鲲鹏arm64架构centos7源码编译cdh

初步计划：

> - 先在centos上搞，打通以后再openeuler
> - 先cdh5.12.1，再cdh6.3.2

> 华为鲲鹏软件栈官方文档
>
> https://www.huaweicloud.com/kunpeng/solution/universal_solution/kunpeng_bigdata.html#section_self
>
> cdh链接
>
> https://github.com/cloudera/hadoop-common/archive/cdh5.12.1-release.tar.gz
>
> https://github.com/cloudera/hadoop-common/archive/cdh6.3.2-release.tar.gz

1、基本配置要求

1.1 环境要求

项目	说明
服务器	鹏城实验室开发者云测试机VM虚拟机
CPU	鲲鹏920处理器 或 鲲鹏916处理器
磁盘分区	对磁盘分区无要求
网络	可访问外网

1.2 软件要求

项目	版本
CentOS	7.6
OS Kernel	4.14.0-115
JDK	1.7.0_261（必须是这个版本，不要用默认1.8版本）
GCC	4.8.5（默认）或7.3.0（后文有升级链接）
Maven	3.5.4
Ant	1.7.1
Protobuf	2.5.0

2、配置yum源

此处配置参考本人blog：https://blog.csdn.net/frdevolcqzyxynjds/article/details/105578249

`mkdir /etc/yum.repos.d/bak && mv /etc/yum.repos.d/C* /etc/yum.repos.d/bak`

`vim /etc/yum.repos.d/CentOS-kunpeng.repo`

```
[kunpeng]
name=CentOS-kunpeng - Base - mirrors.huaweicloud.com
baseurl=https://mirrors.huaweicloud.com/kunpeng/yum/el/7/aarch64/
gpgcheck=0
enabled=1
```

`yum clean all && yum makecache fast && yum repolist`

3、安装、升级GCC

默认gcc版本4.8.5

```
[root@pc-centos-vm-1 ~]# gcc --version
gcc (GCC) 4.8.5 20150623 (Red Hat 4.8.5-36)
Copyright (C) 2015 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

[root@pc-centos-vm-1 ~]# g++ --version
g++ (GCC) 4.8.5 20150623 (Red Hat 4.8.5-36)
Copyright (C) 2015 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

[root@pc-centos-vm-1 ~]#
```

如需升级版本（4.8.5 -> 7.3.0），请参考本人blog：https://blog.csdn.net/frdevolcqzyxynjds/article/details/109710860

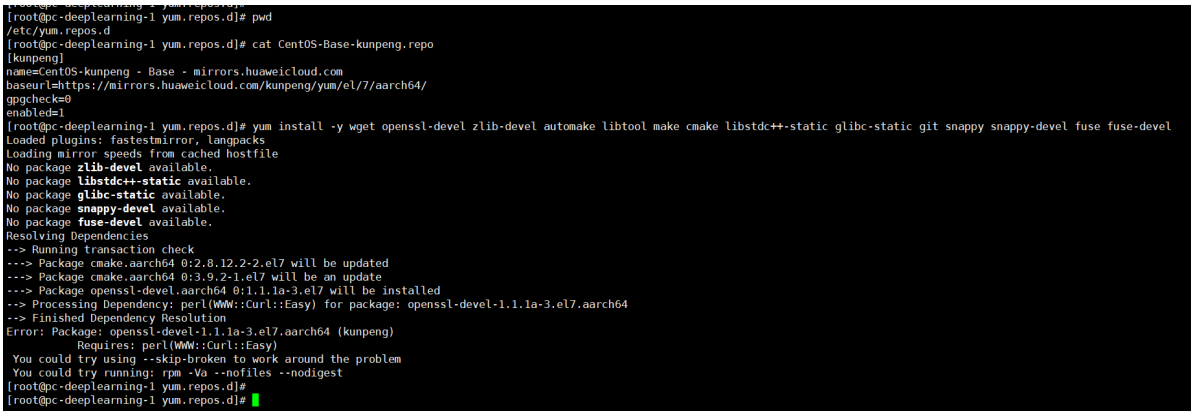
- 升级后查看的gcc、g++版本信息

```
[root@pc-deeplearning-1 bigdata]# gcc --version
gcc (GCC) 7.3.0
Copyright (C) 2017 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# g++ --version
g++ (GCC) 7.3.0
Copyright (C) 2017 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

[root@pc-deeplearning-1 bigdata]#
```

4、安装依赖

4.1 注意：请使用yum安装依赖

```
yum install -y wget openssl-devel zlib-devel automake libtool make cmake libstdc++-static glibc-static git snappy snappy-devel fuse fuse-devel
```



发现不行

4.2 切换yum源为 Ali 的

`vim /etc/yum.repos.d/CentOS-Ali-altarch-7.repo`

```
# CentOS-Base.repo
[base]
name=CentOS-$releasever - Base
baseurl=https://mirrors.aliyun.com/centos-altarch/$releasever/os/$basearch/
gpgcheck=0
gpgkey=https://mirrors.aliyun.com/centos/RPM-GPG-KEY-CentOS-7
enabled=1

#released updates
[updates]
name=CentOS-$releasever - Updates
baseurl=https://mirrors.aliyun.com/centos-altarch/$releasever/updates/$basearch/
gpgcheck=0
gpgkey=https://mirrors.aliyun.com/centos/RPM-GPG-KEY-CentOS-7
enabled=1

#additional packages that may be useful
[extras]
name=CentOS-$releasever - Extras
baseurl=https://mirrors.aliyun.com/centos-altarch/$releasever/extras/$basearch/
gpgcheck=0
gpgkey=https://mirrors.aliyun.com/centos/RPM-GPG-KEY-CentOS-7
enabled=1
```

```
24
25 #additional packages that extend functionality of existing packages
26 [centosplus]
27 name=CentOS-$releasever - Plus
28 baseurl=https://mirrors.aliyun.com/centos-
   altarch/$releasever/centosplus/$basearch/
29 gpgcheck=0
30 enabled=1
31 gpgkey=https://mirrors.aliyun.com/centos/RPM-GPG-KEY-CentOS-7
```

`yum clean all && yum makecache fast && yum repolist`

4.3 然后再走一遍，安装依赖

```
1 yum install -y wget openssl-devel zlib-devel automake libtool make cmake
  libstdc++-static glibc-static git snappy snappy-devel fuse fuse-devel
```

```
Installed:
  fuse-devel.aarch64 0:2.9.2-11.el7 glibc-static.aarch64 0:2.17-307.el7.1 libstdc++-static.aarch64 0:4.8.5-39.el7 openssl-devel.aarch64 1:1.0.2k-19.el7 snappy-devel.aarch64 0:1.1.0-3.el7
  zlib-devel.aarch64 0:1.2.7-18.el7

Dependency Installed:
  keyutils-libs-devel.aarch64 0:1.5.8-3.el7       krb5-devel.aarch64 0:1.15.1-46.el7         libcom_err-devel.aarch64 0:1.42.9-17.el7       libselinux-devel.aarch64 0:2.5-15.el7
  libsepol-devel.aarch64 0:2.5-10.el7             libverto-devel.aarch64 0:0.2.5-4.el7       pcre-devel.aarch64 0:8.32-17.el7

Updated:
  git.aarch64 0:1.8.3.1-23.el7_8                                make.aarch64 1:3.82-24.el7                                wget.aarch64 0:1.14-18.el7_6.1

Dependency Updated:
  cpp.aarch64 0:4.8.5-39.el7                 e2fsprogs.aarch64 0:1.42.9-17.el7          e2fsprogs-libs.aarch64 0:1.42.9-17.el7       gcc.aarch64 0:4.8.5-39.el7
  gcc-c++.aarch64 0:4.8.5-39.el7             gcc-gfortran.aarch64 0:4.8.5-39.el7        glibc.aarch64 0:2.17-307.el7.1               glibc-common.aarch64 0:2.17-307.el7.1
  glibc-devel.aarch64 0:2.17-307.el7.1       glibc-headers.aarch64 0:2.17-307.el7.1     krb5-libs.aarch64 0:1.15.1-46.el7            krb5-workstation.aarch64 0:1.15.1-46.el7
  libcom_err.aarch64 0:1.42.9-17.el7         libgcc.aarch64 0:4.8.5-39.el7              libgfortran.aarch64 0:4.8.5-39.el7           libgomp.aarch64 0:4.8.5-39.el7
  libkadm5.aarch64 0:1.15.1-46.el7           libselinux.aarch64 0:2.5-15.el7            libselinux-python.aarch64 0:2.5-15.el7       libselinux-utils.aarch64 0:2.5-15.el7
  libss.aarch64 0:1.42.9-17.el7              libstdc++.aarch64 0:4.8.5-39.el7           libstdc++-devel.aarch64 0:4.8.5-39.el7       openssl.aarch64 1:1.0.2k-19.el7
  openssl-libs.aarch64 1:1.0.2k-19.el7       perl-Git.noarch 0:1.8.3.1-23.el7_8

Complete!
[root@pc-deeplearning-1 yum.repos.d]#
```

