use: 6.6 GB Total, 0.0 B Used

Applications: 0 Running, 0 Completed

Drivers: 0 Running, 0 Completed

Status: ALIVE

### Workers

Worker id	Address	State
<a href="#">worker-20170628100116-10.10.20.92-44598</a>	10.10.20.92:44598	ALIVE

you should see  
a Worker

<http://dev-cdm-spark02.nexjqa.local:8081/>

## Spark Worker at 10.10.20.92:45020

ID: worker-20170628103621-10.10.20.92-45020

Master URL: spark://dev-cdm-spark01.nexjqa.local:7077

Cores: 4 (0 Used)

Memory: 6.6 GB (0.0 B Used)

[Back to Master](#)

Check Slave  
UI - note the  
port offset

## RIAK Basho Spark Adapter

<https://github.com/basho/spark-riak-connector>

★ <b>spark-riak-connector from the repository comes without pyspark support. But you can build it yourself and attach to pyspark</b>  From < <a href="https://stackoverflow.com/questions/40799372/how-to-use-spark-riak-connector-with-pyspark">https://stackoverflow.com/questions/40799372/how-to-use-spark-riak-connector-with-pyspark</a> >	NO Python Support by default
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo yum install git git clone <a href="https://github.com/basho/spark-riak-connector.git">https://github.com/basho/spark-riak-connector.git</a> cd spark-riak-connector/ python connector/python/setup.py bdist_egg # creates egg file inside connector/python/dist/</pre>	Git clone repo and create egg
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo chown hadoop.hadoop -R * cd \$HOME sudo mv ./spark-riak-connector /usr/local/spark/python</pre>	Chmod and chmove
<pre>[administrator@dev-cdm-spark0* ~]\$ vi \$HOME/.bashrc &lt;&lt;update&gt; # Python PYTHONPATH=\$SPARK_HOME/python:\$SPARK_HOME/python/lib/py4j-0.9-src.zip:\$SPARK_HOME/python/spark-riak-connector/connector/python/dist/pyspark_riak-1.6.3-py3.4.egg:\$PYTHONPATH export PYTHONPATH</pre>	Add to PYTHONPATH
<pre>[administrator@dev-cdm-spark0* ~]\$ pyspark Import pyspark_riak</pre>	Validate
★ <b>Riak Python Client</b>  <a href="http://basho.github.io/riak-python-client/index.html">http://basho.github.io/riak-python-client/index.html</a>	Riak Python Client
<pre>[administrator@dev-cdm-spark0* ~]\$ sudo pip3 install riak</pre>	Install
<pre>[administrator@dev-cdm-spark0* ~]\$ pyspark from riak import RiakClient, RiakNode</pre>	Validate

<b>RiakClient()</b>	
<b>★ scala</b>	
<pre>[administrator@dev-cdm-spark0* ~]\$ wget "http://repo1.maven.org/maven2/com/basho/riak/spark-riak-connector_2.10/1.6.3/spark-riak-connector_2.10-1.6.3-uber.jar" sudo chown hadoop.hadoop spark-riak-connector_2.10-1.6.3-uber.jar sudo mv spark-riak-connector_2.10-1.6.3-uber.jar /usr/local/spark/lib</pre>	Install it
<a href="https://github.com/basho/spark-riak-connector/blob/master/docs/using-connector.md#using-the-spark-riak-connector">https://github.com/basho/spark-riak-connector/blob/master/docs/using-connector.md#using-the-spark-riak-connector</a>	Spark Conf BASHO Riak Properties
<pre>[administrator@dev-cdm-spark0* ~]\$ cd /usr/local/spark/conf sudo cp spark-defaults.conf.template spark-defaults.conf sudo chown hadoop.hadoop spark-defaults.conf  sudo vi /usr/local/spark/conf/spark-defaults.conf &lt;&lt;update&gt;&gt; # BASHO RIAK spark.riak.connection.host dev-cdm-riak01.nexjqa.local:8098 spark.jars /usr/local/spark/lib/spark-riak-connector_2.10-1.6.3-uber.jar</pre>	Create CONF from template
<pre>[administrator@dev-cdm-spark0* ~]\$ cd \$HOME &amp;&amp; spark-shell /* Required Import */ import org.apache.spark.sql.SaveMode import java.sql.Timestamp import com.basho.riak.spark.rdd.connector.RiakConnector  /* Setup the Spark Context (sc is created for you) */ val sqlContext = new org.apache.spark.sql.SQLContext(sc) import sqlContext.implicits._  /* Create an RDD */ val testRDD = sc.parallelize(Seq(   (1, "f", Timestamp.valueOf("1980-1-1 10:00:00"), "v1"),   (1, "f", Timestamp.valueOf("1980-1-1 10:10:00"), "v2"),   (1, "f", Timestamp.valueOf("1980-1-1 10:20:00"), "v3")))  /* Convert to DataFrame (yuck!) */ val df = testRDD.toDF("k", "family", "ts", "value") df.printSchema()  /* Create a TS Table */ val tableName = "ts_table_c" val connector = RiakConnector(sc.getConf)  connector.withSessionDo(session =&gt;{   val request = new com.basho.riak.client.api.commands.timeseries.Query.Builder(     s"""         CREATE TABLE \$tableName (           k   SINT64 not null,           family VARCHAR not null,           ts   TIMESTAMP not null,           value VARCHAR,                   primary key ((k, family, quantum(ts,1,h)), k, family, ts)         )                 """).stripMargin()     .build()    val response = session.execute(request))  /* Write the Data Frame */ df.write.format("org.apache.spark.sql.riak").mode(SaveMode.Append).save(tableName) /* Validate with query */ val tableName = "ts_table_c" val test_query = "ts &gt;= CAST('1980-1-1 10:00:00' AS TIMESTAMP) AND ts &lt;= CAST('1980-1-1 10:30:00' AS TIMESTAMP) AND k = 1"</pre>	Validate

```
AND family = 'f'"
```

```
val df2 = sqlContext.read.format("org.apache.spark.sql.riak").load(tableName).filter(test_query)
```

```
df.toJSON.collect.foreach(println)
```

