# 解决中标麒麟服务器操作系统安装部署 **Docker CE** 问题

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环境：

虚拟机：VMware Workstation 15 Pro 15.0.2 build-10952284

主机操作系统：Windows 10, 64-bit (Build 17134)

虚拟机操作系统：NeoKylin Server 5.0 Build14 (x86_64)

（参考泰晓科技“基于 Docker/Qemu 快速构建 Linux 内核实验环境”一文的方法）

**1**、问题描述

参考泰晓科技上构建 Linux Lab 环境文章中要求先安装部署 docker，然后再 clone linux-lab。

（1） 将“https://mirrors.aliyun.com/centos/7/os/x86_64/”源配置到 yum 源配置文件/etc/yum.repos.d/CentOS-Base.repo

（2） $ sudo yum clean all

$ sudo yum install docker

（3）将 docker 用户加入到 docker 用户组

$ sudo usermod -aG docker $USER

如果报告找不到群组，请创建群组后再执行上面的命令：

$ sudo groupadd docker

（4）配置 registry-mirror 镜像库，重启 docker 服务

$ vim /etc/default/docker

DOCKER_OPTS="$DOCKER_OPTS --registry-mirror=https://docker.mirrors.ustc.edu.cn"

$ service docker restart

（5）创建工作目录并进入

$ mkdir MyWorks

$ cd MyWorks

（6）下载 cloud-lab 和 linux-lab 库

$ git clone https://gitee.com/tinylab/cloud-lab.git

$ cd cloud-lab && tools/docker/choose linux-lab

（7）安装和加载镜像

$ tools/docker/pull # Pull from docker hub

$ tools/docker/run # 加载镜像，拉起一个 Linux Lab 容器

此时在执行 pull 命令时报错，如截图。

$ tools/docker/pull

LOG: Current Lab is linux-lab

Error response from daemon: Get https://index.docker.io/v1/search?q=tinylab&n=25: dial tcp: lookup index.docker.io on 192.168.8.1:53: read udp 192.168.8.109:51365->192.168.8.1:53: i/o timeout

LOG: No tinylab/linux-lab found in docker hub

LOG: Running ' docker pull 'tinylab/linux-lab' '

Using default tag: latest

Trying to pull repository docker.io/tinylab/linux-lab ...

Get https://registry-1.docker.io/v2/: net/http: request canceled while waiting for connection (Client.Timeout exceeded while awaiting headers)


至此，我将该问题提交到“Linux Lab 用户交流群”中寻求帮助，张福新老师回复“最好用 docker 镜像，原始网站网络无法保证”，并让我“搜下 docker 国内镜像”。吴章金老师也给出了指导，建议跑下 docker 的“hello world”（docker run hello-world），确保 docker 的安装配置是 OK 的，如果 docker 安装配置有问题，建议参考 cloud-lab 下的 tools/docker/install 脚本重新安装配置 docker。

经两们大师的指导，我坚定地迈步走向寻求解决方案之路。


**2**、解决问题

首先按照吴章金老师的指导验证 docker 安装配置的正确性：

$ docker run hello-world

Unable to find image 'hello-world:latest' locally
Trying to pull repository docker.io/library/hello-world ...
/usr/bin/docker-current: Get https://registry-1.docker.io/v2/: net/http: request canceled while waiting for connection (Client.Timeout exceeded while awaiting headers).
See '/usr/bin/docker-current run --help'.

