Ubuntu 16.04 Mastersolution for

Linux4Afrika

and

STBA / STALCA e.V.



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1.0 Linux4Afrika PXE Classroom Setup Author: Florian Auer

Network based installation

Preparations

- Make sure network cable is plugged in
- Turn on the computer and enter the BIOS menu (depends on manufacturer)
- In the BIOS, go to boot configuration
- Set hard disk as primary and network to secondary boot device (setting options depend on BIOS manufacturer, see example image below)
- Save changes and restart the computer



The computer will try to connect to the server and fetch setup data. This looks similar to this:

Intel UNDI, PXE-2.1 PXE Software Copyright (C) 1997-2000 Intel Corporation Copyright (C) 2010 Oracle Corporation CLIENT MAC ADDR: 08 00 27 05 88 3E GUID: 8FC03372-1342-404B-B9D5-34A1 CLIENT IP: 192.168.0.147 MASK: 255.255.25.0 DHCP IP: 192.168.0.250 GATEWAY IP: 192.168.0.250 PXE entry point found (we hope) at 9DDC:0104 via plan A UNDI code segment at 9DDC len 199E UNDI data segment at 9C59 len 1830 Getting cached packet 01 02 03 My IP address seems to be COA80093 192.168.0.147 ip=192.168.0.147:192.168.0.250:192.168.0.250:255.255.0 BOOTIF=01-08-00-27-05-88-3e SYSUUID=8fc03372-1342-404b-b9d5-34aecbc7deff TFTP prefix: /ltsp/rescue/ Trying to load: pxelinux.cfg/default 0]

_

The system boots and the Ubuntu boot screen is shown. Hint: You can switch to system output view by using Alt+Tab keys.



After the boot process is completed, a terminal prompt will be shown:

```
Intel UNDI, PXE-2.1
PXE Software Copyright (C) 1997–2000 Intel Corporation
Copyright (C) 2010 Oracle Corporation
CLIENT MAC ADDR: 08 00 27 05 88 3E GUID: 8FC03372-1342-404B-B9D5-34AECBC7DEFF
CLIENT IP: 192.168.0.147 MASK: 255.255.255.0 DHCP IP: 192.168.0.250
GATEWAY IP: 192.168.0.250
!PXE entry point found (we hope) at 9DDC:0104 via plan A
UNDI code segment at 9DDC len 199E
UNDI data segment at 9C59 len 1830
Getting cached packet 01 02 03
My IP address seems to be COA80093 192.168.0.147
ip=192.168.0.147:192.168.0.250:192.168.0.250:255.255.255.0
BOOTIF=01-08-00-27-05-88-3e
SYSUUID=8fc03372-1342-404b-b9d5-34aecbc7deff
TFTP prefix: /ltsp/rescue/
Trying to load: pxelinux.cfg/default
                                                                    ok
Welcome to Ubuntu 14.04 LTS (GNU/Linux 3.13.0-29-generic i686)
 * Documentation: https://help.ubuntu.com/
ubuntu@ubuntu:~$ _
```

Start setup script

\$ sudo su <mark># install.sh</mark>

Important: Do not run the install.sh script via sudo (sudo install.sh). Always switch to *root* via **sudo su** first. Note: this might take some time (approx. 20 minutes, depending on hardware).

Intel UNDI, PXE-2.1 PXE Software Copyright (C) 1997–2000 Intel Corporation Copyright (C) 2010 Oracle Corporation CLIENT MAC ADDR: 08 00 27 05 88 3E GUID: 8FC03372-1342-404B-B9D5-34AECBC7DEFF CLIENT IP: 192.168.0.147 MASK: 255.255.255.0 DHCP IP: 192.168.0.250 GATEWAY IP: 192.168.0.250 PXE entry point found (we hope) at 9DDC:0104 via plan A! UNDI code segment at 9DDC len 199E UNDI data segment at 9C59 len 1830 Getting cached packet 01 02 03 My IP address seems to be COA80093 192.168.0.147 lip=192.168.0.147:192.168.0.250:192.168.0.250:255.255.255.0 BOOTIF=01-08-00-27-05-88-3e SYSUUID=8fc03372-1342-404b-b9d5-34aecbc7deff TFTP prefix: /ltsp/rescue/ Trying to load: pxelinux.cfg/default Πk Welcome to Ubuntu 14.04 LTS (GNU/Linux 3.13.0–29–generic i686) * Documentation: https://help.ubuntu.com/ ubuntu@ubuntu:~\$ sudo su root@ubuntu:/home/ubuntu# install.sh_

Before the setup process starts, you will be asked to confirm to wipe all data from the harddisk. Note: This cannot be undone! Select "Yes" to continue.