成功搞定！（Ali就是很强很香呐！）

5、安装open JDK 1.7

5.1 查看默认JDK环境

（openjdk1.8，但是本次使用1.7）

```
[root@pc-deeplearning-1 ~]# java -version
openjdk version "1.8.0_262"
OpenJDK Runtime Environment (build 1.8.0_262-b10)
OpenJDK 64-Bit Server VM (build 25.262-b10, mixed mode)
[root@pc-deeplearning-1 ~]#
```

5.2 yum安装openjdk1.7

```
1 yum install -y java-1.7.0-openjdk java-1.7.0-openjdk-devel
```

```
  Verifying  : 1:java-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.aarch64                                                 1/17
  Verifying  : 1:java-1.7.0-openjdk-headless-1.7.0.261-2.6.22.2.el7_8.aarch64                                        2/17
  Verifying  : nss-3.44.0-7.el7_7.aarch64                                                                            3/17
  Verifying  : nss-sysinit-3.44.0-7.el7_7.aarch64                                                                    4/17
  Verifying  : nspr-4.21.0-1.el7.aarch64                                                                             5/17
  Verifying  : nss-tools-3.44.0-7.el7_7.aarch64                                                                      6/17
  Verifying  : nss-softokn-3.44.0-8.el7_7.aarch64                                                                    7/17
  Verifying  : 1:java-1.7.0-openjdk-devel-1.7.0.261-2.6.22.2.el7_8.aarch64                                           8/17
  Verifying  : nss-softokn-freebl-3.44.0-8.el7_7.aarch64                                                             9/17
  Verifying  : nss-util-3.44.0-4.el7_7.aarch64                                                                      10/17
  Verifying  : nss-util-3.36.0-1.el7_5.aarch64                                                                      11/17
  Verifying  : nss-sysinit-3.36.0-7.el7_5.aarch64                                                                   12/17
  Verifying  : nss-softokn-freebl-3.36.0-5.el7_5.aarch64                                                            13/17
  Verifying  : nss-softokn-3.36.0-5.el7_5.aarch64                                                                   14/17
  Verifying  : nss-3.36.0-7.el7_5.aarch64                                                                           15/17
  Verifying  : nspr-4.19.0-1.el7_5.aarch64                                                                          16/17
  Verifying  : nss-tools-3.36.0-7.el7_5.aarch64                                                                     17/17

Installed:
  java-1.7.0-openjdk.aarch64 1:1.7.0.261-2.6.22.2.el7_8                                 java-1.7.0-openjdk-devel.aarch64 1:1.7.0.261-2.6.22.2.el7_8

Dependency Installed:
  java-1.7.0-openjdk-headless.aarch64 1:1.7.0.261-2.6.22.2.el7_8

Dependency Updated:
  nspr.aarch64 0:4.21.0-1.el7                 nss.aarch64 0:3.44.0-7.el7_7              nss-softokn.aarch64 0:3.44.0-8.el7_7        nss-softokn-freebl.aarch64 0:3.44.0-8.el7_7
  nss-sysinit.aarch64 0:3.44.0-7.el7_7        nss-tools.aarch64 0:3.44.0-7.el7_7        nss-util.aarch64 0:3.44.0-4.el7_7

Complete!
[root@pc-deeplearning-1 ~]#
```

5.3 安装后查看jvm目录

`ll /usr/lib/jvm`

```
[root@pc-deeplearning-1 ~]# ll /usr/lib/jvm
total 12
lrwxrwxrwx. 1 root root   26 Nov 25 20:17 java -> /etc/alternatives/java_sdk
lrwxrwxrwx. 1 root root   32 Nov 25 20:17 java-1.7.0 -> /etc/alternatives/java_sdk_1.7.0
lrwxrwxrwx. 1 root root   40 Nov 25 20:17 java-1.7.0-openjdk -> /etc/alternatives/java_sdk_1.7.0_openjdk
drwxr-xr-x. 3 root root 4096 Sep 12 13:47 java-1.7.0-openjdk-1.7.0.191-2.6.15.5.el7.aarch64
drwxr-xr-x. 8 root root 4096 Nov 25 20:17 java-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.aarch64
lrwxrwxrwx. 1 root root   32 Sep 12 13:50 java-1.8.0 -> /etc/alternatives/java_sdk_1.8.0
lrwxrwxrwx. 1 root root   40 Sep 12 13:50 java-1.8.0-openjdk -> /etc/alternatives/java_sdk_1.8.0_openjdk
drwxr-xr-x. 7 root root 4096 Sep 12 13:50 java-1.8.0-openjdk-1.8.0.262.b10-0.el7_8.aarch64
lrwxrwxrwx. 1 root root   34 Nov 25 20:17 java-openjdk -> /etc/alternatives/java_sdk_openjdk
lrwxrwxrwx. 1 root root   21 Nov 25 20:17 jre -> /etc/alternatives/jre
lrwxrwxrwx. 1 root root   27 Nov 25 20:17 jre-1.7.0 -> /etc/alternatives/jre_1.7.0
lrwxrwxrwx. 1 root root   35 Nov 25 20:17 jre-1.7.0-openjdk -> /etc/alternatives/jre_1.7.0_openjdk
lrwxrwxrwx. 1 root root   55 Nov 25 20:17 jre-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.aarch64 -> java-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.aarch64/jre
lrwxrwxrwx. 1 root root   27 Sep 12 13:50 jre-1.8.0 -> /etc/alternatives/jre_1.8.0
lrwxrwxrwx. 1 root root   35 Sep 12 13:50 jre-1.8.0-openjdk -> /etc/alternatives/jre_1.8.0_openjdk
lrwxrwxrwx. 1 root root   52 Sep 12 13:50 jre-1.8.0-openjdk-1.8.0.262.b10-0.el7_8.aarch64 -> java-1.8.0-openjdk-1.8.0.262.b10-0.el7_8.aarch64/jre
lrwxrwxrwx. 1 root root   29 Nov 25 20:17 jre-openjdk -> /etc/alternatives/jre_openjdk
[root@pc-deeplearning-1 ~]#
[root@pc-deeplearning-1 ~]#
```

5.4 配置Java环境变量（配置为openjdk1.7.0_261）

```
vim /etc/profile
```

在文件末尾添加如下代码：

```
export JAVA_HOME=/usr/lib/jvm/java-1.7.0-openjdk-1.7.0.261-
2.6.22.2.el7_8.aarch64
export PATH=$JAVA_HOME/bin:$PATH
```

使修改的环境变量生效

```
source /etc/profile
```

5.5 查看java版本

```
java -version
```

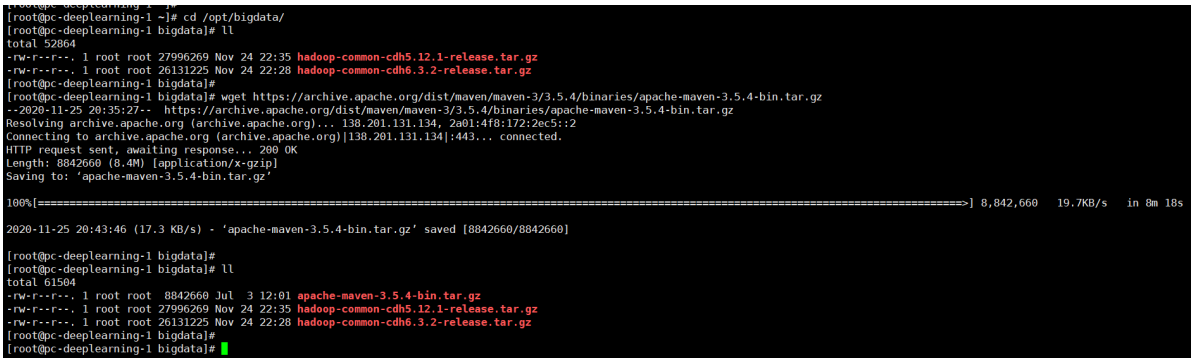
```
[root@pc-deeplearning-1 ~]#
[root@pc-deeplearning-1 ~]# vim /etc/profile
[root@pc-deeplearning-1 ~]#
[root@pc-deeplearning-1 ~]# source /etc/profile
[root@pc-deeplearning-1 ~]#
[root@pc-deeplearning-1 ~]# java -version
java version "1.7.0_261"
OpenJDK Runtime Environment (rhel-2.6.22.2.el7_8-aarch64 u261-b02)
OpenJDK 64-Bit Server VM (build 24.261-b02, mixed mode)
[root@pc-deeplearning-1 ~]#
[root@pc-deeplearning-1 ~]#
```

可以看到 java1.7 环境

6、安装Maven

6.1 先下载

```
wget https://archive.apache.org/dist/maven/maven-3/3.5.4/binaries/apache-maven-3.5.4-bin.tar.gz
```