仍然报错，说明 docker 的确没有安装或配置好。

接着按照吴章金老师的指导，参考 install 安装脚本重新安装 docker。该安装脚本是基于 Ubuntu 的，而我的系统是基于 CentOS 的，没关系，按照 CentOS 的安装方式来安装 docker 即可。

（1）参考安装脚本中的 yum 源地址下载 yum 源配置文件

https://mirrors.aliyun.com/docker-ce/linux/centos/docker-ce.repo

$ cat /etc/yum.repos.d/docker-ce.repo

[docker-ce-stable]
name=Docker CE Stable - $basearch
baseurl=https://mirrors.aliyun.com/docker-ce/linux/centos/7/$basearch/stable
enabled=1
gpgcheck=1
gpgkey=https://mirrors.aliyun.com/docker-ce/linux/centos/gpg

（2）安装 docker

先卸载原来安装的 docker：

$ sudo rpm -e docker

$ sudo rpm -e docker-common docker-client

再安装 docker:

$ sudo yum install docker-ce

（3）配置 docker

$ sudo usermod -aG docker $USER

$ sudo vim /etc/default/docker (仍然用前文中的地址：https://docker.mirrors.ustc.edu.cn)

DOCKER_OPTS="$DOCKER_OPTS --registry-mirror=https://docker.mirrors.ustc.edu.cn"

（4）重新 docker 服务

$ sudo ifconfig docker0 down

$ sudo brctl delbr docker0

$ sudo service docker restart

（5）验证 hello-world

$ docker run hello-world

Unable to find image 'hello-world:latest' locally

docker: Error response from daemon: Get https://registry-1.docker.io/v2/library/hello-world/manifests/latest: Get https://auth.docker.io/token?scope=repository%3Alibrary%2Fhello-world%3Apull&service=registry.docker.io: net/http: request canceled while waiting for connection (Client.Timeout exceeded while awaiting headers).

See 'docker run --help'.

依然报错，说明 docker 的镜像地址存在问题，确定是 ustc 源（https://docker.mirrors.ustc.edu.cn）出错了，需要找个国内镜像源来代替。

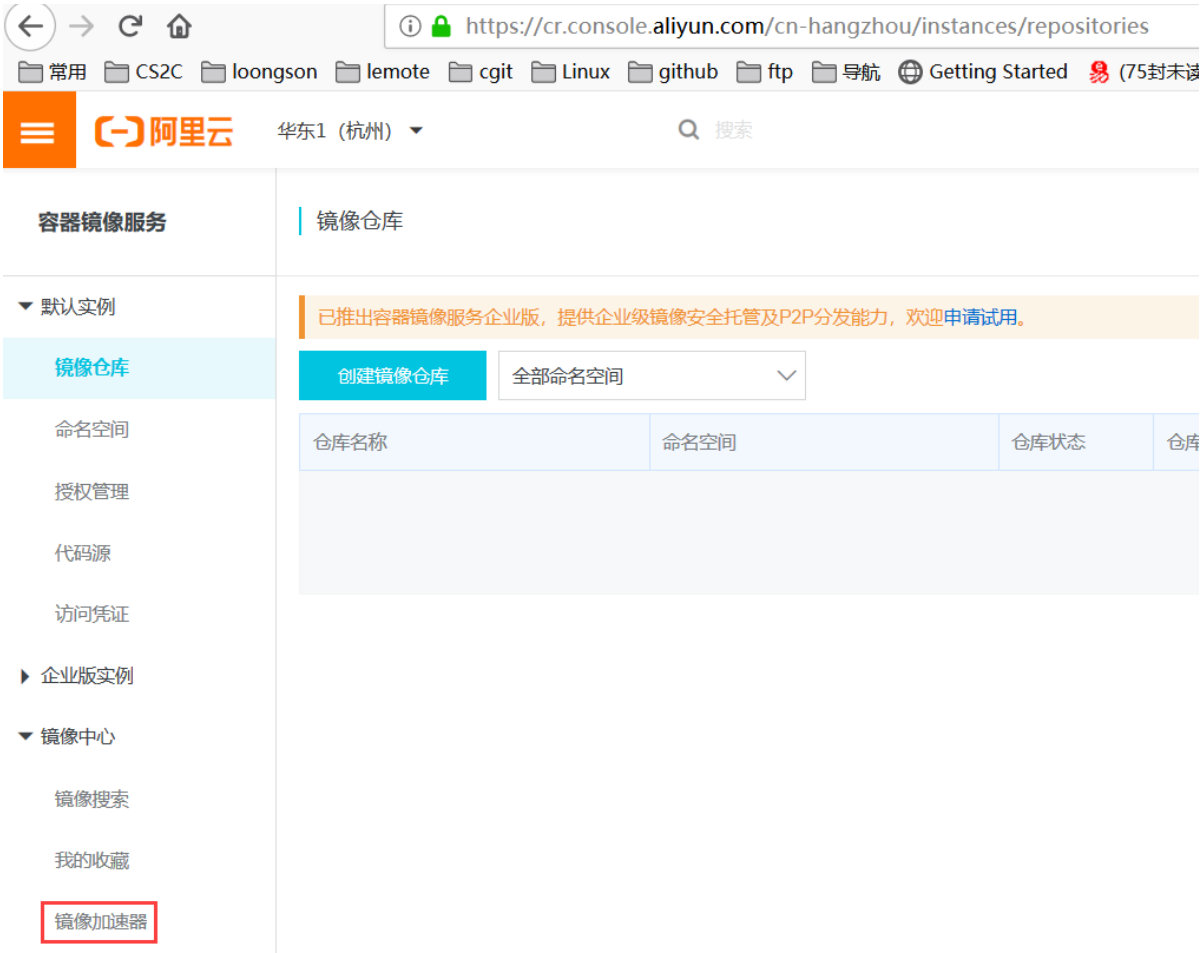
根据报错信息“ docker: Error response from daemon: Get https://registry-1.docker.io/v2/”百到到一篇解决该问题的文章：Docker - 配置国内加速器加速镜像下载，按照文章的指导，终于解决了镜像源出错问题，hello-world 也正常运行了。以下是解决步骤:

（1）打开阿里开发者平台：https://dev.aliyun.com/search.html，进行注册登录

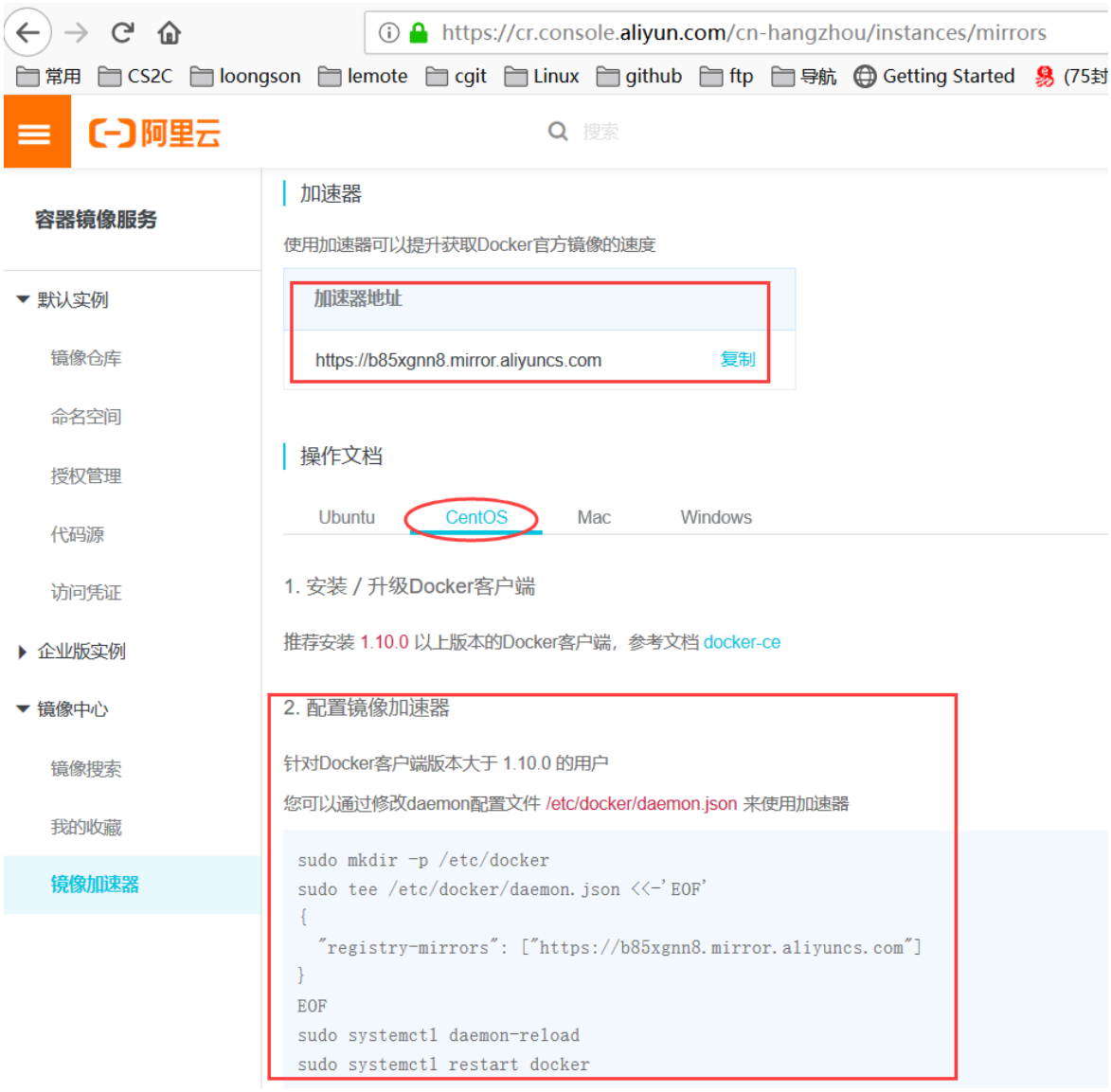
（2）在主页点击镜像搜索


容器服务 ACK

（3）在打开的界面点击左下角的“镜像加速器”




（4）复制加速器地址，按照操作文档（CentOS）修改 daemon 配置文件（/etc/docker/daemon.json）将加速器地址添加进去来使用加速器




注意：一定要同步将该加速器地址替换之前配置的/etc/default/docker 文件中的镜像源地址。

（5）验证 hello-world

```
$ sudo docker run hello-world

Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
1b930d010525: Pull complete
Digest: sha256:b8ba256769a0ac28dd126d584e0a2011cd2877f3f76e093a7ae560f2a5301c00
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.
```

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
(amd64)
3. The Docker daemon created a new container from that image which runs the executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

运行 hello-world 成功，至此安装配置 docker 镜像源问题得到解决。

经反复验证确认，发现/etc/docker/daemon.json 配置文件跟运行 hello-world 无关，可以没有该文件，但/etc/default/docker 配置文件一定要有。

不过/etc/docker/daemon.json 配置文件会影响 Cloud Lab 的镜像源，会导致 Cloud Lad 不能 pull 镜像源上的镜像（报错信息如截图），因此这个配置文件一样不可缺少，一定要配置，切记！

以下是没有/etc/default/docker 配置文件时的报错信息：

$ tools/docker/pull

LOG: Current Lab is linux-lab
Error response from daemon: Get https://index.docker.io/v1/search?q=tinylab&n=25: dial tcp: lookup index.docker.io on 192.168.8.1:53: read udp 192.168.8.109:43971->192.168.8.1:53: i/o timeout
LOG: No tinylab/linux-lab found in docker hub
LOG: Running ' docker pull 'tinylab/linux-lab' '
Using default tag: latest
Error response from daemon: Get https://registry-1.docker.io/v2/: net/http: request canceled while waiting for connection (Client.Timeout exceeded while awaiting headers)

```
[huangw@localhost cloud-lab]$ tools/docker/pull
LOG: Current Lab is linux-lab
Error response from daemon: Get https://index.docker.io/v1/search?q=tinylab&n=25: dial tcp: lookup index.docker.io o
n 192.168.8.1:53: read udp 192.168.8.109:43971->192.168.8.1:53: i/o timeout
LOG: No tinylab/linux-lab found in docker hub
LOG: Running ' docker pull 'tinylab/linux-lab' '
Using default tag: latest
Error response from daemon: Get https://registry-1.docker.io/v2/: net/http: request canceled while waiting for conne
ction (Client.Timeout exceeded while awaiting headers)
```