## Utilities

SSH Web Client (Terminal on port 4200) Shell in a Box

<https://www.unixmen.com/shellinabox-a-web-based-ajax-terminal-emulator/>

```
[administrator@dev-cdm-spark0* ~]$  
sudo yum install shellinabox  
sudo vi /etc/sysconfig/shellinabxd  
<<updated>>  
# Basic options  
USER=shellinabox  
GROUP=shellinabox  
CERTDIR=/var/lib/shellinabox  
PORT=4300  
OPTS="-t -s /:SSH:dev-cdm-spark01/2.nexjqa.local"
```

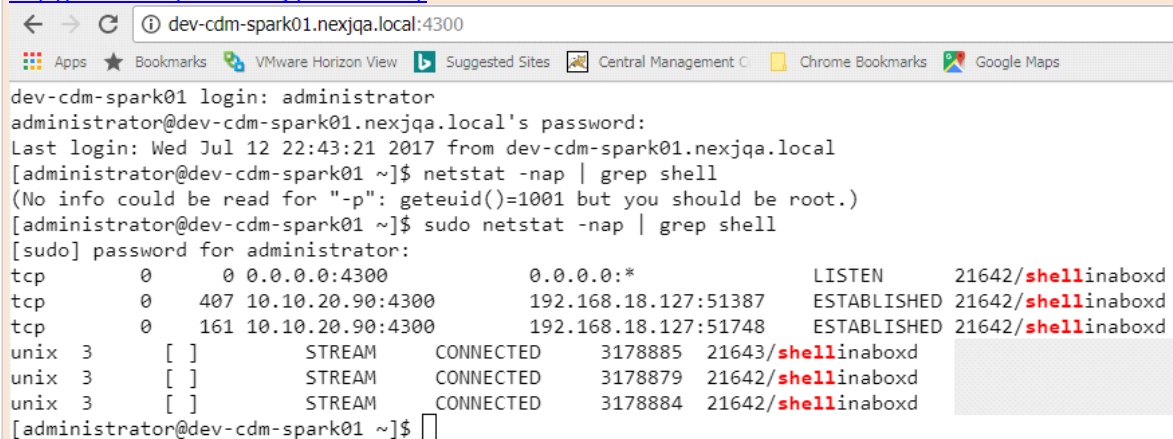
Add it

```
[administrator@dev-cdm-spark0* ~]$  
sudo systemctl enable shellinabxd  
sudo systemctl start shellinabxd
```

Enable &  
Restart service

<http://dev-cdm-spark01.nexjqa.local:4300/>

Validate it



```
dev-cdm-spark01 login: administrator  
administrator@dev-cdm-spark01.nexjqa.local's password:  
Last login: Wed Jul 12 22:43:21 2017 from dev-cdm-spark01.nexjqa.local  
[administrator@dev-cdm-spark01 ~]$ netstat -nap | grep shell  
(No info could be read for "-p": geteuid()=1001 but you should be root.)  
[administrator@dev-cdm-spark01 ~]$ sudo netstat -nap | grep shell  
[sudo] password for administrator:  
tcp        0      0 0.0.0.0:4300          0.0.0.0:*             LISTEN      21642/shellinabxd  
tcp        0  407 10.10.20.90:4300      192.168.18.127:51387   ESTABLISHED 21642/shellinabxd  
tcp        0  161 10.10.20.90:4300      192.168.18.127:51748   ESTABLISHED 21642/shellinabxd  
unix  3      [ ]          STREAM  CONNECTED  3178885    21643/shellinabxd  
unix  3      [ ]          STREAM  CONNECTED  3178879    21642/shellinabxd  
unix  3      [ ]          STREAM  CONNECTED  3178884    21642/shellinabxd  
[administrator@dev-cdm-spark01 ~]$
```

From <http://www.aodba.com/how-to-install-apache-spark-in-centos-standalone/>>