In the next step, you are asked to select a number for this client. The number will be used later to identify this computer in the network. Note: This number must not be used twice - make sure every number is only used once!

As a last step, you are asked what to do after installation is finished. You can select between the following options:

Shutdown

Computer will be shut down after installation is finished. This is a convenient way to make sure the system is powered off after everything has been set up. You could use this if you start the setup before leaving the office.

Reboot

Choose this option if you would like to continue working with the computer after everything has been set up.

Shell

If you would like to use the terminal after setup has been completed, select this option. However, it is recommended to reboot the system first.





When the system the setup is complete The system is booted and the login screen is shown. You can now log in with the username user and the password **edubuntu**.

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1.1 Client Backup and Restore Author: Florian Auer

Start the system

GNU GRUB version 2.02~beta2-9ubuntu1

*Ubuntu 14.04 Client Rescue System gPXE Network Boot

> Use the ↑ and ↓ keys to select which entry is highlighted. Press enter to boot the selected OS, `e' to edit the commands before booting or `c' for a command-line.

Rescue System

Backup & Restore the system partitions

It is recommended to create a backup of the system partitions. This can be easily done with the *diskmanager* tool. Note: You must be *root* in order to use this command.

The syntax for *diskmanager* is very simple:

```
# diskmanager help
# diskmanager <action> <partitionname>
```

Action can be either "help", "backup" or "restore". The help action shows how to use *diskmanager*. The backup action can be used to create a backup. The restore action can be used to restore a previously created backup.

Partition Name	System Path Backup File	
educlient	/dev/sda1	/media/images/1_educlient.img
rescue	/dev/sda1	/media/images/2_rescue.img

Create a backup of the system

Backup the Edubuntu Client partition

<mark>\$ sudo su</mark> # diskmanager backup educlient

Backup the Rescue partition

<mark>\$ sudo su</mark> # diskmanager backup rescue

Restore a back of the system

Restore the Edubuntu client partition

\$ sudo su
\$ diskmanager restore educlient

Restore the Rescue partition

\$ sudo su
\$ diskmanager backup rescue

1.2 PXE Booting LKRN files (advanced) Author: Florian Auer

HOWTO generate a local *.lkrn ROM file to boot from a network card NOTE: THIS STEP MIGHT BE OBSOLETE DUE TO THE POSSIBILITY TO USE THE GENERIC PXE DRIVER!

Get root permissions

\$ sudo su

Password: linux

Search from pci bus installed Ethernet card

Ispci | grep Ethernet

Example output:

02:0f.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL-8110SC/8169SC Gigabit Ethernet (rev 10)

Find PCI vendor code and PCI device code from network card

lspci -n | grep 02:0f.0

Example output:

02:0f.0 0200: **10ec:8167** (rev 10)

In this example, the PCI vendor code is **10ec** and the PCI device code is **8167**.

Create network card specific LKRN image

- 1. Go to http://rom-o-matic.net/gpxe/gpxe-git/gpxe.git/contrib/rom-o-matic/
- 2. Choose output format "Linux kernel (SYSLINUX/GRUB/LILO) loadable image (.lkrn)"
- 3. Choose NIC type "All drivers"
- 4. Enter PCI vendor code and PCI device code
- 5. Click "Get Image"

This will create a custom image file and start the download.

ROM-o-matic.net for gPXE 1.0.1+ - Mozilla Firefox ROM-o-matic.net fo F ROM-o-matic.net fo F romburning:gemu F pxechaining - Etherb F		1	1	0	
(☆	Ê	ŧ	⋒	≡
ROM-o-matic.net dynamically generates gPXE imag	ges				
If this site helps you, please <i>Donate</i> to help us con to make Free, Open Source, State-of-the-art networ booting software. Thanks!	tin k	ue			
To create an image:					
1. Choose an output format: Linux kernel (SYSLINUX/GRUB/LILO) loadable image (.lkrn)	*				
2. Choose a NIC type: all-drivers					Ξ
3. (optional — for binary ROM image format only)					
If you choose <i>Binary ROM image</i> as your output format, you must enter 4 hex digits below for <i>PCI VENDOR CODE</i> and <i>PCI DEVICE CODE</i> that match the NIC device for which you are making this image.					
Information on how to determine NIC PCI IDs may be found <u>here</u> .					
PCI VENDOR CODE: 10EC PCI DEVICE CODE: 8167					
Please note for ROM images:					
 If you enter PCI IDs, we will attempt to determine the correct driver to support them, and will ignore any NIC type entered above. 					
∘ gPXE does not support all possible PCI IDs for supported NICs.					
4. Generate and download an image: Get Image					
5. (optional) Customize image configuration options: Customize					
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Install LKRN image

- Got to the downloads folder (or the place where you downloaded the file)
- Rename the file you dowloaded to "gpxe_<VENDOR CODE>_<DEVICE CODE>.lkrn
- In our example above, the file name would be gpxe_10ec_8167.lkrn
- Copy the file to /mirror/pxe_client/rom-o-matic/ on the server
- Reboot the client

Trouble Shooting (L4A Team Only)

Error message due to missing PXE driver



- Select "OK"

- Hit Enter

System should reboot now

Select "Rescue System" in boot menu

NOTE: THIS ISSUE COULD BE SOLVED BY USING THE GENERIC PXE DRIVER!

Suggestions for improvements (L4A Team Only)

- Florian: Check setup is run as root at the very beginning, point out to switch to root rather than doing "sudo install.sh"
- Florian: Prefix all L4A specific scripts/tools with I4a, e. g. "I4a-setup"?

Install generic PXE boot driver

Go to ROM-O-MATIC website

Use settings from screenshot below

- Use output format *.kpxe
- Use NIC type "All drivers"
- Do not enter any vendor or device code
- Click "Get Image"
- Save file in "Downloads" folder
- Rename downloaded file to gpxe_universal_driver.kpxe
- Copy downloaded file to tftp boot folders on the server
 - For 192.168.0.0/24 subnet /var/lib/tftpboot/ltsp/rescue
 - For 192.168.1.0/24 subnet /var/lib/tftpboot/ltsp/rescue2
- Add new *filename* entries to dhcp.conf
 - For 192.168.0.0/24 subnet
 filename //ltsp/rescue/gpxe_universal_driver.kpxe"
 - For 192.168.1.0/24 subnet
 filename //ltsp/rescue2/gpxe_universal_driver.kpxe

ROM-o-matic.net for gPXE 1.0.1+ - Mozilla Firefox
Image: Control of the second seco
ROM-o-matic.net dynamically generates gPXE images
If this site helps you, please <i>Donate</i> to help us continue to make Free, Open Source, State-of-the-art network booting software. Thanks!
To create an image:
1. Choose an output format: PXE bootstrap loader keep [Keep PXE stack method 1] (.kpxe) 🛟
2. Choose a NIC type: all-drivers
3. (optional — for binary ROM image format only)
If you choose <i>Binary ROM image</i> as your output format, you must enter 4 hex digits below for <i>PCI VENDOR CODE</i> and <i>PCI DEVICE CODE</i> that match the NIC device for which you are making this image.
Information on how to determine NIC PCI IDs may be found <u>here</u> .
PCI VENDOR CODE: PCI DEVICE CODE:
Please note for ROM images:
 If you enter PCI IDs, we will attempt to determine the correct driver to support them, and will ignore any NIC type entered above.
• gPXE does not support all possible PCI IDs for supported NICs.
4. Generate and download an image: Get Image
5. (optional) Customize image configuration options: Customize
Resources

2.0 Server: Network Setup Author: Hans-Peter Merkel

Linux4afrika default server uses 3 Network cards:

- eth0 goes to main switch for network 192.168.0.0/24
- eth1 goes to additional (or stays open) switch for same network 192.168.0.0/24
- eth2 might be connected to any Internet router or stays open

eth0 should be 1 GB NIC and should always be onboard NIC. Eth1 should be an additional 1 GB NIC in PCI(e) slot. eth2 can be any 100 MBit NIC in PCI slot.

cat /etc/udev/rules.d/70-persistent-net.rules

```
root@server:/home/teacher# cat /etc/udev/rules.d/70-persistent-net.rules
# This file was automatically generated by the /lib/udev/write_net_rules
# program, run by the persistent-net-generator.rules rules file.
#
# You can modify it, as long as you keep each rule on a single
# line, and change only the value of the NAME= key.
# PCI device 0x8086:0x10de (e1000e)
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*", ATTR{address}=="00:23:24:02:22:41", ATTR{
dev_id}=="0x0", ATTR{type}=="1", KERNEL=="eth*", NAME="eth0"
# PCI device 0x10ec:0x8168 (r8169)
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*", ATTR{address}=="00:1f:1f:50:73:ed", ATTR{
dev_id}=="0x0", ATTR{type}=="1", KERNEL=="eth*", NAME="eth1"
# PCI device 0x8086:0x107c (e1000)
SUBSYSTEM==="net", ACTION=="add", DRIVERS=="?*", ATTR{address}=="00:1b:21:86:7d:a8", ATTR{
dev_id}=="0x0", ATTR{type}=="1", KERNEL=="eth*", NAME="eth1"
# PCI device 0x8086:0x107c (e1000)
SUBSYSTEM==="net", ACTION=="add", DRIVERS=="?*", ATTR{address}=="00:1b:21:86:7d:a8", ATTR{
dev_id}=="0x0", ATTR{type}=="1", KERNEL=="eth*", NAME="eth1"
# PCI device 0x8086:0x107c (e1000)
SUBSYSTEM==="net", ACTION=="add", DRIVERS=="?*", ATTR{address}=="00:1b:21:86:7d:a8", ATTR{
dev_id}=="0x0", ATTR{type}=="1", KERNEL=="eth*", NAME="eth2"
    root@server:/home/teacher#
```

eth0 and eth1 are running in bridged mode. This ensures that both NICs provide DHCP to all clients attached to both switches.

cat /etc/network/interfaces

```
root@server:/home/teacher# cat /etc/network/interfaces
# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback
auto eth0
iface eth0 inet manual
auto eth1
iface eth1 inet manual
# Default network settings: 1 Classroom up to 2 switches
# attached to eth0 which is always onboard GB NIC
auto br0
iface br0 inet static
    address 192.168.0.250
    netmask 255.255.255.0
    bridge_ports eth0 eth1
    bridge_fd 5
    bridge_stp no
# PCI NIC (normally 100 MBit) goes to internet access via DHCP
auto eth2
iface eth2 inet dhcp
```

2.1 Server: Harddrives Author: Hans-Peter Merkel

Linux4Afrika mastersolution comes with 2 harddrives (currently 750 GB SATA)

cat /etc/fstab

root@server:/tmp# cat /etc/fstab # /etc/fstab: static file system information. # # Use 'blkid' to print the universally unique identifier for a # device; this may be used with UUID= as a more robust way to name devices # that works even if disks are added and removed. See fstab(5). # <dump> <pass> # <file system> <mount point> <type> <options> # / was on /dev/sda1 during installation #UUID=f4332b50-d5d8-4245-8b6a-90508abfd551 / ext4 errors=remount-ro 0 1 /dev/sda1 ext4 errors=remount-ro 0 1 1 # /media/images was on /dev/sda7 during installation #UUID=b853d98a-7d5e-4fa8-8439-064f02703587 /media/images ext4 defaults 0 2 /dev/sda8 /media/images ext4 defaults 0 2 # /mirror was on /dev/sda6 during installation #UUID=a3c119d5-01e8-4249-b569-3ff5f27269af /mirror ext4 defaults 0 2 /dev/sda6 /mirror ext4 defaults 0 2 # /var/www was on /dev/sda5 during installation #UUID=0e60e18b-ad9f-4e3f-8599-0f2c924f352d /var/www ext4 defaults 0 2 /dev/sda5 /var/www ext4 defaults 0 2 # swap was on /dev/sda3 during installation swap SW 0 0 0 /dev/sda3 none swap SW 0 # Remove 4 Linux4Afrika: #/dev/sdb1 /media/forensics ext4 defaults 0 0 /dev/sda7 /media/data ext4 defaults 0 2 /media/data/pxe_client/pxe_client.iso /opt/ltsp/rescue udf,iso9660 user,loop 0 0

2.2 Server: Select Client OS Author: Hans-Peter Merkel

Up to 2016 Ubuntu 14.04 was default client OS. In 2016 an update for 14.04 took place before migrating to 16.04. Since September 2016 Ubuntu 16.04 will be default client OS.

There are several client OS located in /media/data:

- educlient
- pxe_client
- rescueclient

Additionally some folders with educlient backup are stored here:



- 1404_20151212 (rollout in Nairobi)
- 1404_20160916 (last update of 14.04)
- 1604_20160918 current default

If you want to change client OS, you can erase all files from educlient and rsync the one you need into educlient folder (advanced Admins only !)

Never change the folders pxe_client and rescueclient. This should only be exchanged by the developers!

2.3 Server: New in 1604 Samba Fileserver Author: Hans-Peter Merkel

So far, students did not have a chance to exchange data. To cirumvent this situation the mailsystem was used. Starting with 16.04 a Samba filesserver was included. It holds 2 shares:

- (Read/Write access for everybody) 4all
- samples

•

- (Read only for students, full access for teacher from classroom server)

laces System 🤤	▶_
teacher's Home	
data binages	
4all samples	

Those shares can also being accessed from any notebook temporary in this LAN. Windows PCs use:

net use //192.168.0.250/4all

or use their GUI.

2.4 Server: 1604 Local Mirror Author: Hans-Peter Merkel

Clients originally installed their packages from German repository. A local mirror (repository) is located on the server to be able to install software in African classrooms without internet access.

You can use aptitude install to install any package located in the mirror. However those programs are lost after restoring any image.

Example:

aptitude install yourprogram

root@client01:... root@cl

To make them permanent you need to create an new distribution image in educlient folder. This is NOT recommended for unexperienced admins !

2.5 Server: Webserver Author: Hans-Peter Merkel

Linux4Afrika classroom server holds an Apache Webserver on 192.168.0.250



This is the homepage for all clients and stored in Firefox browser. The main components are (left to right):

- Moodle E-Learning Platform
- Offline Wikipedia
- Gate to Internet with Google as starting page (if server has online connection)
- Zarafa Mailserver
- Wordpress
- Admin Tools

Those components to be described by somebody else !!

2.6 Server: Mailserver with Zarafa Author: Hans-Peter Merkel

Linux4Afrika server holds a Postfix Mailserver only for local training. It will not send any mails to the outside without reconfiguration. To be independent from Mailclient configuration, the webbased solution ZARAFA is used.

• Zarafa WebAccess - Mozilla Firefox					- 8(
<u>F</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>T</u> ools <u>H</u> elp					
🐼 Zarafa WebAccess 🗙 Ubuntu Start Page 🗙 🗱 Preferences 🗙 🕇 🕂					
(⇐) ③ 192.168.0.250/webaccess/	☆ 自	Ŧ	⋒	9	





2.7 Server: Epoptes Author: Hans-Peter Merkel

Linux4Afrika server comes with epoptes installed. This software enables the teachers, to monitor each individual client PC and take full control. See: <u>http://www.epoptes.org/</u> for details.

All clients have epoptes client software preinstalled. They automatically connect to 192.168.0.250



Since 2016 the Mastersolution uses a transparent proxy. The clients therefore no longer need a confiured Proxy setting. All outgoing requests (except local connections to 192.168.0.250) will be redirected via iptables to squid which now runs a a transparent proxy.

```
cat /etc/rc.local
```

```
# By default this script does nothing.
ethtool -s eth0 wol g
/usr/local/sbin/myservices
sleep2
iptables-restore < /etc/fw.conf
exit 0
```

cat /etc/squid/squid.conf | grep http_port

Squid normally listens to port 3128
HPM NEU: Transparenter Proxy 24.09.2016
http_port 192.168.0.250:3128 transparent

tail -f /var/log/squid/access.log

#

root@server: /home/teacher • File Edit View Search Terminal Tabs Help root@server: /var/www/html 💥 root@server: /home/teacher 🔀 root@server: /home/teacher IER_DIRECT/5.9.39.207 image/vnd.microsoft.icon 1474711694.521 118 192.168.0.113 TCP_MISS/404 566 GET http://hpmerkel.de/piwik/piwik.js - HIER_DIRECT/5.9.39.207 t ext/html 333 192.168.0.113 TCP_MISS/200 54933 GET http://www.linux4afrika.de/fileadmin/images/Kenia_january_ 1474711694.730 2016/ing_2016-01-22_01_250-140px.png - HIER_DIRECT/5.9.39.207 image/png 1474711694.779 383 192.168.0.113 TCP_MISS/200 48142 GET http://www.linux4afrika.de/fileadmin/images/Kenia_january_ 2016/img_2016-01-22_02_250-140px.png - HIER_DIRECT/5.9.39.207 image/png 1474711696.500 17 192.168.0.113 TCP_MISS_ABORTED/000 0 GET http://linux4afrika.de/favicon.ico - HIER_DIRECT/5.9.3 9.207 1474711698.146 531 192.168.0.113 TCP_MISS/200 3493 GET http://www.linux4afrika.de/index.php? - HIER_DIRECT/5.9.39. 207 text/html 1474711698.251 61 192.168.0.113 TCP_MISS/404 599 GET http://www.linux4afrika.de/fileadmin/scripts/menu/horizontal _JS.js - HIER_DIRECT/5.9.39.207 text/html 1474711698.361 98 192.168.0.113 TCP_MISS/404 566 GET http://hpmerkel.de/piwik/piwik.js - HIER_DIRECT/5.9.39.207 t ext/html 1474711698.432 180 192.168.0.113 TCP_MISS/200 22329 GET http://www.linux4afrika.de/fileadmin/images/sr_emily_2016/ IMG_8920_250px.jpg - HIER_DIRECT/5.9.39.207 image/jpeg 1474711698.436 184 192.168.0.113 TCP_MISS/200 20588 GET http://www.linux4afrika.de/fileadmin/images/sr_emily_2016/ IMG_8927_250px.jpg - HIER_DIRECT/5.9.39.207 image/jpeg 1474711698.448 195 192.168.0.113 TCP_MISS/200 22522 GET <u>http://www.linux4afrika.de/fileadmin/images/sr emily 2016/</u> IMG 8933 250px.jpg - HIER_DIRECT/5.9.39.207 image/jpeg 260 192.168.0.113 TCP_MISS/200 23190 GET http://www.linux4afrika.de/fileadmin/images/sr_emily_2016/ 1474711698.513 IMG_8935_250px.jpg - HIER_DIRECT/5.9.39.207 image/jpeg 1474711698.577 325 192.168.0.113 TCP_MISS/200 25644 GET http://www.linux4afrika.de/fileadmin/images/sr_emily_2016/ IMG_8900_250px.jpg - HIER_DIRECT/5.9.39.207 image/jpeg

2.9 Server: VUZE Torrent Server Author: Hans-Peter Merkel

If a teacher needs to deliver huge files to all clients, a Samba File server might not be suitable. For this reason a torrent server has been installed on the Server:

Applications \rightarrow Internet \rightarrow Vuze

Applications	Places	Sys	stem 😇 🔄 😹
🛓 Accessories			\mathcal{T}
🚺 Education			
💽 Games			
着 Graphics			
🔵 Internet		×	💮 Browser
📊 Office			🍄 Ekiga Softphone
🍟 Other			🔍 Empathy
🖉 Programming			🛐 Epoptes
🔲 Sound & Video	o		🕹 Firefox Web Browser
🕻 System Tools			🕼 gFTP
🔊 Universal Acce	ess		🧿 Google Chrome
🖿 Utilities			🐼 HexChat
	124 -		🤞 Jitsi
samples		62 70	셼 Oracle Java 9 Web Start
icus vitae		2 0	🧕 Pidgin Internet Messenger
met, fauci dipiscina		с. К,	🚛 Remmina
ondimentur		C	😋 Thunderbird Mail
Munurus Sodar N		ra	🛅 Transmission
t, dignissim		ele,	📣 Vuze
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File	View Comm	unity T	ools	Window	Help					
	Open Torrent	s 🔎	Fin	d Torren	ts					
▼ MY	TORRENTS		1		2			1. 9 Se	arch library	
	Library								All	Uncategorized
	New 1	Order 🔺			Name			Play Now	P	rogress
	Active × 0	A 1	1	VUZ01.00				0	100.0%	
	Daused X			vuze i.pii	y				FOR	CED SUPER-SEED
-	MyTracker ×									
▼ VUZ	ZE									
	Getting St ×									
	Notificat 2									
V COI	Vuze Studi									
	Sub									
	• -									
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				Sel	ect one	downlo	ad to di	splay this v	/iew	
			-		0	20142	2	Z 0.5/-	A feore	
		0	Re	spect <u>IP</u>	÷. (384,13	3 users	V 0 B/s	🔺 [18K]	* 0 B/s 🕕 3

Make a torrent	8
Build Your Own	
Drop a selection of file build a torrent. Double-clic	s and/or directories onto the area below to ck or F2 to edit names.
Torrent Structure	Original File
vuze2.png	/media/daten/4all/vuze2.png
Add Container <u>A</u> dd File	Add <u>F</u> older
Cance	el < Back Next > Finish
Make a torrent	8
Torrent File	<u> </u>
Please choose the tor	rent file to create
/media/daten/4all/vuze	2.png.torrent Browse
File(s) Size 71.9 kB Piece Count 3	
Piece Size 32.0 kB	Auto 🔻
Open the torrent for	seeding when done

Private torrent - only accept peers from the tracker S Allow decentralized tracking when tracker is unavailable Cancel < Back Next >

Finish

Sorce start the torrent 🔽 Use super-seeding

Initial tags (',' separated)

S Host the torrent on the built-in tracker

Client can access this torrent servia via Browser:

http://192.168.0.250:6969 (or use preset bookmark)

Azureus : Java BitTorrent (Client Tracker: 5.7.3	.0/2.1.9) - Moz	illa Fir	efox		•••
<u>F</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory	<u>B</u> ookmarks <u>T</u> ool	s <u>H</u> e	lp				
😨 Azureus : Java Bi 🗴 U	Jbuntu Start Page	×	🗰 Pre	eferer	nces		× +
(i) 192.168.0.250:6969		C	Q, Sea	arch			» ≡
Show Last Week's - Show A	мі				XML	4	AZUREUS
Azureus : Java BitTorrent Client Tracker							
	Search 2 torrents listed						
Torrent A	Status	Size	Seeds	Peers	Comp	Avg Pr	Added
vuze1.png	× į Running	109.4 kB	1	0	0		2016-09-24 13:43:16
vuze1.png vuze2.png	× i Running i Running	109.4 kB 71.9 kB	1 1	0 0	0 0		2016-09-24 13:43:16 2016-09-24 13:44:51
vuze1.png vuze2.png	≭ i Running i Running	109.4 kB 71.9 kB	1	0 0	0		2016-09-24 13:43:16 2016-09-24 13:44:51 Up ▲
vuze1.png vuze2.png Tracker Totals: 2 tor Swarm Totals: 3 Transfer Totals: 940.7 kB, 0 B	× į Running į Running rents, 0 announce/s, 2 seeds, 0 peers, 0 B/ , 0 B/s up, 20.98 MB,	109.4 kB 71.9 kB 0 scrape s up, 0 l 518.0 k	1 1 e/s, 0 B B/s dow cB, 0 B/	0 0 /sin, (vn, 0 B /sdown	0 0 0 B/s ou 1 left n, 00:10	 it):14 u	2016-09-24 13:43:16 2016-09-24 13:44:51 Up ▲

3.0 Clients: Creating ISO images for distribution Author: Hans-Peter Merkel

All Linux4Africa clients have now Pinguy Builder installed. It can be used to create your own custom ISO images for being burned on DVD or installed on USB stick.



• Pinguy Builder (as super	user)	- 🗉 😣
Actions Settings Output		
Backup	Backup complete system including user data	
Dist	Make a Distributable copy to share with friends - both cdfs and iso will be created	
Distcdfs	Make a Distributable copy filesystem only - good if you want to add files to the cd	
Distiso	Make distributable iso file only - cd filesystem must have been completed already	
(X) Clear	Remove temporary files	
Select Boot men	u picture for the live cd (640x480 PNG)	
Select Boot men	u picture for the installed environment	
Select User, who	se current settings will be used as default	
Select Plymouth	theme	
		About X Close

3.1 Clients: Creating bootable USB sticks Author: Hans-Peter Merkel

If you need a bootable USB stick instead of an installtion DVD, you can create one with **Startup Disk Creator**.

It is also preinstalled on each Linux4Afrika client.



3.2 Clients: Playing with Android Author: Hans-Peter Merkel

Genymotion is a program which nicely emulates Android smartphones. Unfortunately newer versions do not support 32 Bit clients anymore. Last available 32 Bit version is 2.5 which is now installed. It collides with GT libraries and can only run as root.

root@client01: /home/	/user	×	user@
user@client01:~\$ Segmentation fault user@client01:~\$	/opt/genymotion/ t	genymot	ion

/opt/genymotion/genymotion



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Camera	Clock	Contacts	Custom Locale
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Music	Phone	Search	Settings
ee for personal	use (. O	