6.2 再解压

```
tar -zxf apache-maven-3.5.4-bin.tar.gz
```

```
[root@pc-deeplearning-1 bigdata]# tar -zxf apache-maven-3.5.4-bin.tar.gz
[root@pc-deeplearning-1 bigdata]# ll
total 61508
drwxr-xr-x. 6 root root     4096 Nov 25 20:45 apache-maven-3.5.4
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]#
```

```
mkdir -p /opt/tools/mvn
```

```
mv apache-maven-3.5.4 /opt/tools/mvn/
```

```
[root@pc-deeplearning-1 bigdata]# mkdir -p /opt/tools/mvn
[root@pc-deeplearning-1 bigdata]# mv apache-maven-3.5.4 /opt/tools/mvn/
[root@pc-deeplearning-1 bigdata]# ll
total 61504
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]# ll /opt/tools/mvn/
total 4
drwxr-xr-x. 6 root root 4096 Nov 25 20:45 apache-maven-3.5.4
[root@pc-deeplearning-1 bigdata]#
```

6.3 配置Maven环境变量

```
vim /etc/profile
```

在“/etc/profile”文件末尾增加下面代码

```
export MAVEN_HOME=/opt/tools/mvn/apache-maven-3.5.4
export PATH=$MAVEN_HOME/bin:$PATH
```

使修改的环境变量生效

```
source /etc/profile
```

6.4 查看maven版本

```
mvn -v
```

```
[root@pc-deeplearning-1 bigdata]# vim /etc/profile
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# source /etc/profile
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# mvn -v
Apache Maven 3.5.4 (1edded0938998edf8bf061f1ceb3cfdeccf443fe; 2018-06-18T02:33:14+08:00)
Maven home: /opt/tools/mvn/apache-maven-3.5.4
Java version: 1.7.0_261, vendor: Oracle Corporation, runtime: /usr/lib/jvm/java-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.aarch64/jre
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "4.14.0-115.el7a.0.1.aarch64", arch: "aarch64", family: "unix"
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]#
```

6.5 修改Maven配置文件中的本地仓路径、远程仓等

```
[root@pc-deeplearning-1 bigdata]# ll /opt/tools/mvn/apache-maven-3.5.4/conf/settings.xml
-rw-r--r--. 1 501 games 10211 Jun 18  2018 /opt/tools/mvn/apache-maven-3.5.4/conf/settings.xml
[root@pc-deeplearning-1 bigdata]#
```

6.5.1 配置本地仓库

```
[root@pc-deeplearning-1 bigdata]# ll ~/.m2
ls: cannot access /root/.m2: No such file or directory
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# mkdir ~/.m2
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# ll ~/.m2
total 0
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# cp /opt/tools/mvn/apache-maven-3.5.4/conf/settings.xml ~/.m2/
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# ll ~/.m2
total 12
-rw-r--r--. 1 root root 10211 Nov 25 21:06 settings.xml
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]#
```

```
vim ~/.m2/settings.xml
```

```
  <mirrors>
    <mirror>
      <id>huaweimaven</id>
      <name>huawei maven</name>
      <url>https://mirrors.huaweicloud.com/repository/maven/</url>
      <mirrorOf>central</mirrorOf>
    </mirror>
  </mirrors>
```

```
[root@pc-deeplearning-1 bigdata]# vim ~/.m2/settings.xml
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# ll ~/.m2
total 12
-rw-r--r--. 1 root root 10426 Nov 25 21:10 settings.xml
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]#
```

7、安装ANT

7.1 下载并安装到指定目录

```
wget https://archive.apache.org/dist/ant/binaries/apache-ant-1.7.1-bin.tar.gz
```

```
[root@pc-deeplearning-1 bigdata]# ll
total 61504
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# wget wget https://archive.apache.org/dist/ant/binaries/apache-ant-1.7.1-bin.tar.gz
--2020-11-25 21:13:07--  http://wget/
Resolving wget (wget)... failed: Name or service not known.
wget: unable to resolve host address 'wget'
--2020-11-25 21:13:08--  https://archive.apache.org/dist/ant/binaries/apache-ant-1.7.1-bin.tar.gz
Resolving archive.apache.org (archive.apache.org)... 138.201.131.134, 2a01:4f8:172:2ec5::2
Connecting to archive.apache.org (archive.apache.org)|138.201.131.134|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 9151860 (8.7M) [application/x-gzip]
Saving to: 'apache-ant-1.7.1-bin.tar.gz'

100%[=============================================================================================================================================>] 9,151,860   12.6KB/s   in 13m 47s

2020-11-25 21:26:56 (10.8 KB/s) - 'apache-ant-1.7.1-bin.tar.gz' saved [9151860/9151860]

FINISHED --2020-11-25 21:26:56--
Total wall clock time: 13m 48s
Downloaded: 1 files, 8.7M in 13m 47s (10.8 KB/s)
[root@pc-deeplearning-1 bigdata]# ll
total 70448
-rw-r--r--. 1 root root  9151860 Jul  9  2008 apache-ant-1.7.1-bin.tar.gz
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]#
```

7.2 解压

```
tar -zxf apache-ant-1.7.1-bin.tar.gz
```

```
[root@pc-deeplearning-1 bigdata]# tar -zxf apache-ant-1.7.1-bin.tar.gz
[root@pc-deeplearning-1 bigdata]# ll
total 70452
drwxr-xr-x. 6 root root     4096 Jun 27  2008 apache-ant-1.7.1
-rw-r--r--. 1 root root  9151860 Jul  9  2008 apache-ant-1.7.1-bin.tar.gz
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]#
```

```
mkdir -p /opt/tools/ant/
```

```
mv apache-ant-1.7.1 /opt/tools/ant/
```

```
[root@pc-deeplearning-1 bigdata]# mkdir -p /opt/tools/ant/
[root@pc-deeplearning-1 bigdata]# mv apache-ant-1.7.1 /opt/tools/ant/
[root@pc-deeplearning-1 bigdata]# ll
total 70448
-rw-r--r--. 1 root root  9151860 Jul  9  2008 apache-ant-1.7.1-bin.tar.gz
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]# ll /opt/tools/ant/
total 4
drwxr-xr-x. 6 root root 4096 Jun 27  2008 apache-ant-1.7.1
[root@pc-deeplearning-1 bigdata]#
```

7.3 配置环境变量

```
vim /etc/profile
```

在/etc/profile文件末尾增加下面代码

```
export ANT_HOME=/opt/tools/ant/apache-ant-1.7.1
export PATH=$ANT_HOME/bin:$PATH
```

运行下面命令，使修改的环境变量生效

```
source /etc/profile
```

7.4 查看ant版本

```
ant -version
```

```
[root@pc-deeplearning-1 bigdata]# vim /etc/profile
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# source /etc/profile
[root@pc-deeplearning-1 bigdata]#
[root@pc-deeplearning-1 bigdata]# ant -version
Apache Ant version 1.7.1 compiled on June 27 2008
[root@pc-deeplearning-1 bigdata]#
```

8、安装protobuf

```
yum install -y protobuf protobuf-devel
```

```
Installed:
  protobuf.aarch64 0:2.5.0-8.el7                                protobuf-devel.aarch64 0:2.5.0-8.el7

Dependency Installed:
  protobuf-compiler.aarch64 0:2.5.0-8.el7

Complete!
[root@pc-deeplearning-1 bigdata]#
```

9、编译Hadoop

9.1 先下载cdh

```
wget https://github.com/cloudera/hadoop-common/archive/cdh5.12.1-release.tar.gz
```

```
[root@pc-deeplearning-1 bigdata]# ll
total 70448
-rw-r--r--. 1 root root  9151860 Jul  9  2008 apache-ant-1.7.1-bin.tar.gz
-rw-r--r--. 1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
-rw-r--r--. 1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--. 1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]#
```

已经提前下载完毕!

9.2 解压cdh

```
tar -zxf hadoop-common-cdh5.12.1-release.tar.gz
```

```
[root@pc-deeplearning-1 bigdata]# tar -zxf hadoop-common-cdh5.12.1-release.tar.gz
[root@pc-deeplearning-1 bigdata]# ll
total 70452
-rw-r--r--.  1 root root  9151860 Jul  9  2008 apache-ant-1.7.1-bin.tar.gz
-rw-r--r--.  1 root root  8842660 Jul  3 12:01 apache-maven-3.5.4-bin.tar.gz
drwxrwxr-x. 18 root root     4096 Aug 24  2017 hadoop-common-cdh5.12.1-release
-rw-r--r--.  1 root root 27996269 Nov 24 22:35 hadoop-common-cdh5.12.1-release.tar.gz
-rw-r--r--.  1 root root 26131225 Nov 24 22:28 hadoop-common-cdh6.3.2-release.tar.gz
[root@pc-deeplearning-1 bigdata]#
```

9.3 进入hadoop源码解压目录

```
[root@pc-deeplearning-1 bigdata]# cd hadoop-common-cdh5.12.1-release/
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# ll
total 200
-rw-rw-r--.  1 root root 12096 Aug 24  2017 BUILDING.txt
drwxrwxr-x.  2 root root  4096 Aug 24  2017 cloudera
drwxrwxr-x.  3 root root  4096 Aug 24  2017 dev-support
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-assemblies
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-build-tools
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-client
drwxrwxr-x. 10 root root  4096 Aug 24  2017 hadoop-common-project
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-dist
drwxrwxr-x.  6 root root  4096 Aug 24  2017 hadoop-hdfs-project
drwxrwxr-x. 10 root root  4096 Aug 24  2017 hadoop-mapreduce1-project
drwxrwxr-x.  9 root root  4096 Aug 24  2017 hadoop-mapreduce-project
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-maven-plugins
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-minicluster
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-project
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-project-dist
drwxrwxr-x. 18 root root  4096 Aug 24  2017 hadoop-tools
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-yarn-project
-rw-rw-r--.  1 root root 85063 Aug 24  2017 LICENSE.txt
-rw-rw-r--.  1 root root 14978 Aug 24  2017 NOTICE.txt
-rw-rw-r--.  1 root root 19039 Aug 24  2017 pom.xml
-rw-rw-r--.  1 root root  1366 Aug 24  2017 README.txt
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]#
```

9.4 修改根目录下的pom.xml，添加maven仓库源

```
vim pom.xml
```

在repositories标签内增加鲲鹏maven仓库，鲲鹏仓库一定要放在第一位：

```
<repository>
    <id>Kunpeng.repo</id>
    <url>https://mirrors.huaweicloud.com/kunpeng/maven/</url>
    <name>Kunpeng Repositories</name>
    <snapshots>
       <enabled>false</enabled>
    </snapshots>
</repository>
<repository>
    <id>huaweicloud.repo</id>
    <url>http://mirrors.huaweicloud.com/repository/maven</url>
    <name>huaweicloud Repositories</name>
    <snapshots>
      <enabled>false</enabled>
    </snapshots>
</repository>
```

原来：

```
49  <repositories>
50    <repository>
51      <id>cdh.repo</id>
52      <url>https://repository.cloudera.com/artifactory/cloudera-repos</url>
53      <name>Cloudera Repositories</name>
54      <snapshots>
55        <enabled>false</enabled>
56      </snapshots>
57    </repository>
58    <repository>
59      <id>cdh.snapshots.repo</id>
60      <url>https://repository.cloudera.com/artifactory/libs-snapshot-local</url>
61      <name>Cloudera Snapshots Repository</name>
62      <snapshots>
63        <enabled>true</enabled>
64      </snapshots>
65      <releases>
66        <enabled>false</enabled>
67      </releases>
68    </repository>
```

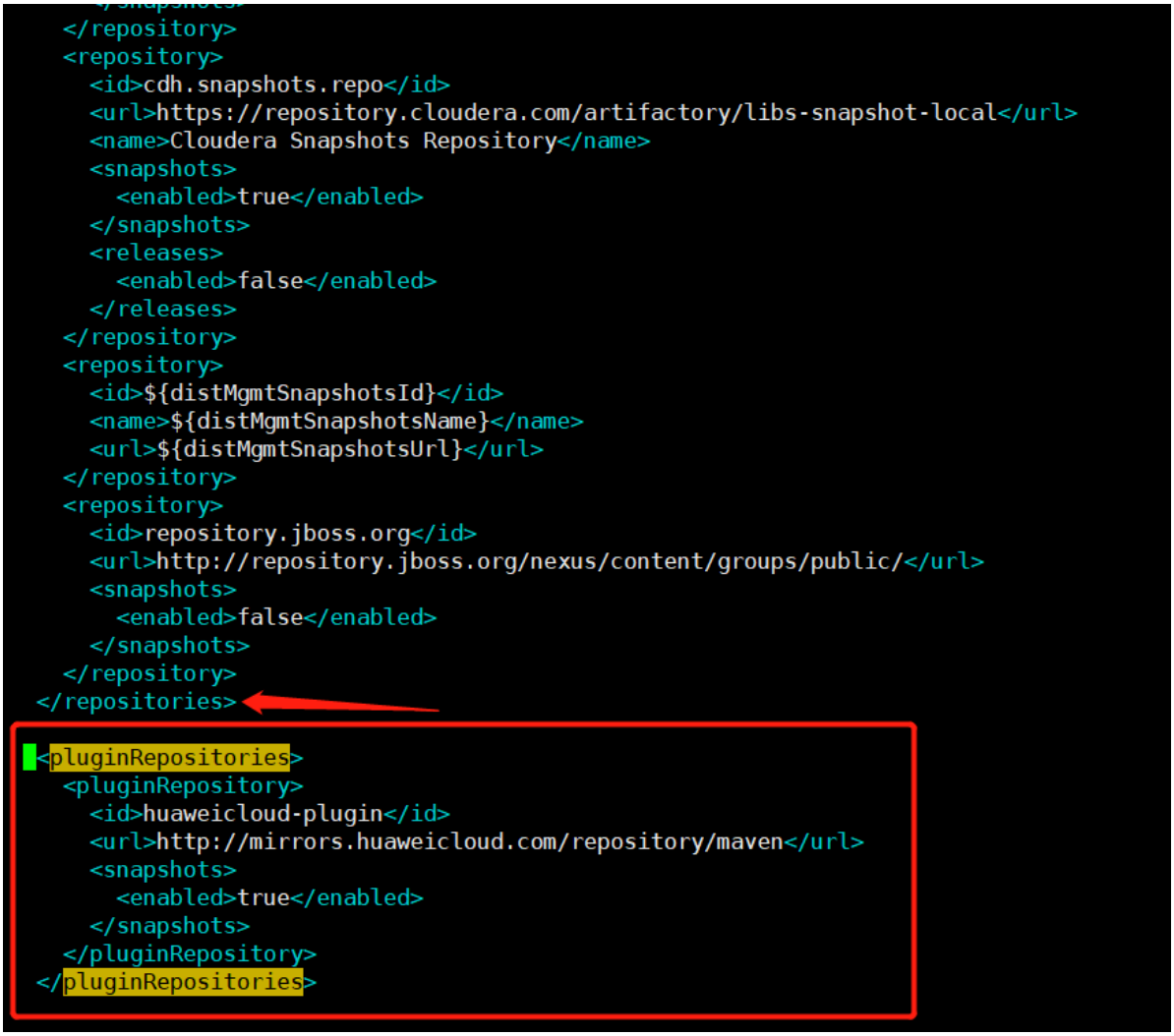
```
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# pwd
/opt/bigdata/hadoop-common-cdh5.12.1-release
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# vim pom.xml
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]#
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]#
```

添加后:

```
49  <repositories>
50
51    <repository>
52      <id>Kunpeng.repo</id>
53      <url>https://mirrors.huaweicloud.com/kunpeng/maven/</url>
54      <name>Kunpeng Repositories</name>
55      <snapshots>
56        <enabled>false</enabled>
57      </snapshots>
58    </repository>
59    <repository>
60      <id>huaweicloud.repo</id>
61      <url>http://mirrors.huaweicloud.com/repository/maven</url>
62      <name>huaweicloud Repositories</name>
63      <snapshots>
64        <enabled>false</enabled>
65      </snapshots>
66    </repository>
67
68    <repository>
69      <id>cdh.repo</id>
70      <url>https://repository.cloudera.com/artifactory/cloudera-repos</url>
71      <name>Cloudera Repositories</name>
72      <snapshots>
73        <enabled>false</enabled>
74      </snapshots>
75    </repository>
76    <repository>
77      <id>cdh.snapshots.repo</id>
78      <url>https://repository.cloudera.com/artifactory/libs-snapshot-local</url>
79      <name>Cloudera Snapshots Repository</name>
80      <snapshots>
81        <enabled>true</enabled>
82      </snapshots>
83      <releases>
84        <enabled>false</enabled>
85      </releases>
86    </repository>
```

9.5 除了依赖仓库源，还要添加插件仓库源，pluginRepositories和repositories的节点级别一样：

```
<pluginRepositories>
  <pluginRepository>
    <id>huaweicloud-plugin</id>
    <url>http://mirrors.huaweicloud.com/repository/maven</url>
    <snapshots>
      <enabled>true</enabled>
    </snapshots>
  </pluginRepository>
</pluginRepositories>
```




```
ll hadoop-mapreduce-project/hadoop-mapreduce-client/hadoop-mapreduce-client-nativetask/src/main/native/src/lib/primitives.h
```

9.6 修改primitives.h中的bswap方法和bswap64方法。

```
vim hadoop-mapreduce-project/hadoop-mapreduce-client/hadoop-mapreduce-client-nativetask/src/main/native/src/lib/primitives.h
```

原来：

```
 96 /**
 97  * little-endian to big-endian or vice versa
 98  */
 99 inline uint32_t bswap(uint32_t val) {
100   __asm__("bswap %0" : "=r" (val) : "0" (val));
101   return val;
102 }
103
104 inline uint64_t bswap64(uint64_t val) {
105 #ifdef __X64
106   __asm__("bswapq %0" : "=r" (val) : "0" (val));
107 #else
108
109   uint64_t lower = val & 0xffffffffU;
110   uint32_t higher = (val >> 32) & 0xffffffffU;
111
112   lower = bswap(lower);
113   higher = bswap(higher);
114
115   return (lower << 32) + higher;
116
117 #endif
118   return val;
119 }
120
121 /**
122  * Fast memcmp
123  */
124 inline int64_t fmemcmp(const char * src, const char * dest, uint32_t len) {
125
126 #ifdef BUILDIN_MEMCMP
127   return memcmp(src, dest, len);
128 #else
129
```

需要增加的代码：

```
#ifdef __aarch64__
  __asm__("rev %w[dst], %w[src]" : [dst]"=r"(val) : [src]"r"(val));
#else
  __asm__("bswap %0" : "=r" (val) : "0" (val));
#endif
```

```
#ifdef __aarch64__
  __asm__("rev %[dst], %[src]" : [dst]"=r"(val) : [src]"r"(val));
#else
```

修改后：

```
/**
 * little-endian to big-endian or vice versa
 */
inline uint32_t bswap(uint32_t val) {
/**  __asm__("bswap %0" : "=r" (val) : "0" (val));*/

#ifdef __aarch64__
  __asm__("rev %w[dst], %w[src]" : [dst]"=r"(val) : [src]"r"(val));
#else
  __asm__("bswap %0" : "=r" (val) : "0" (val));
#endif

  return val;
}

inline uint64_t bswap64(uint64_t val) {

#ifdef __aarch64__
  __asm__("rev %[dst], %[src]" : [dst]"=r"(val) : [src]"r"(val));
#else

#ifdef __X64
  __asm__("bswapq %0" : "=r" (val) : "0" (val));
#else

  uint64_t lower = val & 0xffffffffU;
  uint32_t higher = (val >> 32) & 0xffffffffU;

  lower = bswap(lower);
  higher = bswap(higher);

  return (lower << 32) + higher;

#endif
#endif
  return val;
}

```

9.7 修改Checksum.cc文件。

```
vim hadoop-mapreduce-project/hadoop-mapreduce-client/hadoop-mapreduce-client-nativetask/src/main/native/src/util/Checksum.cc
```

```
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# vim hadoop-mapreduce-project/hadoop-mapreduce-client/hadoop-mapreduce-client-nativetask/src/main/native/src/util/Checksum.cc
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]#
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]#
```

原来：

```
581
582 #ifndef SOFTWARE_CRC
583 #define USE_HARDWARE_CRC32C 1
584 #endif
585
586 #ifdef USE_HARDWARE_CRC32C
587
588 static int cached_cpu_supports_crc32; // initialized by constructor below
589 static uint32_t crc32c_hardware(uint32_t crc, const uint8_t* data, size_t length);
590
591 #define SSE42_FEATURE_BIT (1 << 20)
592 #define CPUID_FEATURES 1
593
594 /**
595  * Call the cpuid instruction to determine CPU feature flags.
596  */
597 static uint32_t cpuid(uint32_t eax_in) {
598   uint32_t eax, ebx, ecx, edx;
599 #  if defined(__PIC__) && !defined(__LP64__)
600 // 32-bit PIC code uses the ebx register for the base offset --
601 // have to save and restore it on the stack
602   asm("pushl %%ebx\n\t"
603       "cpuid\n\t"
```

582行增加以下代码：

```
#ifdef __aarch64__
// Awaiting HW implementation
#define SOFTWARE_CRC
#endif
```

添加后：

```
581
582 #ifdef __aarch64__
583 // Awaiting HW implementation
584 #define SOFTWARE_CRC
585 #endif
586
587 #ifndef SOFTWARE_CRC
588 #define USE_HARDWARE_CRC32C 1
589 #endif
590
591 #ifdef USE_HARDWARE_CRC32C
592
593 static int cached_cpu_supports_crc32; // initialized by constructor below
594 static uint32_t crc32c_hardware(uint32_t crc, const uint8_t* data, size_t length);
595
596 #define SSE42_FEATURE_BIT (1 << 20)
597 #define CPUID_FEATURES 1
598
```

9.8 编译task-controller

9.8.1 进入hadoop-mapreduce1-project目录

```
cd hadoop-mapreduce1-project
```

```
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# pwd
/opt/bigdata/hadoop-common-cdh5.12.1-release
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# ll
total 200
-rw-rw-r--.  1 root root 12096 Aug 24  2017 BUILDING.txt
drwxrwxr-x.  2 root root  4096 Aug 24  2017 cloudera
drwxrwxr-x.  3 root root  4096 Aug 24  2017 dev-support
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-assemblies
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-build-tools
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-client
drwxrwxr-x. 10 root root  4096 Aug 24  2017 hadoop-common-project
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-dist
drwxrwxr-x.  6 root root  4096 Aug 24  2017 hadoop-hdfs-project
drwxrwxr-x. 10 root root  4096 Aug 24  2017 hadoop-mapreduce1-project
drwxrwxr-x.  9 root root  4096 Aug 24  2017 hadoop-mapreduce-project
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-maven-plugins
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-minicluster
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-project
drwxrwxr-x.  2 root root  4096 Aug 24  2017 hadoop-project-dist
drwxrwxr-x. 18 root root  4096 Aug 24  2017 hadoop-tools
drwxrwxr-x.  3 root root  4096 Aug 24  2017 hadoop-yarn-project
-rw-rw-r--.  1 root root 85063 Aug 24  2017 LICENSE.txt
-rw-rw-r--.  1 root root 14978 Aug 24  2017 NOTICE.txt
-rw-rw-r--.  1 root root 19799 Nov 25 21:48 pom.xml
-rw-rw-r--.  1 root root  1366 Aug 24  2017 README.txt
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# cd hadoop-mapreduce1-project/
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# pwd
/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
```

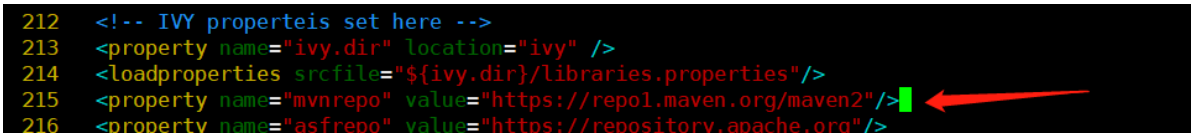
```
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# ll
total 508
drwxrwxr-x.  2 root root   4096 Aug 24  2017 bin
-rw-rw-r--.  1 root root  95090 Aug 24  2017 build.xml
-rw-rw-r--.  1 root root 348776 Aug 24  2017 CHANGES.txt
drwxrwxr-x.  4 root root   4096 Aug 24  2017 cloudera
-rw-rw-r--.  1 root root   7688 Aug 24  2017 cloudera-pom.xml
drwxrwxr-x.  2 root root   4096 Aug 24  2017 conf
drwxrwxr-x.  4 root root   4096 Aug 24  2017 example-confs
drwxrwxr-x.  2 root root   4096 Aug 24  2017 ivy
-rw-rw-r--.  1 root root   7318 Aug 24  2017 ivy.xml
drwxrwxr-x.  4 root root   4096 Aug 24  2017 lib
-rw-rw-r--.  1 root root  13366 Aug 24  2017 LICENSE.txt
-rw-rw-r--.  1 root root    101 Aug 24  2017 NOTICE.txt
-rw-rw-r--.  1 root root   1366 Aug 24  2017 README.txt
drwxrwxr-x. 13 root root   4096 Aug 24  2017 src
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
```

9.8.2 将build.xml文件中全部的"http://repo2.maven.org/maven2"都修改为"https://repo1.maven.org/maven2"。

```
1  vim build.xml
```

```
211
212   <!-- IVY properteis set here -->
213   <property name="ivy.dir" location="ivy" />
214   <loadproperties srcfile="${ivy.dir}/libraries.properties"/>
215   <property name="mvnrepo" value="http://repo2.maven.org/maven2"/>
216   <property name="asfrepo" value="https://repository.apache.org"/>
217   <property name="ivy.jar" location="${ivy.dir}/ivy-${ivy.version}.jar"/>
218   <property name="ivy_repo_url"
219     value="${mvnrepo}/org/apache/ivy/ivy/${ivy.version}/ivy-${ivy.version}.jar"/>
220   <property name="ant_task.jar"
221     location="${ivy.dir}/maven-ant-tasks-${ant-task.version}.jar"/>
222   <property name="tsk.org" value="/org/apache/maven/maven-ant-tasks/"/>
```

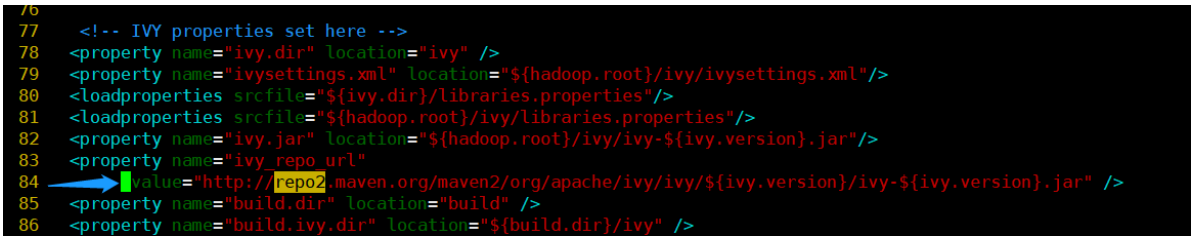
修改后:



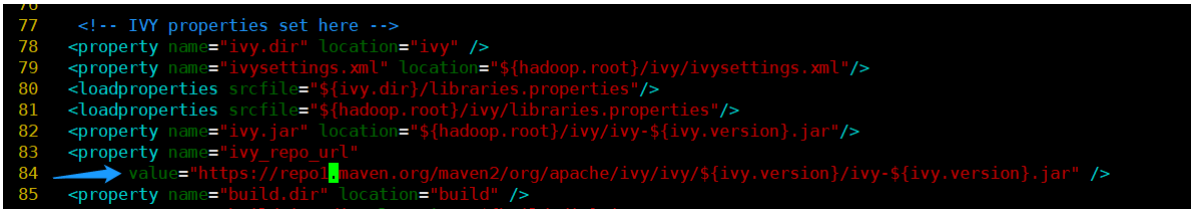
9.8.3 将build-contrib.xml文件中全部的"http://repo2.maven.org/maven2"修改为"https://repo1.maven.org/maven2"。

```
vim src/contrib/build-contrib.xml
```

原来：



修改后：

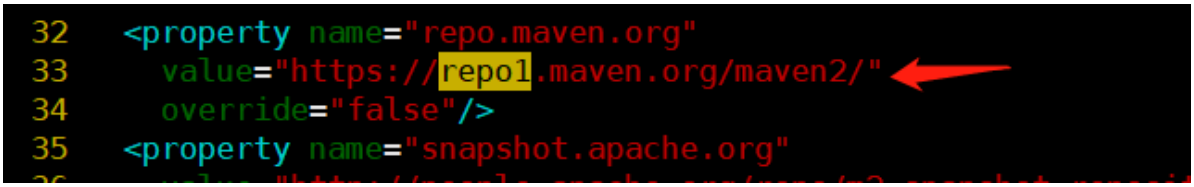


9.8.4 将ivysettings.xml文件中全部的"http://repo1.maven.org/maven2"修改为"https://repo1.maven.org/maven2"。

```
vim ivy/ivysettings.xml
```

原来：

修改后：



9.8.5 执行编译命令。

```
ant task-controller
```

```
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# pwd
/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# ant task-controller
Buildfile: build.xml
     [exec] [ERROR] Error executing Maven.
     [exec] [ERROR] 1 problem was encountered while building the effective settings
     [exec] [FATAL] Non-parseable settings /root/.m2/settings.xml: Duplicated tag: 'mirrors' (position: START_TAG seen ...</mirrors>\n\n  <mirrors>... @156:12)  @ /root/.m2/settings.xml, l
ine 156, column 12
     [exec]

BUILD FAILED
/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/build.xml:42: exec returned: 1

Total time: 2 seconds
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
```

9.8.6 根据报错信息排查是maven仓库配置的问题

```
146
147   <mirrors>
148     <mirror>
149       <id>huaweimaven</id>
150       <name>huawei maven</name>
151       <url>https://mirrors.huaweicloud.com/repository/maven/</url>
152       <mirrorOf>central</mirrorOf>
153     </mirror>
154   </mirrors>
155
156
157   <!-- profiles
158     | This is a list of profiles which can be activated in a variety of ways
159     | the build process. Profiles provided in the settings.xml are intended
160     | specific paths and repository locations which allow the build to work
```

只留这一个

9.8.7 修改完配置之后再编译

```
ant task-controller
```

```
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# vim /root/.m2/settings.xml
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# ant task-controller
Buildfile: build.xml
     [exec] [INFO] Scanning for projects...
     [exec] Downloading from cdh.releases.repo: https://repository.cloudera.com/content/groups/cdh-releases-rcs/com/cloudera/cdh/cdh-root/5.12.1/cdh-root-5.12.1.pom
```

```
B | 239 kB | 44 kB | 94/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 98/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 102/155 kBProgress (5): 88 kB |
| 106/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 110/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 114/155 kBProgress (5): 88 kB | 10 kB | 239 kB |
ess (5): 88 kB | 10 kB | 239 kB | 44 kB | 122/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 126/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 131/155 k
10 kB | 239 kB | 44 kB | 135/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 139/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 143/155 kBProgress (5): 88
44 kB | 147/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 151/155 kBProgress (5): 88 kB | 10 kB | 239 kB | 44 kB | 155/155 kBProgress (5): 88 kB | 10 kB | 239
                                                Downloaded from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/apache/maven/maven-model/2.2.
 (88 kB at 127 kB/s)Downloaded from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/apache/maven/maven-monitor/2.2.1/maven-monitor-2.2.1.jar (10 kB
     [exec] Downloading from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/com/google/code/findbugs/jsr305/2.0.1/jsr305-2.0.1.jar
     [exec] Downloading from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/sonatype/plexus/plexus-build-api/0.0.4/plexus-build-api-0.0.4.jar
     [exec] Downloaded from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/apache/maven/shared/maven-filtering/1.2/maven-filtering-1.2.jar (44 kB
     [exec] Downloading from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/codehaus/plexus/plexus-interpolation/1.19/plexus-interpolation-1.19.ja
     [exec] Progress (3): 239 kB | 155 kB | 4.1/32 kB
     [exec] Progress (4): 239 kB | 155 kB | 4.1/32 kB | 4.1/6.8 kBProgress (4): 239 kB | 155 kB | 7.7/32 kB | 4.1/6.8 kBProgress (4): 239 kB | 155 kB | 7.7/32 kB | 6
239 kB | 155 kB | 12/32 kB | 6.8 kB Progress (4): 239 kB | 155 kB | 16/32 kB | 6.8 kBProgress (4): 239 kB | 155 kB | 20/32 kB | 6.8 kBProgress (4): 239 kB | 155 kB |
ess (4): 239 kB | 155 kB | 28/32 kB | 6.8 kBProgress (4): 239 kB | 155 kB | 32 kB | 6.8 kB                                                                    Downloaded from huaweimave
eicloud.com/repository/maven/org/codehaus/plexus/plexus-utils/3.0.15/plexus-utils-3.0.15.jar (239 kB at 325 kB/s)Downloaded from huaweimaven: https://mirrors.huaweic
en/org/apache/maven/shared/maven-shared-utils/0.3/maven-shared-utils-0.3.jar (155 kB at 207 kB/s)
     [exec] Progress (3): 32 kB | 6.8 kB | 4.1/62 kB
     [exec] Progress (3): 32 kB | 6.8 kB | 7.7/62 kBProgress (3): 32 kB | 6.8 kB | 12/62 kB Progress (3): 32 kB | 6.8 kB | 16/62 kBProgress (3): 32 kB | 6.8 kB | 20/
B | 6.8 kB | 24/62 kBProgress (3): 32 kB | 6.8 kB | 28/62 kBProgress (3): 32 kB | 6.8 kB | 32/62 kBProgress (3): 32 kB | 6.8 kB | 36/62 kBProgress (3): 32 kB | 6.8 k
): 32 kB | 6.8 kB | 45/62 kBProgress (3): 32 kB | 6.8 kB | 49/62 kBProgress (3): 32 kB | 6.8 kB | 53/62 kBProgress (3): 32 kB | 6.8 kB | 57/62 kBProgress (3): 32 kB
ress (3): 32 kB | 6.8 kB | 62 kB                                                Downloaded from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/com/google/code/
sr305-2.0.1.jar (32 kB at 40 kB/s)Downloaded from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/sonatype/plexus/plexus-build-api/0.0.4/plexus-bui
B at 8.5 kB/s)
     [exec] Downloaded from huaweimaven: https://mirrors.huaweicloud.com/repository/maven/org/codehaus/plexus/plexus-interpolation/1.19/plexus-interpolation-1.19.jar
     [exec] [INFO] Using 'UTF-8' encoding to copy filtered resources.
     [exec] [INFO] Copying 1 resource
     [exec] [INFO] ------------------------------------------------------------------------
     [exec] [INFO] BUILD SUCCESS
     [exec] [INFO] ------------------------------------------------------------------------
     [exec] [INFO] Total time: 56.485 s
     [exec] [INFO] Finished at: 2020-11-25T22:44:29+08:00
     [exec] [INFO] ------------------------------------------------------------------------

jvm-check:

ivy-download:
      [get] Getting: https://repo1.maven.org/maven2/org/apache/ivy/ivy/2.2.0/ivy-2.2.0.jar
      [get] To: /opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/ivy/ivy-2.2.0.jar
```

```
[ivy:resolve]   confs: [common]
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found org.apache.hadoop#hadoop-annotations;2.6.0-cdh5.12.1 in cdh-releases
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found org.apache.hadoop#hadoop-common;2.6.0-cdh5.12.1 in cdh-releases
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found com.google.guava#guava;11.0.2 in maven2
[ivy:resolve]   found com.google.code.findbugs#jsr305;3.0.0 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found commons-cli#commons-cli;1.2 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found org.apache.commons#commons-math3;3.1.1 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found xmlenc#xmlenc;0.52 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found commons-httpclient#commons-httpclient;3.1 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found commons-logging#commons-logging;1.1.3 in maven2
[ivy:resolve]   found commons-codec#commons-codec;1.4 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found commons-io#commons-io;2.4 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found commons-net#commons-net;3.1 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found commons-collections#commons-collections;3.2.2 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found javax.servlet#servlet-api;2.5 in maven2
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found org.mortbay.jetty#jetty;6.1.26.cloudera.4 in cdh-releases
[ivy:resolve] You probably access the destination server through a proxy server that is not well configured.
[ivy:resolve]   found org.mortbay.jetty#jetty-util;6.1.26.cloudera.4 in cdh-releases
```

由于没有代理服务器，所以卡在这了

当编译环境不能访问外网，需要在settings.xml配置文件中添加代理配置，具体内容如下：

```
<proxies>
  <proxy>
    <id>optional</id>
    <active>true</active>
    <protocol>http</protocol>
    <username>用户名</username>
    <password>密码</password>
    <host>代理服务器网址</host>
    <port>代理服务器端口</port>
    <nonProxyHosts>local.net|some.host.com</nonProxyHosts>
  </proxy>
</proxies>
```

9.8.8 换阿里云的maven仓

```
  <mirrors>

<!--
    <mirror>
      <id>huaweimaven</id>
      <name>huawei maven</name>
      <url>https://mirrors.huaweicloud.com/repository/maven/</url>
      <mirrorOf>central</mirrorOf>
    </mirror>
-->

    <mirror>
      <id>aliyunmaven</id>
      <mirrorOf>*</mirrorOf>
      <name>Aliyunmvn</name>
      <url>https://maven.aliyun.com/repository/public</url>
    </mirror>

  </mirrors>
```

阿里云maven仓库

```
<repository>
    <id>spring</id>
    <url>https://maven.aliyun.com/repository/spring</url>
    <releases>
        <enabled>true</enabled>
    </releases>
    <snapshots>
        <enabled>true</enabled>
    </snapshots>
</repository>
```

再来编译ant

```
ant task-controller
```

```
     [exec] checking whether make supports nested variables... yes
     [exec] checking dependency style of gcc... gcc3
     [exec] checking whether to enable maintainer-specific portions of Makefiles... no
     [exec] checking for gcc... (cached) gcc
     [exec] checking whether we are using the GNU C compiler... (cached) yes
     [exec] checking whether gcc accepts -g... (cached) yes
     [exec] checking for gcc option to accept ISO C89... (cached) none needed
     [exec] checking whether gcc and cc understand -c and -o together... yes
     [exec] checking for unistd.h... (cached) yes
     [exec] checking for stdbool.h that conforms to C99... yes
     [exec] checking for _Bool... yes
     [exec] checking for an ANSI C-conforming const... yes
     [exec] checking for off_t... yes
     [exec] checking for size_t... yes
     [exec] checking whether strerror_r is declared... yes
     [exec] checking for strerror_r... yes
     [exec] checking whether strerror_r returns char *... yes
     [exec] checking for mkdir... yes
     [exec] checking for uname... yes
     [exec] checking that generated files are newer than configure... done
     [exec] configure: creating ./config.status
     [exec] config.status: creating Makefile
     [exec] config.status: executing depfiles commands
     [exec] depbase=`echo impl/configuration.o | sed 's|[^/]*$|.deps/&|;s|\.o$||`;\
     [exec] gcc -DPACKAGE_NAME=\"linux-task-controller\" -DPACKAGE_TARNAME=\"linux-task-controller\" -DPACKAGE_VERSION=\"1.0.0\" -DPACKAGE_STRING=\"linux-task-controller\ 1.0.0\" -DPACKAGE_BUGREPORT=\"mapreduce-dev@hadoop.apache.org\" -DPACKAGE_URL=\"\" -DSTDC_HEADERS=1
 -DHAVE_SYS_TYPES_H=1 -DHAVE_SYS_STAT_H=1 -DHAVE_STDLIB_H=1 -DHAVE_STRING_H=1 -DHAVE_MEMORY_H=1 -DHAVE_STRINGS_H=1 -DHAVE_INTTYPES_H=1 -DHAVE_STDINT_H=1 -DHAVE_UNISTD_H=1 -D__EXTENSIONS__=1 -D_ALL_SOURCE=1 -D_GNU_SOURCE=1 -D_POSIX_PTHREAD_SEMANTICS=1 -D_TANDEM_SOURCE=1
-DPACKAGE=\"linux-task-controller\" -DVERSION=\"1.0.0\" -DHAVE_UNISTD_H=1 -DHAVE__BOOL=1 -DHAVE_STDBOOL_H=1 -DHAVE_DECL_STRERROR_R=1 -DHAVE_STRERROR_R=1 -DSTRERROR_R_CHAR_P=1 -DHAVE_MKDIR=1 -DHAVE_UNAME=1 -I. -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapredu
ce1-project/src/c++/task-controller    -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/src/c++/task-controller/impl -Wall -g -Werror -g -O2 -MT impl/configuration.o -MD -MP -MF $depbase.Tpo -c -o impl/configuration.o /opt/bigdata/hadoop-common-c
dh5.12.1-release/hadoop-mapreduce1-project/src/c++/task-controller/impl/configuration.c &&\
     [exec] mv -f $depbase.Tpo $depbase.Po
     [exec] depbase=`echo impl/task-controller.o | sed 's|[^/]*$|.deps/&|;s|\.o$||`;\
     [exec] gcc -DPACKAGE_NAME=\"linux-task-controller\" -DPACKAGE_TARNAME=\"linux-task-controller\" -DPACKAGE_VERSION=\"1.0.0\" -DPACKAGE_STRING=\"linux-task-controller\ 1.0.0\" -DPACKAGE_BUGREPORT=\"mapreduce-dev@hadoop.apache.org\" -DPACKAGE_URL=\"\" -DSTDC_HEADERS=1
 -DHAVE_SYS_TYPES_H=1 -DHAVE_SYS_STAT_H=1 -DHAVE_STDLIB_H=1 -DHAVE_STRING_H=1 -DHAVE_MEMORY_H=1 -DHAVE_STRINGS_H=1 -DHAVE_INTTYPES_H=1 -DHAVE_STDINT_H=1 -DHAVE_UNISTD_H=1 -D__EXTENSIONS__=1 -D_ALL_SOURCE=1 -D_GNU_SOURCE=1 -D_POSIX_PTHREAD_SEMANTICS=1 -D_TANDEM_SOURCE=1
-DPACKAGE=\"linux-task-controller\" -DVERSION=\"1.0.0\" -DHAVE_UNISTD_H=1 -DHAVE__BOOL=1 -DHAVE_STDBOOL_H=1 -DHAVE_DECL_STRERROR_R=1 -DHAVE_STRERROR_R=1 -DSTRERROR_R_CHAR_P=1 -DHAVE_MKDIR=1 -DHAVE_UNAME=1 -I. -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapredu
ce1-project/src/c++/task-controller    -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/src/c++/task-controller/impl -Wall -g -Werror -g -O2 -MT impl/task-controller.o -MD -MP -MF $depbase.Tpo -c -o impl/task-controller.o /opt/bigdata/hadoop-comm
on-cdh5.12.1-release/hadoop-mapreduce1-project/src/c++/task-controller/impl/task-controller.c &&\
     [exec] mv -f $depbase.Tpo $depbase.Po
     [exec] depbase=`echo impl/main.o | sed 's|[^/]*$|.deps/&|;s|\.o$||`;\
     [exec] gcc -DPACKAGE_NAME=\"linux-task-controller\" -DPACKAGE_TARNAME=\"linux-task-controller\" -DPACKAGE_VERSION=\"1.0.0\" -DPACKAGE_STRING=\"linux-task-controller\ 1.0.0\" -DPACKAGE_BUGREPORT=\"mapreduce-dev@hadoop.apache.org\" -DPACKAGE_URL=\"\" -DSTDC_HEADERS=1
 -DHAVE_SYS_TYPES_H=1 -DHAVE_SYS_STAT_H=1 -DHAVE_STDLIB_H=1 -DHAVE_STRING_H=1 -DHAVE_MEMORY_H=1 -DHAVE_STRINGS_H=1 -DHAVE_INTTYPES_H=1 -DHAVE_STDINT_H=1 -DHAVE_UNISTD_H=1 -D__EXTENSIONS__=1 -D_ALL_SOURCE=1 -D_GNU_SOURCE=1 -D_POSIX_PTHREAD_SEMANTICS=1 -D_TANDEM_SOURCE=1
-DPACKAGE=\"linux-task-controller\" -DVERSION=\"1.0.0\" -DHAVE_UNISTD_H=1 -DHAVE__BOOL=1 -DHAVE_STDBOOL_H=1 -DHAVE_DECL_STRERROR_R=1 -DHAVE_STRERROR_R=1 -DSTRERROR_R_CHAR_P=1 -DHAVE_MKDIR=1 -DHAVE_UNAME=1 -I. -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapredu
ce1-project/src/c++/task-controller    -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/src/c++/task-controller/impl -Wall -g -Werror -g -O2 -MT impl/main.o -MD -MP -MF $depbase.Tpo -c -o impl/main.o /opt/bigdata/hadoop-common-cdh5.12.1-release/h
adoop-mapreduce1-project/src/c++/task-controller/impl/main.c &&\
     [exec] mv -f $depbase.Tpo $depbase.Po
     [exec] gcc -I/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/src/c++/task-controller/impl -Wall -g -Werror -g -O2   -o task-controller impl/configuration.o impl/task-controller.o impl/main.o
     [exec] make[1]: 进入目录“/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/build/c++-build/Linux-aarch64-64/task-controller”
     [exec]  /usr/bin/mkdir -p '/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/build/hadoop-2.6.0-mr1-cdh5.12.1/sbin/Linux'
     [exec]  /usr/bin/install -c task-controller '/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/build/hadoop-2.6.0-mr1-cdh5.12.1/sbin/Linux'
     [exec] make[1]: 对“install-data-am”无需做任何事。
     [exec] make[1]: 离开目录“/opt/bigdata/hadoop-common-cdh5.12.1-release/hadoop-mapreduce1-project/build/c++-build/Linux-aarch64-64/task-controller”

BUILD SUCCESSFUL
Total time: 6 minutes 15 seconds
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
```

9.8.9 编译成功！

```
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# ll build/hadoop-2.6.0-mr1-cdh5.12.1/sbin/Linux/
总用量 116
-rwxr-xr-x. 1 root root 149680 11月 26 02:48 task-controller
[root@pc-deeplearning-1 hadoop-mapreduce1-project]#
```

9.8.10 编译好的task-controller位于“build/hadoop-2.6.0-mr1-cdh5.12.1/sbin/Linux/task-controller”

返回项目根目录。

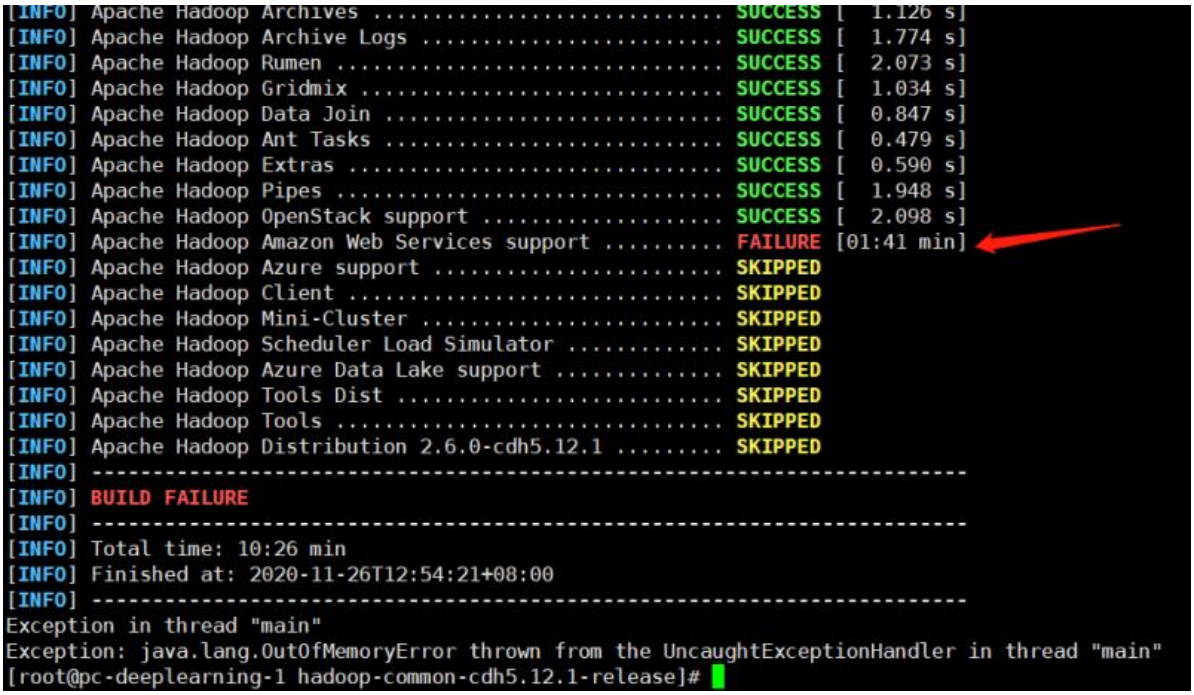
`cd hadoop-common-cdh5.12.1-release`

```
[root@pc-deeplearning-1 hadoop-mapreduce1-project]# cd /opt/bigdata/hadoop-common-cdh5.12.1-release/
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# ll
总用量 200
-rw-rw-r--.  1 root root 12096 8月  24 2017 BUILDING.txt
drwxrwxr-x.  2 root root  4096 8月  24 2017 cloudera
drwxrwxr-x.  3 root root  4096 8月  24 2017 dev-support
drwxrwxr-x.  3 root root  4096 8月  24 2017 hadoop-assemblies
drwxrwxr-x.  2 root root  4096 8月  24 2017 hadoop-build-tools
drwxrwxr-x.  2 root root  4096 8月  24 2017 hadoop-client
drwxrwxr-x. 10 root root  4096 8月  24 2017 hadoop-common-project
drwxrwxr-x.  2 root root  4096 8月  24 2017 hadoop-dist
drwxrwxr-x.  6 root root  4096 8月  24 2017 hadoop-hdfs-project
drwxrwxr-x. 12 root root  4096 11月 25 22:47 hadoop-mapreduce1-project
drwxrwxr-x.  9 root root  4096 8月  24 2017 hadoop-mapreduce-project
drwxrwxr-x.  3 root root  4096 8月  24 2017 hadoop-maven-plugins
drwxrwxr-x.  2 root root  4096 8月  24 2017 hadoop-minicluster
drwxrwxr-x.  3 root root  4096 8月  24 2017 hadoop-project
drwxrwxr-x.  2 root root  4096 8月  24 2017 hadoop-project-dist
drwxrwxr-x. 18 root root  4096 8月  24 2017 hadoop-tools
drwxrwxr-x.  3 root root  4096 8月  24 2017 hadoop-yarn-project
-rw-rw-r--.  1 root root 85063 8月  24 2017 LICENSE.txt
-rw-rw-r--.  1 root root 14978 8月  24 2017 NOTICE.txt
-rw-rw-r--.  1 root root 19799 11月 25 21:48 pom.xml
-rw-rw-r--.  1 root root  1366 8月  24 2017 README.txt
[root@pc-deeplearning-1 hadoop-common-cdh5.12.1-release]# mvn package -DskipTests -Pdist,native -Dtar -Dsnappy.lib=/usr/lib64 -Dbundle.snappy -Dmaven.javadoc.skip=true
```

9.9、执行编译，其中-Dsnappy.lib参数值设为libsnappy.so所在的目录

```
mvn package -DskipTests -Pdist,native -Dtar -Dsnappy.lib=/usr/lib64 -Dbundle.snappy -Dmaven.javadoc.skip=true
```

编译失败界面如下所示



本人初步判断，编译失败是由于 maven仓库没有配置代理服务器，所以无法访问外网，所以编译失败。

请各位专家经过排查后再做判断。

特殊说明：

本文记录于2020-11-25，最终整理完毕于2020-12-03，由 **张琦琛** 导出

希望各位专家闲暇之余帮忙看下如何解决这个问题，不胜感激！

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微信公众号：

微信：