**3**、实验 **Linux Lab**

继续执行 linux-lab 来进行泰晓科技的 Linux 实验室的验证工作，看是否能够完成实验。

（1）下载 linux-lab

$ tools/docker/choose linux-lab

LOG: Current Lab is linux-lab
LOG: Current Lab is linux-lab
LOG: Source code downloaded to /home/huangw/MyWorks/cloud-lab/labs/linux-lab

（2）安装

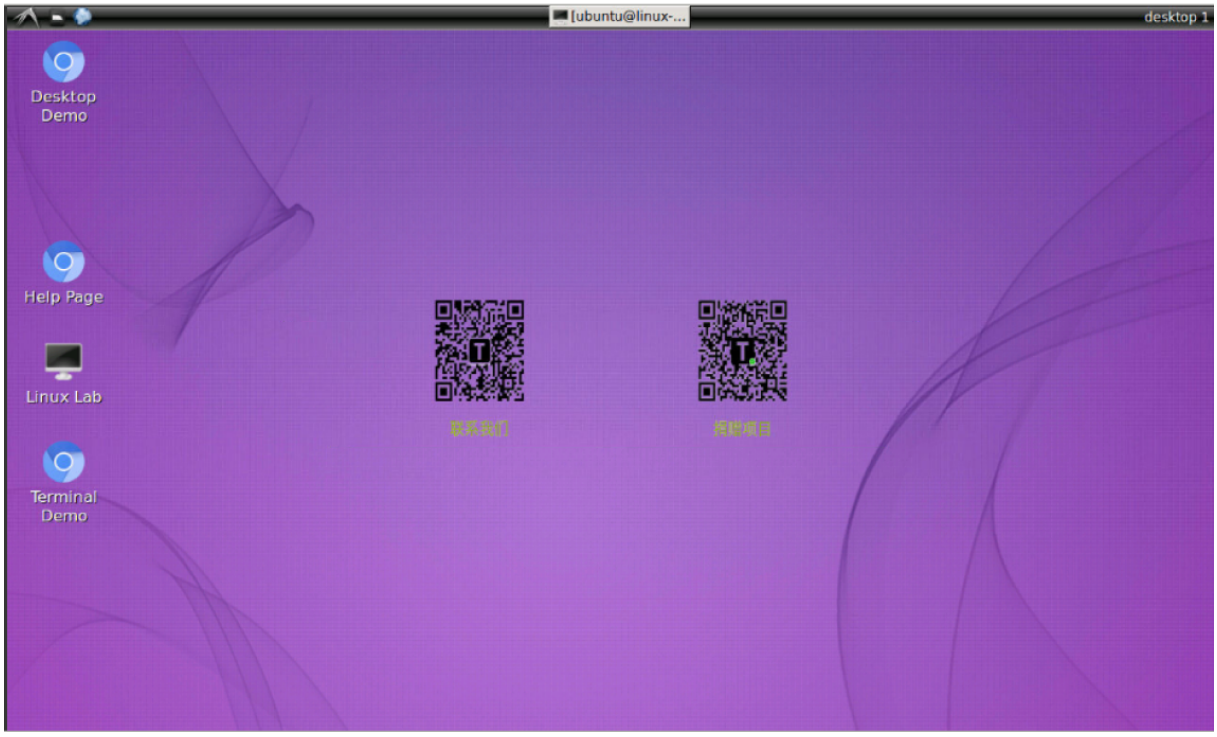
$ tools/docker/pull # Pull from docker hub

