

# ctys-uc-debian(7)

## Setup debian

November 29, 2010

### Contents

<b>1</b>	<b>General</b>	<b>2</b>
<b>2</b>	<b>Setup of Host-OS and Hypervisor</b>	<b>2</b>
<b>3</b>	<b>Setup of the UnifiedSessionsManager</b>	<b>2</b>
3.1	Install tgz-Packages . . . . .	2
3.2	Install rpm-Packages . . . . .	3
3.3	Setup of the Gnome Menu . . . . .	3
<b>4</b>	<b>Creation of the the Raw-VM</b>	<b>4</b>
4.1	Creation of the Raw-VM with QEMU/KVM . . . . .	4
4.2	Creation and Installation on VirtualBox . . . . .	7
<b>5</b>	<b>Installation of the GuestOS - debian</b>	<b>15</b>
<b>6</b>	<b>Creation of the Inventory - cacheDB</b>	<b>15</b>
<b>7</b>	<b>Graphical Start of the Virtual Machine</b>	<b>17</b>
<b>8</b>	<b>Manage the VM</b>	<b>18</b>
8.1	Common Syntax . . . . .	18
8.2	Prepare CentOS . . . . .	18
8.3	Install UnifiedSessionsManager in GuestOS - CentOS . . . . .	18
8.4	Open a Remote CLI-Terminal . . . . .	18
8.5	Check Plugins States . . . . .	18
8.6	Open a Remote RDP-Desktop . . . . .	18
8.7	Open a Remote VNC-Desktop . . . . .	18
8.8	Open a Remote X11-Terminal . . . . .	18
<b>9</b>	<b>SEE ALSO</b>	<b>19</b>
<b>10</b>	<b>AUTHOR</b>	<b>19</b>
<b>11</b>	<b>COPYRIGHT</b>	<b>19</b>

### List of Figures

1	Default Menu . . . . .	3
2	Start Debian installation - CD/DVD . . . . .	5
3	Standard Debian installation . . . . .	5
4	Reboot without changing install media . . . . .	6
5	Reboot without changing install media . . . . .	6
6	debian . . . . .	7
7	Create Virtual Machine . . . . .	8

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8	Set virtual RAM	8
9	Create Virtual HDD	9
10	Check HDD image file	9
11	Network device	10
12	Audio device	10
13	Install media	12
14	Install menu	13
15	Format vHDD	14
16	Proceed Installation	14
17	debian	15
18	CentOS Start Menu	17
19	CentOS VM Selection	17
20	CentOS Call Confirmation	18

## 1 General

The current document shows the basic installation of Debian.

The following host environment is used here:

- CentOS-5.4 with kvm-83 / Qemu-0.9.1
- debian-5.0.6 with VirtualBox-3.2.10

The following client environment is used here:

- Debian-5.0.6
- UnifiedSessionsManager - ctys-01.11.018

The following common assumptions and simplifications are chosen, when multiple approaches are valid.

1. The initial start of the machines are executed before scanning these into the inventory database. Thus the call is frequently executed by the suboption **BASEPATH of <machine-address>** or for short **'b:\$PWD'**, which defines the filesystem scan to be started at the given directory, in this case the current dir. This is particularly helpful in NFS based distributed environments with processing nodes containing identical directory structures.
2. The initial installation is proceeded by the vendor tools, when available. This avoids some deeper knowledge for the application of varios options.
3. The example setups are generally the provided defaults by the distributions. This should be also the first trial to become familiar with the environment.

## 2 Setup of Host-OS and Hypervisor

The installation for the following variants has to be performed by the appropriate standard setup of the Host OS, which quite straight forward:

- CentOS with QEMU/KVM
- Debian with VirtualBox

## 3 Setup of the UnifiedSessionsManager

### 3.1 Install tgz-Packages

1. Apply the standard installation procedure:

```
ctys-distribute -F 2 -P UserHomeCopy root@myHost
```

For short

```
ctys-distribute -F 2 -P uhc root@myHost
```

2. Open a Remote Shell by call of CLI plugin:

```
ctys -t cli -a create=1:myHost root@myHost
```

3. Check the plugins states by calling ctys-plugins:

```
ctys-plugins -T all -E
```

### 3.2 Install rpm-Packages

The following steps are required for a RPM based setup on CentOS. The installation is relocatable, but located at '/opt', and installed locally by 'ctys-distribute'.

1. Install BASE package.

```
rpm -i ctys-base-01.11.011.noarch.rpm
```

2. Now install a local version, here by copy. The PATH prefix is important here, particularly in case of updates. The path is resolved to it's actual path by eliminating any symbolic link, and used for consistent link of libraries.

```
/opt/ctys-01.11.011/bin/ctys-distribute -F 2 -P UserHomeCopy
```

3. Next the menu is setup.

```
ctys-xdg --menu-create
```

4. Now the help is available as either a Gnome or KDE menu. Alternatively could be called from the commandline.

### 3.3 Setup of the Gnome Menu

The setup of the Gnome Menu is quite simple, the contained tool **ctys-xdg** sets up a standard menu by the call:

```
ctys-xdg --menu-create
```

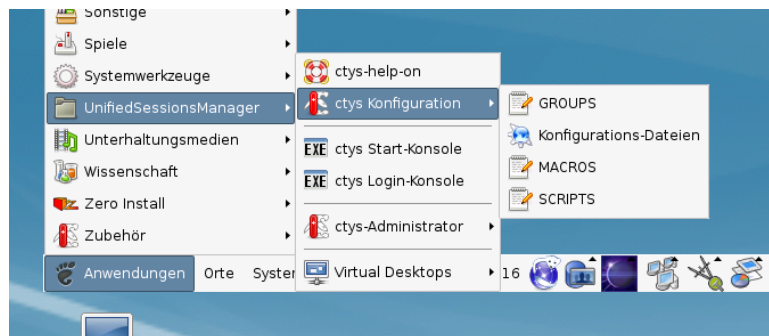


Figure 1: Default Menu

The call

```
ctys-xdg --menu-cancel
```

removes the installed files. For current version no checks for changed files is done.

The menus could be edited and extended by the call

```
ctys-xdg --menu-edit
```

which opens the related directories for modification of '\*.menu', '\*.desktop', and '\*.directory' files.

## 4 Creation of the the Raw-VM

### 4.1 Creation of the Raw-VM with QEMU/KVM

The demo example VM is here named `tst004`, this is the hostname of GuestOS too.

1. Login into the machine where QEMU/KVM is installed.

```
ssh -X app2
```

When just the processing node of mounted filesystem has to be changed, the following call could be applied. This works in case of identical mount paths:

```
ctys -t cli -a create=1:tst004,cd:$PWD root@lab02
```

2. Change to the `vm` pool and create a directory and change into.

```
mkdir tst004
```

3. Call the install and configuration utility for VMs. Here some values are set by environment variables, a complete list including the actually assigned values could be displayed by the option `-levo`.

```
ARCH=x86_64 \
DIST=debian \
DISTREL=5.0.6 \
OS=Linux \
OSREL=2.6.32-6 \
ctys-createConfVM -t qemu --label=tst004
```

This call creates a virtual image(`hda.img`), the call-wrapper(`tst219.sh`), and the configuration file(`tst004.ctys`). The files are created from templates by assigning configuration values either from pre-configured default values, or interactive variation. The whole process of creation could be batch-proceeded by using the either the `-auto`, or the `-auto-all` option when appropriate default values are preconfigured.

When no MAC database nor DHCP is available, the MAC and IP addresses might be provided too.

4. Once the set of files is created the virtual machine is prepared for startup. For some other systems complete installation routines are available, e.g. `debian` and `CentOS`. The current state could be checked now by the following call.

```
./tst004.sh --console=vnc --vncaccessdisplay=47 --print --instmode --check
```

5. The installation could be started now e.g. on the install host by:

```
./tst004.sh --console=vnc --vncaccessdisplay=47 --print --instmode
```

Alternatively a remote call could be proceeded:

```
ctys -t qemu -a create=1:tst004,b:${VMPATH},instmode app2
```

In case of appropriate defaults(refer to `tst004.ctys`) this starts e.g. the CD/DVD installation.

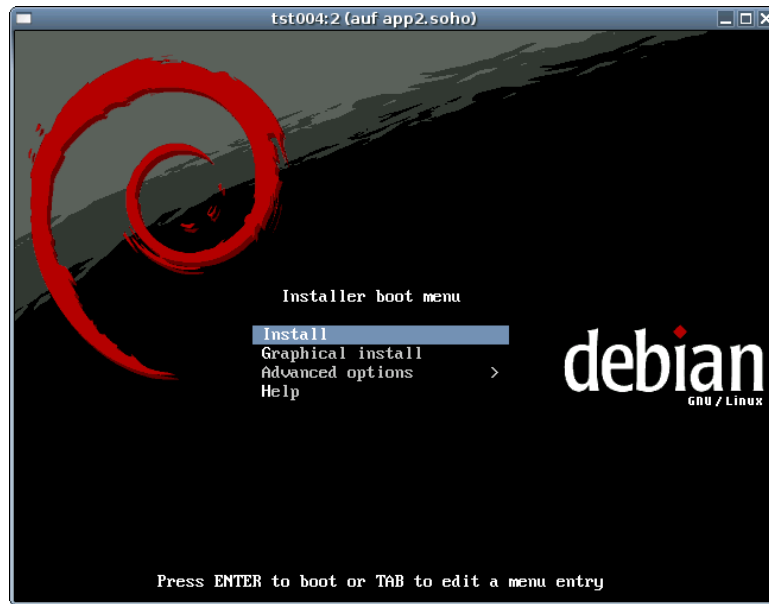


Figure 2: Start Debian installation - CD/DVD

6. Proceed with standard installation.

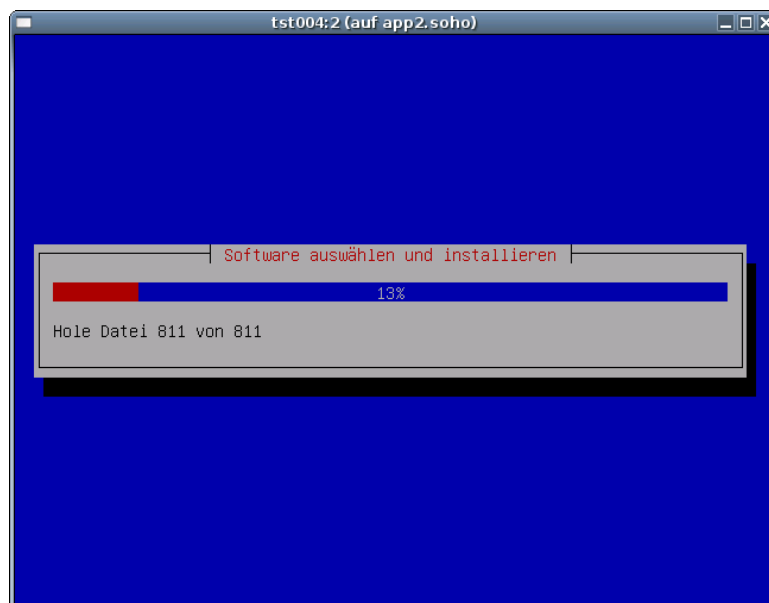


Figure 3: Standard Debian installation

7. After the installation either a manual reconfiguration of the boot device within the monitor, or by rebooting without the install suboption is required.

```
tst004:2 (auf app2.soho)
Plex86/Bochs UGABios (PCI) current-cvs 26 Oct 2009
This UGA/UBE Bios is released under the GNU LGPL

Please visit :
. http://bochs.sourceforge.net
. http://www.nongnu.org/ugabios

cirrus-compatible UGA is detected

QEMU BIOS - build: 10/26/09
$Revision: 1.182 $ $Date: 2007/08/01 17:09:51 $
Options: apmbios pcibios eltorito rombios32

ata0 master: QEMU HARDDISK ATA-7 Hard-Disk (8192 MBytes)
ata1 master: QEMU DVD-ROM ATAPI-4 CD-Rom/DVD-Rom

Press F12 for boot menu.

Booting from CD-Rom...
CDROM boot failure code : 0003
Boot failed: could not read the boot disk

FATAL: No bootable device.
-
```

Figure 4: Reboot without changing install media

The shutdown could be proceeded by the 'quit' command within the monitor. The **monitor mode** is entered e.g. by **Ctrl-Alt-2**.

```
tst004:2 (auf app2.soho)
QEMU 0.9.1 monitor - type 'help' for more information
(qemu) quit
```

Figure 5: Reboot without changing install media

8. In case of a first start the call could look like:

```
ctys -t qemu \  
-a create=1:tst004,id:${PWD}/tst004.ctys,console:vnc \  
app2
```

The default console is here VNC.



Figure 6: debian

Proceed with standard configuration from now on.

## 4.2 Creation and Installation on VirtualBox

The creation of the raw VM is the first step to be executed at the host operating system. This could be either performed locally or remote and requires the usage of the provided tools by VirtualBox(TM).

1. Login into the machine where VirtualBox is installed.

```
ssh -X lab02
```

2. Execute the VirtualBox(TM) console.

```
VirtualBox
```

3. Create the VM, the machine is called here 'tst002'. The OS is 'Linux', the version is 'Linux 2.6'.



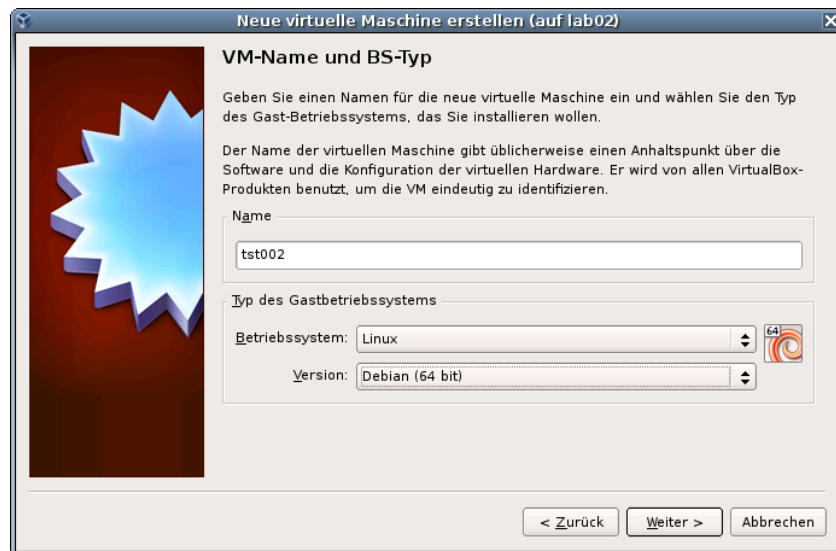


Figure 7: Create Virtual Machine

4. Set RAM to 640MByte.



Figure 8: Set virtual RAM

5. Create a virtual HDD, here 8GByte is chosen. When finished the raw VM is present and could be used as required, for basic functions of ctys no additional configuration is required.



Figure 9: Create Virtual HDD

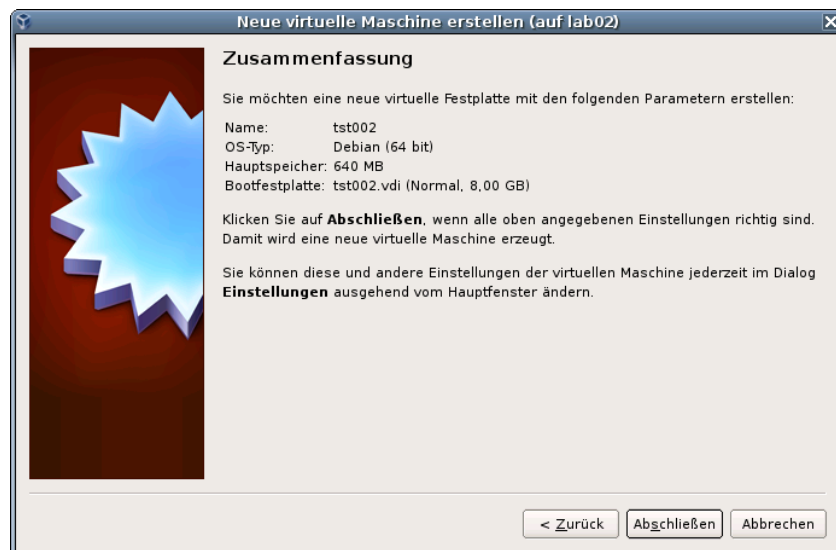


Figure 10: Check HDD image file

6. The network device should be set to 'PCnet-Fast III' with DHCP, either NAT or bridged.

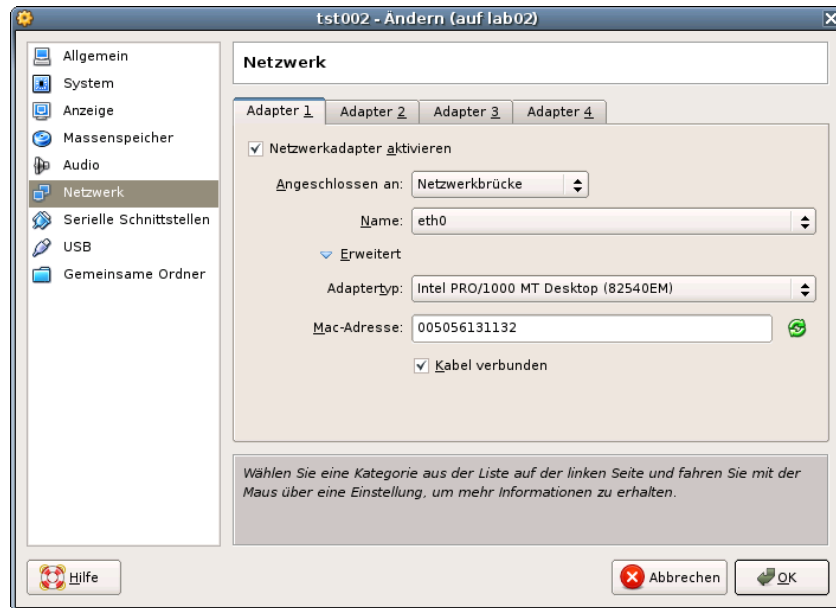


Figure 11: Network device

7. The audio card has to be set preferably to 'Sound Blaster 16'.

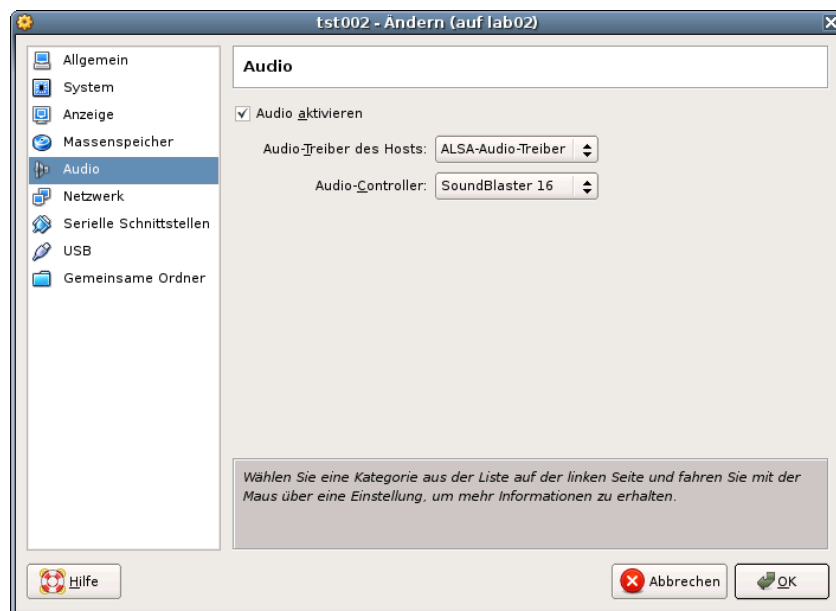


Figure 12: Audio device

8. When additional information should be stored coallocated to the VM and scanned automatically into a database, than the tool **ctys-createConfVM(1)** should be applied. This generates additional detailed information related to the specific VM and the inherent guest OS. The call could be executed either interactive or automatic.

Call within the same directory for first inspection:

```
DIST=debian \
DISTREL=5..6 \
OS=Linux \
OSREL=2.6-26.2 \
ctys-createConfVM -t vbox --label=tst002 --levo
```

This lists some defaults for the specific hypervisor. These could be preconfigured by specific template files within the configuration directory **ctys-createCOnfVM.d**. The result should look like the following:

Not all values require to be set, some will be requested later by dialogue.

Thus it is not necessary to have values assigned to the complete displayed set.

Actually used sources for default values:

```
no-marker = Pre-Set value, either from defaults configuration,
           or by commandline.
no-value  = Either requested by dialog later, or the defaults
           of the finally called application are used.
(c)       = Read from actual configuration file, e.g. vmx-file.
(d)       = Read from database.
(g)       = Dynamically generated.
(h)       = Used from current host as default.
(m)       = Received from mapping definitions.
```

Applicable modifications:

```
blue      = By call option, defines dependency for others.
green     = By environment, 'could be set almost independent'
           from other values.
cyan      = By miscellaneous facilities, but is dependent from
           others.
           E.g. LABEL defines by convention the network 'hostname',
           thus the TCP/IP params.
           This could ..., but should not be altered!
```

Most of the missing values will be fetched during actual execution of this tool by dynamic evaluation.

```
VAR name:Initial Value
```

```
C_SESSIONTYPE:VBOX
  LABEL:tst002
  MAC:00:50:56:13:11:32 (c)
  IP::172.20.2.132 (m)
  BRIDGE:
  DHCP:
  NETMASK:
  TCP:tst002 (m)
  GATEWAY:

  EDITOR:root

  UUID:a610968d-8cfd-40d1-bf26-30c72e0f4684 (c)

  DIST:debian (h)
  DISTREL:5.0.6 (h)
```

```

OS:Linux (h)
OSREL:2.6.26-2-amd64 (h)

ARCH:x86_64 (h)
ACCELERATOR:VT (c)
SMP:1 (c)
MEMSIZE:640 (c)
KBD_LAYOUT:de

STARTERCALL:/usr/bin/VirtualBox

DEFAULTBOOTMODE:HDD

DEFAULTINSTTARGET:/mntn/vmpool/vmpool05/vbox/test/...
...tst-ctys/tst002/tst002.vdi
HDDBOOTIMAGE_INST_SIZE:8192M

DEFAULTHOSTS:VNC
DEFAULTCONSOLE:RDP

VMSTATE:ACTIVE

```

Remember that this is a draft pre-display of current defaults. No consistency-checks for provided values are performed at this stage. Some missing values are evaluated at a later stage dynamically.

When the call is finished without the '-levo' option the file 'tst002.ctys' with additional configuration information is stored.

- The start of the VM could be proceeded either by calling VirtualBox, or by the VBOX plugin.

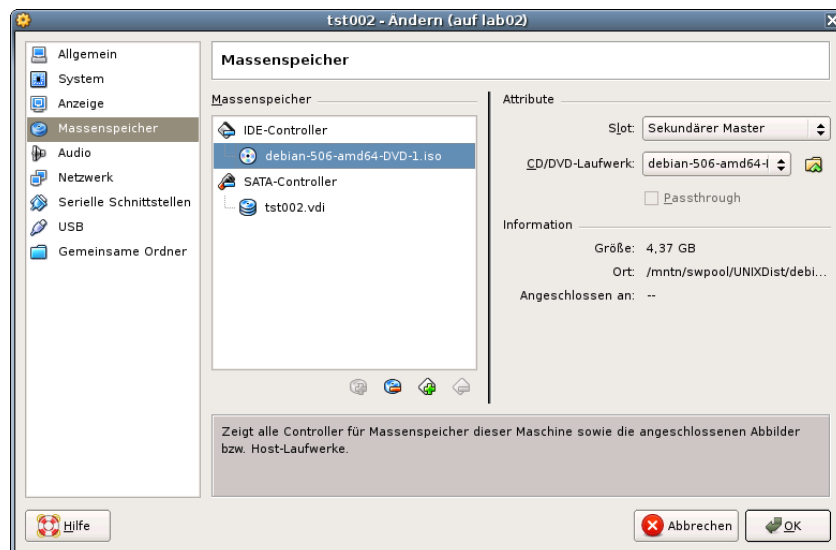


Figure 13: Install media

The following call starts the VirtualBox console.

VirtualBox

The following call variant starts the remote VM with a VirtualBox console:

```
ctys -t vbox \  
-a create=1:tst002,id:${TST002}/tst002.ctys,console:vbox\  
lab02
```

10. Now boot the VM and choose 'Installation Only' to start the installation.

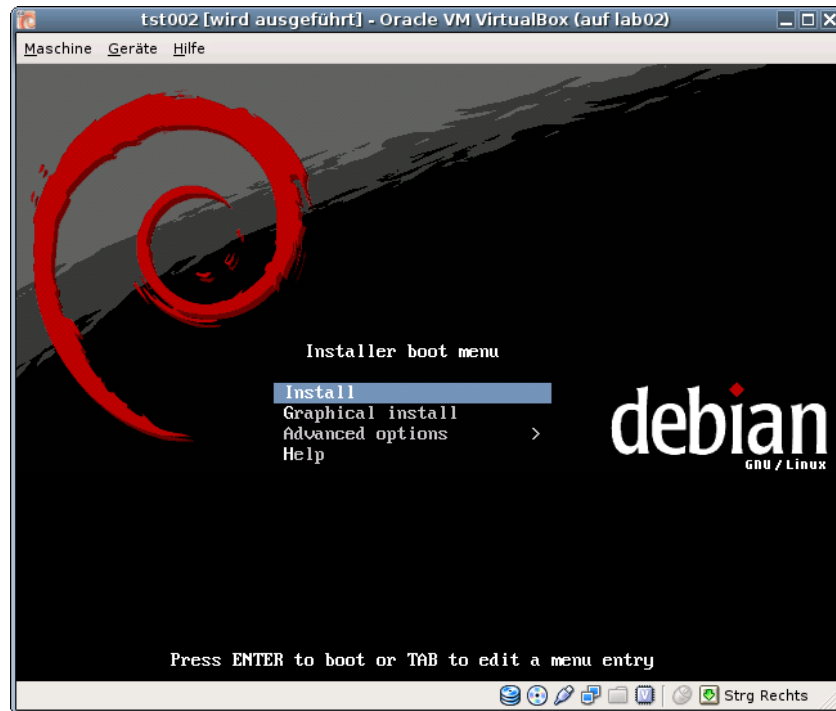


Figure 14: Install menue

11. HDD partitioning, defaults for simplicity.

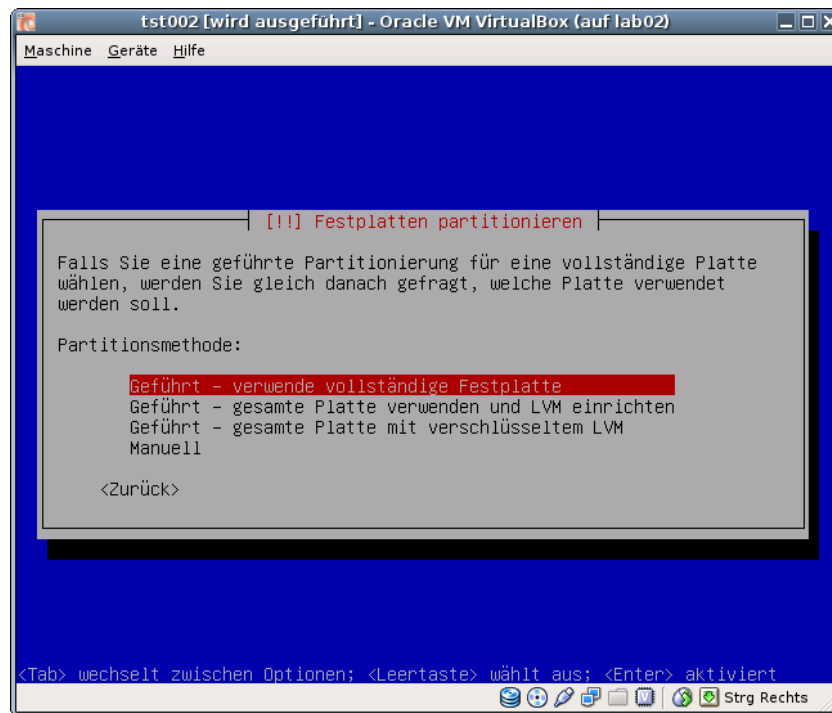


Figure 15: Format vHDD

12. Use for all following dialogues the default until installation starts.

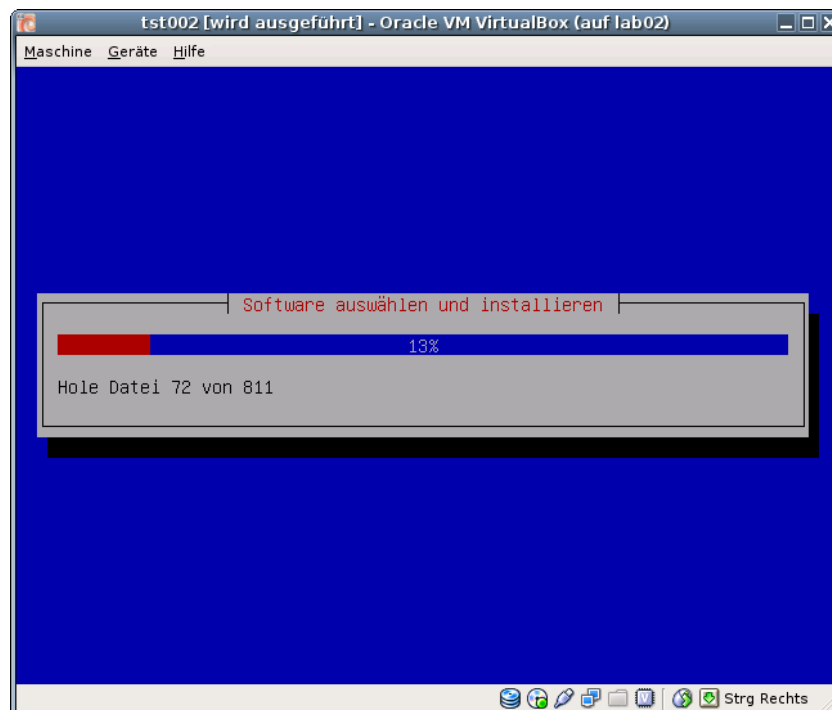


Figure 16: Proceed Installation

13. After the installation unmount the install media and boot into debian. In case of a first start the call could look like:

```
ctys -t vbox \  
-a create=1:tst002,id:${PWD}/tst002.ctys,console:vbox \  
lab02
```

The default console is here RDP.

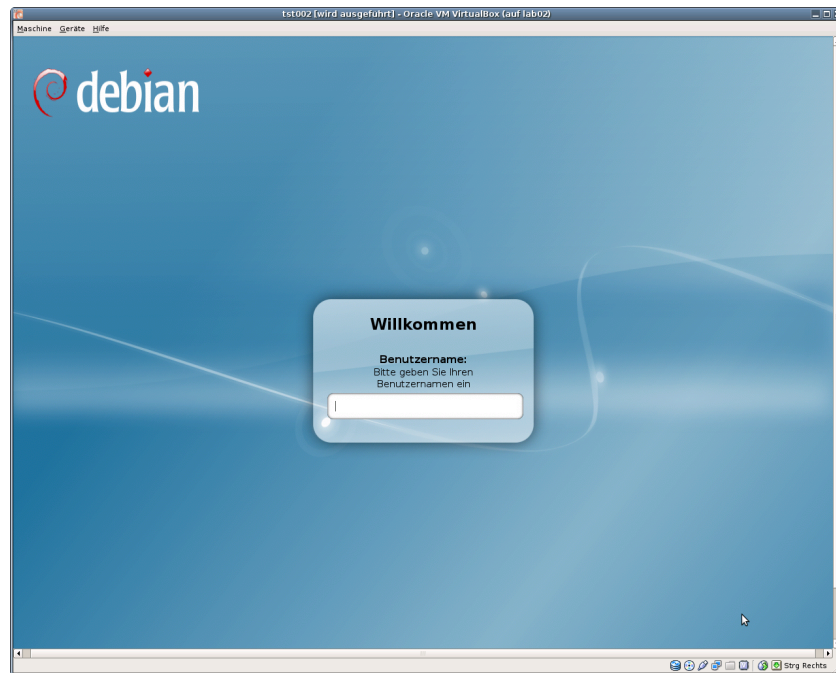


Figure 17: debian

Proceed with standard configuration from now on.

## 5 Installation of the GuestOS - debian

1. Finish innstallation and configuration.

## 6 Creation of the Inventory - cacheDB

In case of a common mounted NFS filesystem for the pool VMs for simplicity just change into the directory of the VM on any machine. Call for the first check **ctys-vdbgen** with the **-stdio** option for display only.

```
ctys-vdbgen --append --base=$PWD --stdio -- lab02
```

When the result is displyed correctly just call

```
ctys-vdbgen --append --base=$PWD -- lab02
```



The following output should be displayed:

Prepare execution-call:

```
Require DB-PATH,      USE: DEFAULT_DBPATHLIST="/homen/acue/.ctys/db/default"
Require DB-PATH,      USE: -o => "/homen/acue/.ctys/db/default"
APPEND mode           : ON(1)
STDIO mode off       : OFF(0)
Set TYPE scope        ADD: DEFAULT="-t ALL"
Preload TYPE set      ADD: DEFAULT="-T ALL"
For splitted operations ADD: DEFAULT="-b sync,seq "
Nameservice cache     OFF: DEFAULT="-c off "
Data cache            OFF: DEFAULT="-C off "
```

```
Resulting ENUMERATE   ADD: DEFAULT="-a enumerate=...
...matchvstat:active%disabled%empty,machine,\
b:/mntn/vmpool/vmpool105/vbox/test/tst-ctys/tst137 \
-C off -c off -T ALL "
```

-> generate DB(may take a while)...

```
-----
START:08:38:35
-----
```

```
-----
END:08:39:03
DURATION:00:00:28
-----
```

```
RET=0
-----
```

Cached data:

```
Mode:                APPEND
Pre-Appended:        834 records
Appended:             1 records
Fetched Records Raw:  records
Fetched Records Unique:  records
Final:                835 records
```

```
-----
...finished.
```

This shows that only one entry is appended to the existing database with 834 VM-Entries. Now check the database entry by calling:

```
ctys-vhost tst137
```

The following result should be displayed:

```
label |stype|accel|distro|distrorel|os  |osrel|PM  |if |TCP
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
tst137|VBOX |      |CentOS|1.0.0  |Linux|2.6  |lab02|0  |172.20.2.241
```

## 7 Graphical Start of the Virtual Machine

Now call the menu item for start of the VM 'tst137'.

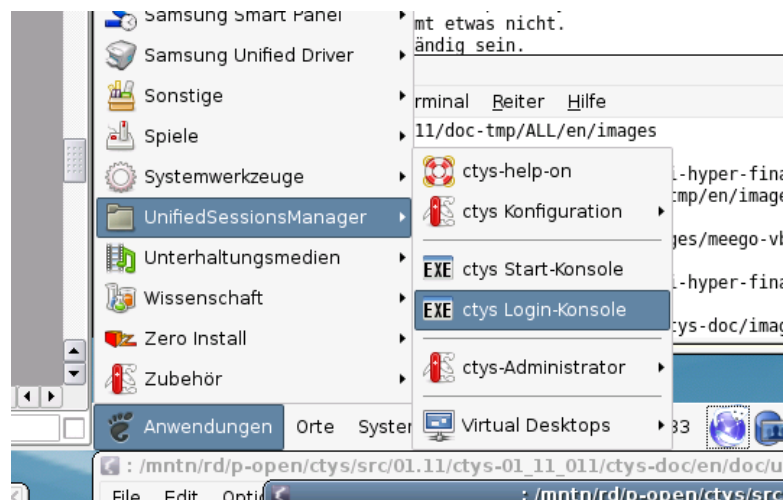


Figure 18: CentOS Start Menu

The created cacheDB record for the VM 'tst137' is now automatically visible in the list of startable virtual machines.

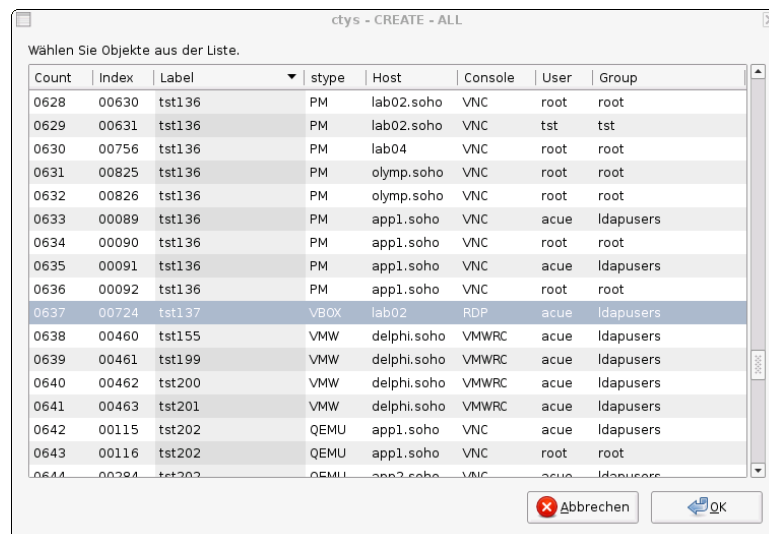


Figure 19: CentOS VM Selection

Confirm the selected entry.

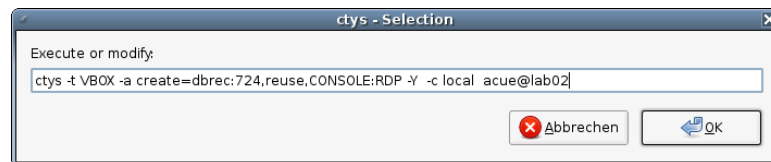


Figure 20: CentOS Call Confirmation

## 8 Manage the VM

### 8.1 Common Syntax

### 8.2 Prepare CentOS

1. Set yum repository in '/etc/yum.repo.d/'
2. Install the following additional Packages:
  - (a) openssh-server
  - (b) make
  - (c) gcc
  - (d) kernel-devel
  - (e) kernel-netbook-devel

Almost absolutely required is a Single-Sign-On facility for OpenSSH. This is due to the required multiple remote remote calls for a number of operational modes. Recommended is either the usage of SSH-Keys, or Kerberos by GSSAPI.

### 8.3 Install UnifiedSessionsManager in GuestOS - CentOS

Apply standard procedure:

```
ctys-distribute -F 2 -P UserHomeCopy root@tst137
```

### 8.4 Open a Remote CLI-Terminal

Call CLI plugin:

```
ctys -t cli -a create=1:tst137 root@tst137
```

### 8.5 Check Plugins States

Call ctys-plugins:

```
ctys-plugins -T all -E
```

### 8.6 Open a Remote RDP-Desktop

ffs.

### 8.7 Open a Remote VNC-Desktop

Call VNC plugin:

```
ctys -t vnc -a create=1:tst137,reuse root@tst137
```

### 8.8 Open a Remote X11-Terminal

Call VNC plugin:

```
ctys -t x11 -a create=1:tst137,reuse root@tst137
```

## 9 SEE ALSO

*ctys-VBOX(1)*, *ctys-QEMU(1)*, *ctys-uc-VBOX(7)*, *ctys-uc-QEMU(7)*, *ctys-configuration-VBOX(7)*, *ctys-configuration-QEMU(7)*

## 10 AUTHOR

Maintenance: <[acue\\_sf1@sourceforge.net](mailto:acue_sf1@sourceforge.net)>  
Homepage: <<http://www.UnifiedSessionsManager.org>>  
Sourceforge.net: <<http://sourceforge.net/projects/ctys>>  
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