

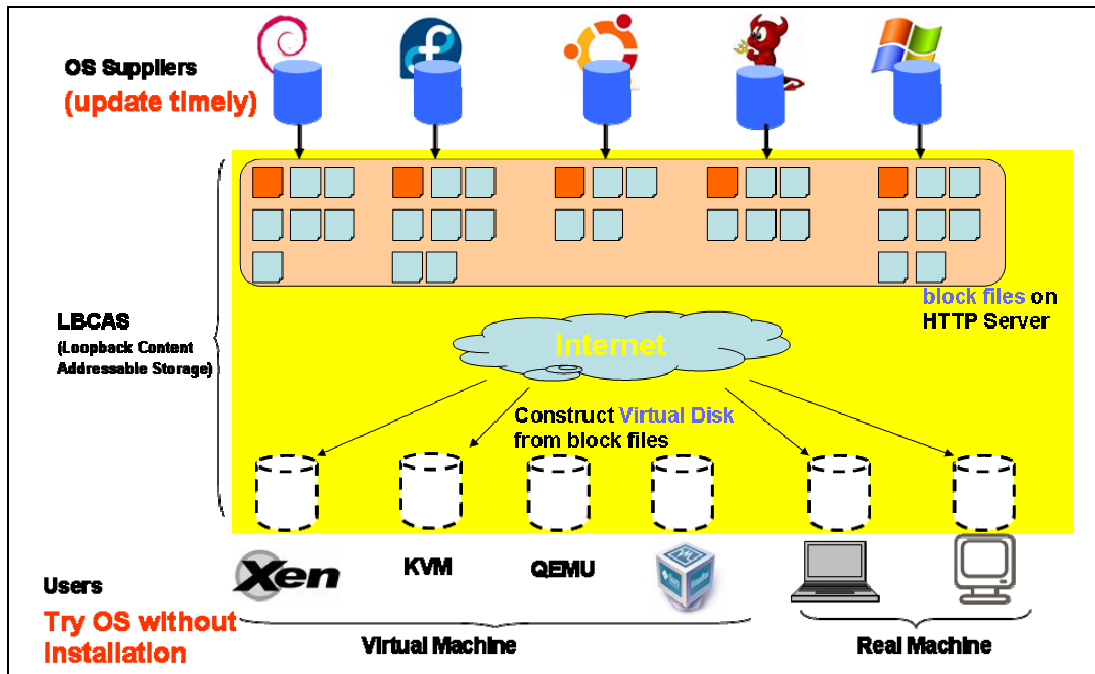
OS Circular Guide

2009/03/23

■ Overview

OS Circular is a framework of Internet Disk Image Distributor for anonymous operating systems. It enables to boot anonymous OS on any real/virtual machines without installation. The transferred OS is maintained periodically and updates to fix vulnerable applications. However, the old disk image is reserved and the user can rollback to old OS. The disk image is distributed by LBCAS (LoopBack Content Addressable Storage) which manages the virtual disk efficiently. The accessed blocks, which are called block files, are cached on a local storage and reused.

Current transferred OS (Ubuntu/Debian GNU Linux) will boot on KVM (or Xen, QEMU). They are updated every week from 03/Oct/2008.



Client images are prepared for OS Circular.

- Bootable USB Flash Memory
- Debian packages for Ubuntu/Debian GNU Linux

Hardware requirements are followings.

- USB Flash Memory more than 4GB (if you install live image)
- CPU with Intel VT-x, AMD-V (if not, the speed is very slow.)
- Memory more than 1GB
- IP address is obtained by DHCP server.

Download from <http://ring.aist.go.jp/archives/linux/oscircular/20090323/>

- Bootable USB image: [debian-live-binary.tar.gz](#)

Debian Packages: [httpstored 1.1-3 i386.deb](#), [httpfusevm-scripts 0.1-7 all.deb](#)

■ Build client image on USB Flash Memory

Download “debian-live-binary.tar.gz” 50MB, and set up a USB Flash Memory. Following instruction assumes USB Flash memory is connected to /dev/sdb.

```
# wget http://ring.aist.go.jp/archives/linux/oscircular/20090323/debian-live-binary.tar.gz
```

```
# mkfs.ext3 /dev/sdb1
```

```
# mount -t ext3 /dev/sdb1 /media/sdb1
```

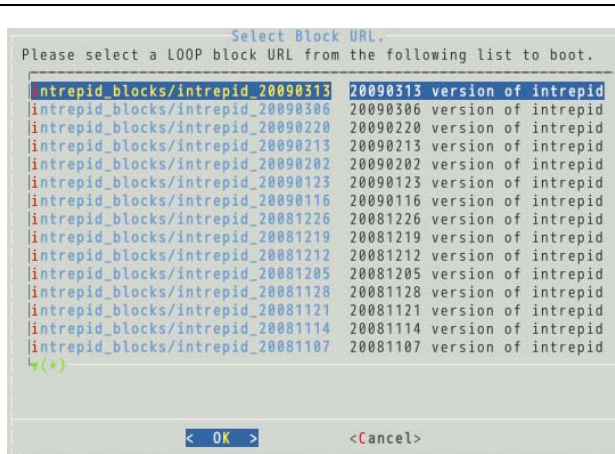
```
# tar xvf /media/sdb1 debian-live-binary.tar.gz -C /dev/sdb1/
```

```
# grub-install /dev/sdb --root-directory=/media/sdb1/
```

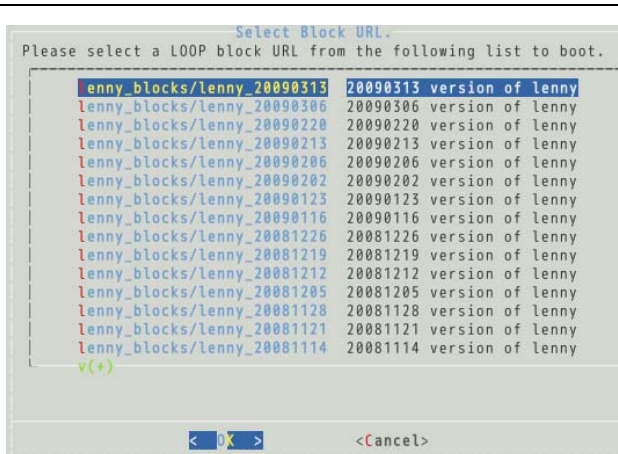
After that, boot PC from USB with the installed USB Flash Memory. When an IP address is setup by DHCP, you will find the following menu. “intrepid” and “lenny” include sub-menu. The second “intrepid_blocks” and fourth “lenny_blocks” indicate the least version.



Top Menu



Sub Menu for Intrepid Ubuntu



Sub Menu for Lenny Debian GNU Linux

After the selection, full screen KVM will be launched on your PC. The login information is

User Name	http-fuse	root
Password	http-fuse	http-fuse

The first boot may be slow because the necessary block files are downloaded on demand. However they are cached on a local storage (`/var/tmp/blocks/`) and reused. The second boot will be quick as the normal virtual disk.

■ Install deb package on Ubuntu/Debian GNU Linux

Requirements

kvm, dialog, and fuse on your Ubuntu/Debian GNU Linux.

Download two debian packages and install them.

```
# wget http://ring.aist.go.jp/archives/linux/oscircular/20090323/httpfusevm-scripts\_0.1-7\_all.deb
# wget http://ring.aist.go.jp/archives/linux/oscircular/20090323/httpstoraged\_1.1-3\_i386.deb
# dpkg -i httpfusevm-scripts_0.1-7_all.deb httpstoraged_1.1-3_i386.deb
```

Following command launches OS Circular.

```
# vmmenu.sh
```

You will find the selection menu. The procedure is same as the USB boot.

■ Miscellaneous

● Communication to Host OS

Transferred OS runs on KVM of USB Client image. Transferred OS communicates to the host OS by “ssh”.

```
# ssh -l root 10.0.2.2
```

Password is “http-fuse”

The ssh communication on host OS is limited to the guest OS for security.

● Storage Cache

Downloaded block files are stored at `/var/tmp/blocks/blockfile/`. They are managed by LIFO but sometimes choked. At that time clear the files. The necessary block files are downloaded again.

● How to make original LBCAS

You can create your own LBCAS from a block device or loopback file.

Download a debian package and install it.

```
# wget http://ring.aist.go.jp/archives/linux/oscircular/20090323/mksha1files\_1.0-1\_i386.deb
# dpkg -i mksha1files_1.0-1_i386.deb
```

The following commands are sample to create and use the LBCAS.

```
# mkdir /mnt/lbcas
```

```
# mksha1files knoppix.iso knoppix.idx 262144
```

```
# cp index.idx /var/tmp/blocks/
```

```
# httpstaged -f /mnt/lbcas/ file:///***/knoppix.idx
# kvm -m 512 -cdrom /mnt/lbcas/knoppix
```

- **CAUTION: Old OS image**

The disk images will be removed according to the volume of server.

- **Reference**

- Linux Conf Australia 2009, “OS Circular: Internet bootable OS Archive”, Kuniyasu Suzuki
 - ✧ Slide PDF: <http://linux.conf.au/slides/145.pdf>
- USENIX LISA 07 (21st Large Installation System Administration Conference), “OS Circular: Internet Client for Reference”, K.Suzaki, T.Yagi, K.Iijima, and N.A. Quynh
 - ✧ Paper PDF: http://www.usenix.org/events/lisa07/tech/full_papers/suzaki/suzaki.pdf

- **Related Work**

- OS Zoo
 - ✧ <http://www.oszoo.org/>
- LivePC of Moka5
 - ✧ <http://www.mokafive.com/>