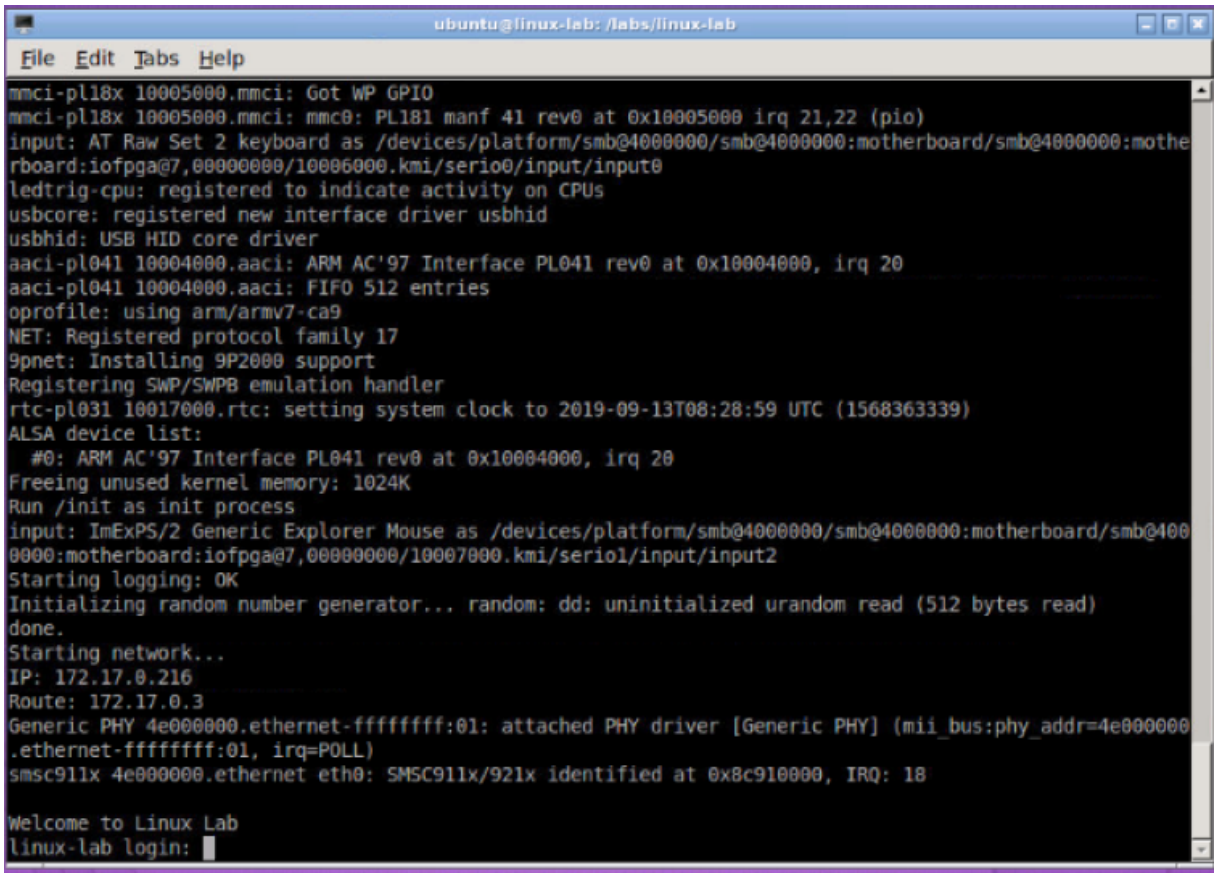
LOG: Current Lab is linux-lab
Error response from daemon: Get https://index.docker.io/v1/search?q=tinylab&n=25: dial tcp: lookup index.docker.io on 192.168.8.1:53: read udp 192.168.8.109:57803->192.168.8.1:53: i/o timeout
LOG: No tinylab/linux-lab found in docker hub
LOG: Running ' docker pull 'tinylab/linux-lab' '
Using default tag: latest
latest: Pulling from tinylab/linux-lab
16da43b30d89: Pulling fs layer
1840843dafed: Pulling fs layer
... ...
e549c4a6c08b: Pull complete
720869a3187c: Pull complete
3c9e7a73bcef: Pull complete
Digest: sha256:d323fbefdb72dba69d8fa300c82058244bed456668ede48321004a4d56b0dbdb
Status: Downloaded newer image for tinylab/linux-lab:latest
docker.io/tinylab/linux-lab:latest

拉起 linux-lab 库成功。

$ tools/docker/run # 加载镜像，拉起一个 Linux Lab 容器

```
huangw@localhost cloud-lab$ tools/docker/run
LOG: Current Lab is linux-lab
LOG: Start cloud-ubuntu-web
LOG: Current Lab is linux-lab
Using default tag: latest
latest: Pulling from tinylab/cloud-ubuntu-web
d8592394ba1: Extracting [==========================================>        ]  55.71MB/67.11MB
01aa7f61ccd1: Download complete
5dd2552a960e: Download complete
7cbe941c5e3e: Download complete
2549ecfb14c6: Download complete
a6627d1f63e0: Download complete
a11a1884f04d: Download complete
5b7589c006c9: Download complete
61f1a1cff67f: Download complete
03e9cbe72c37: Download complete
2e89c85a8764: Download complete
700be5f5e42a: Download complete
afb9dcbfe40b: Verifying Checksum
08dfd7c2f319: Download complete
5c0883718a61: Download complete
7622b28f5f1d: Download complete
169e84070adf: Downloading [=========================>                         ]  34.12MB/65.8MB
022af65cefe4: Download complete
0d3f4e9f285e: Download complete
```




ubuntu@linux-lab: /labs/linux-lab
File Edit Tabs Help
mmci-pl18x 10005000.mmci: Got WP GPIO
mmci-pl18x 10005000.mmci: mmc0: PL181 manf 41 rev0 at 0x10005000 irq 21,22 (pio)
input: AT Raw Set 2 keyboard as /devices/platform/smb@4000000/smb@4000000:motherboard/smb@4000000:mothe
rboard:iofpga@7,00000000/10006000.kmi/serio0/input/input0
ledtrig-cpu: registered to indicate activity on CPUs
usbcore: registered new interface driver usbhid
usbhid: USB HID core driver
aaci-pl041 10004000.aaci: ARM AC'97 Interface PL041 rev0 at 0x10004000, irq 20
aaci-pl041 10004000.aaci: FIFO 512 entries
oprofile: using arm/armv7-ca9
NET: Registered protocol family 17
9pnet: Installing 9P2000 support
Registering SWP/SWPB emulation handler
rtc-pl031 10017000.rtc: setting system clock to 2019-09-13T08:28:59 UTC (1568363339)
ALSA device list:
#0: ARM AC'97 Interface PL041 rev0 at 0x10004000, irq 20
Freeing unused kernel memory: 1024K
Run /init as init process
input: ImExPS/2 Generic Explorer Mouse as /devices/platform/smb@4000000/smb@4000000:motherboard/smb@400
0000:motherboard:iofpga@7,00000000/10007000.kmi/serio1/input/input2
Starting logging: OK
Initializing random number generator... random: dd: uninitialized urandom read (512 bytes read)
done.
Starting network...
IP: 172.17.0.216
Route: 172.17.0.3
Generic PHY 4e000000.ethernet-ffffffff:01: attached PHY driver [Generic PHY] (mii_bus:phy_addr=4e000000
.ethernet-ffffffff:01, irq=POLL)
smsc911x 4e000000.ethernet eth0: SMSC911x/921x identified at 0x8c910000, IRQ: 18
Welcome to Linux Lab
linux-lab login: