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Back Up/Restore Hard Drives And Partitions With CloneZilla Live

Version 1.0

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This tutorial shows how you can back up and restore hard drives and partitions with [CloneZilla Live](#). CloneZilla Live is a Linux Live-CD that you insert into your computer; it contains hard disk and partition imaging and cloning tools similar to Norton Ghost. The created images are compressed and can be transferred to a Samba-, SSH-, or NFS server or to a local hard drive or USB drive.

I do not issue any guarantee that this will work for you!

1 Get CloneZilla Live

First we must download the CloneZilla Live iso image from http://sourceforge.net/project/showfiles.php?group_id=115473 and burn it to a CD. At the time of this writing the current version is 1.2.1.

2 Creating A Hard Drive Image

Next we insert the CloneZilla Live CD into the CD drive of the system we want to back up (for example, your Ubuntu desktop) and make the system boot from the CloneZilla Live CD (you might have to change the order of the boot devices in the BIOS so that the computer tries to boot from the CD before the hard drive). CloneZilla Live comes up with this screen. Hit *ENTER* to boot:

```
clonezilla.sourceforge.net, clonezilla.nchc.org.tw
Clonezilla live (Default settings, UGA 1024x768)
Clonezilla live (Default settings, UGA 800x600)
Clonezilla live (Default settings, UGA 640x480)
Clonezilla live (To RAM. Boot media can be removed later)
Clonezilla live (Safe graphic settings, vga=normal)
Clonezilla live (Failsafe mode)
Local operating system in harddrive (if available)
Memory test using Memtest86+
FreeDOS
Network boot via etherboot
Network boot via PXE
```

Press [Tab] to edit options

Automatic boot in 24 seconds...

- * Clonezilla live version: 1.2.0-25. (C) 2003-2008, NCHC, Taiwan
- * Disclaimer: Clonezilla comes with ABSOLUTE NO WARRANTY

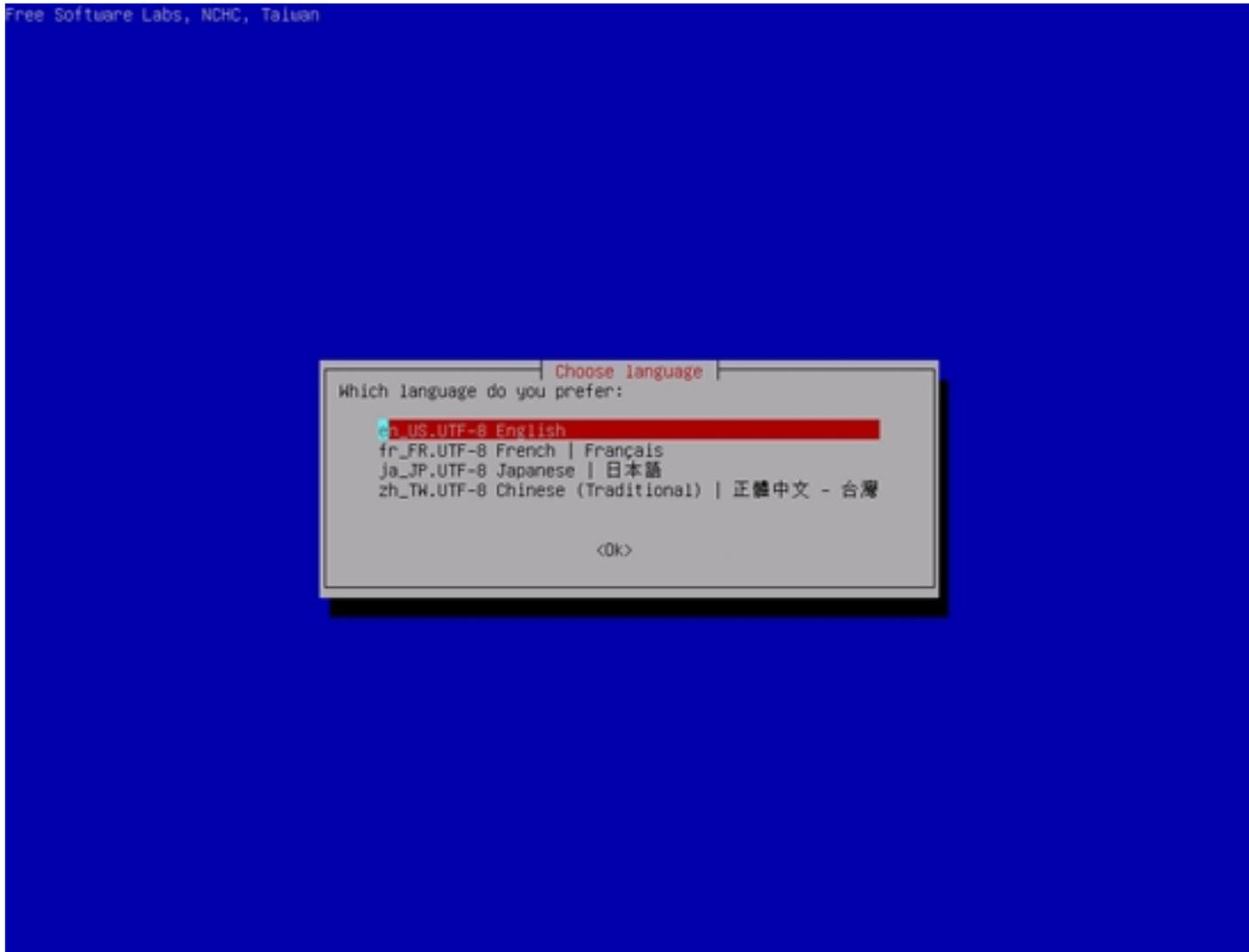
Free Software Labs, NCHC, Taiwan

自由軟體實驗室

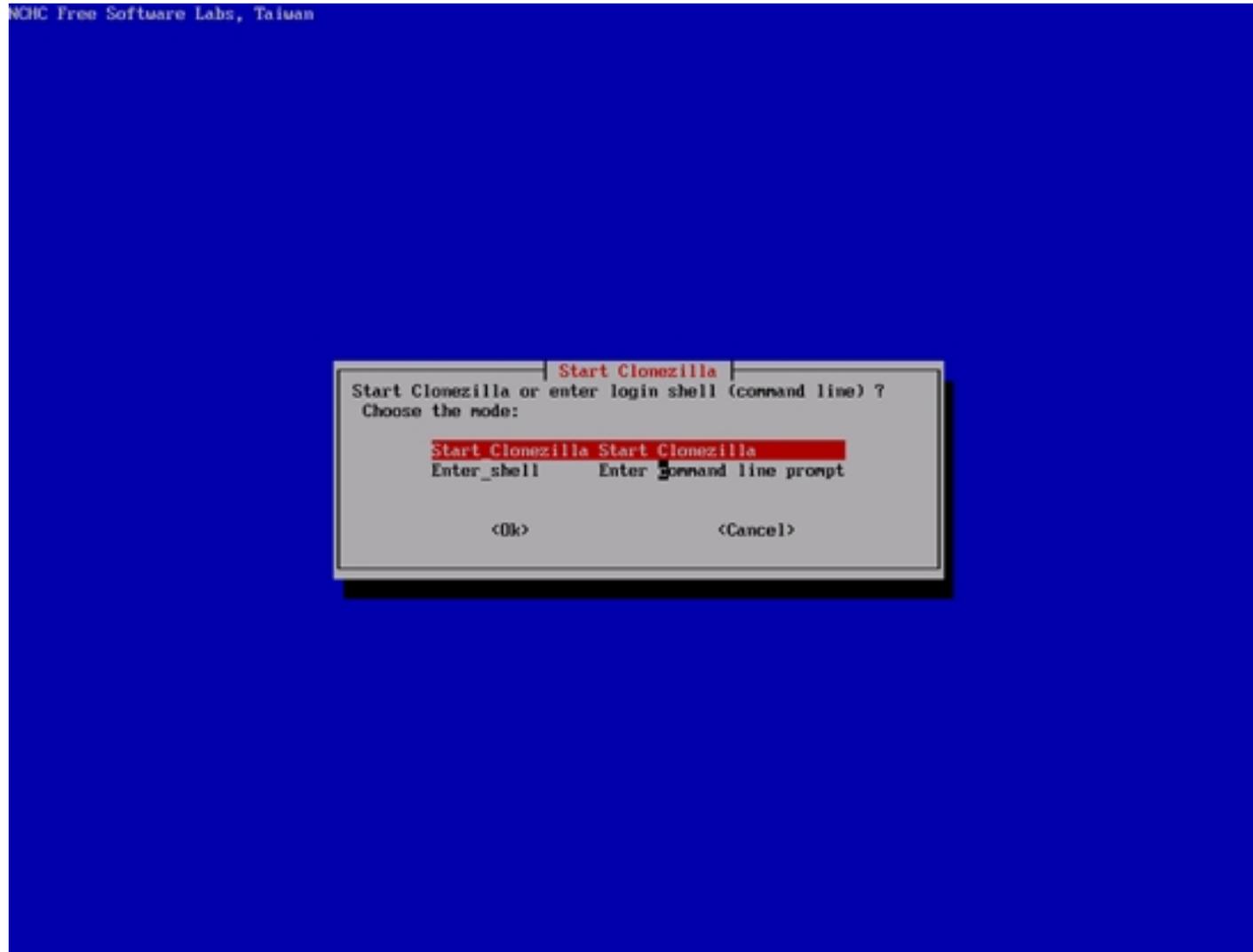
Clonezilla

國家高速網路與計算中心

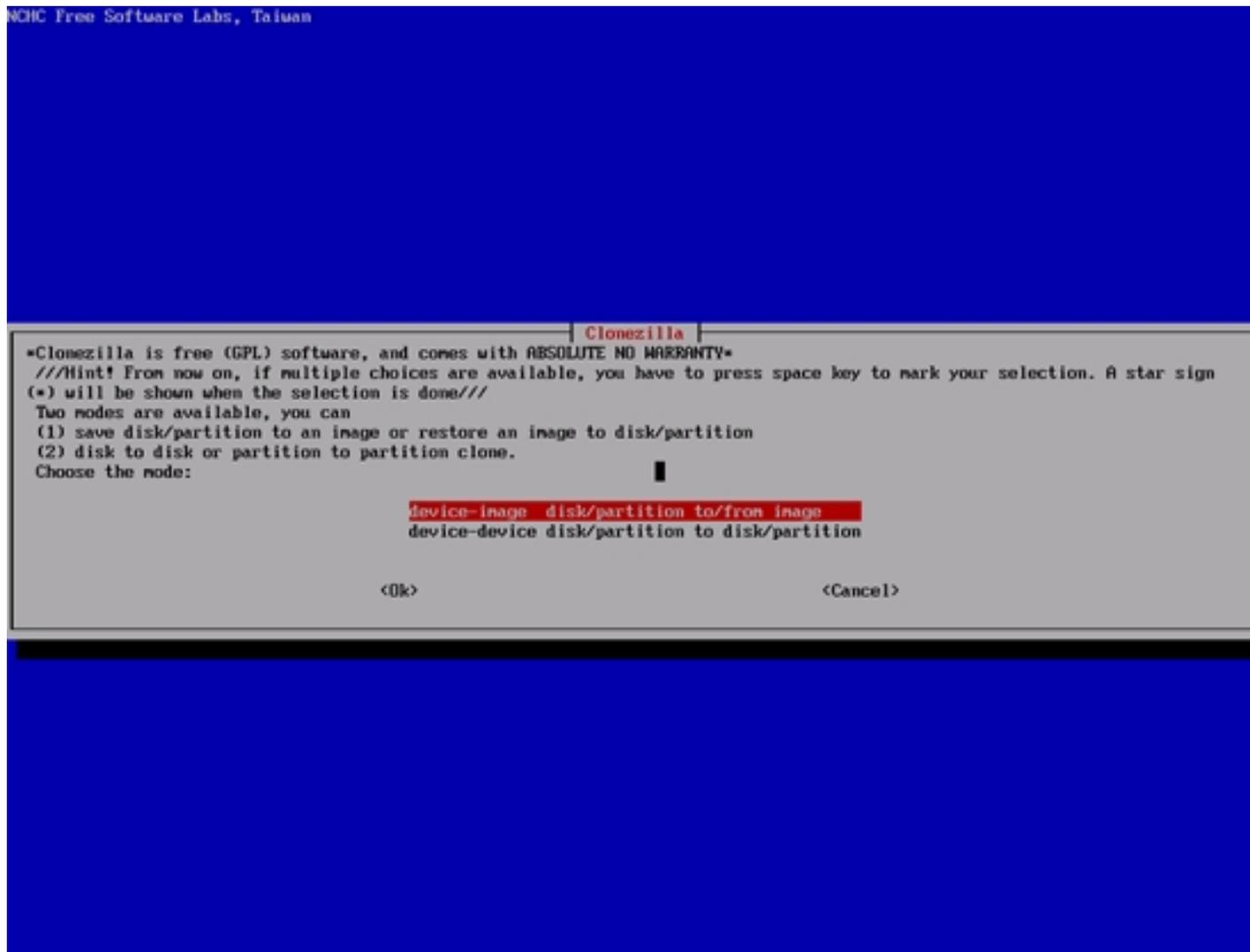
Select your language:



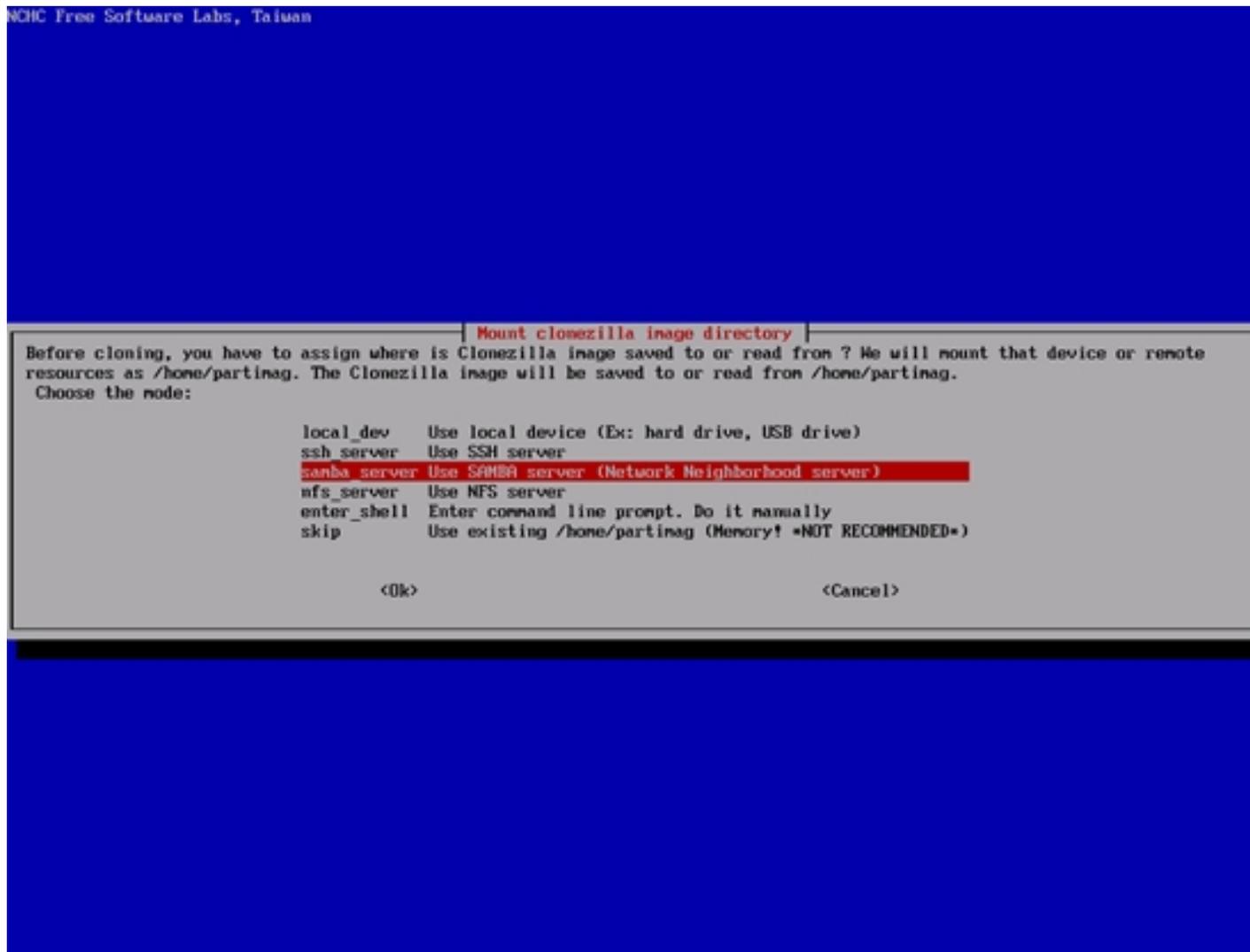
Select your keyboard layout:



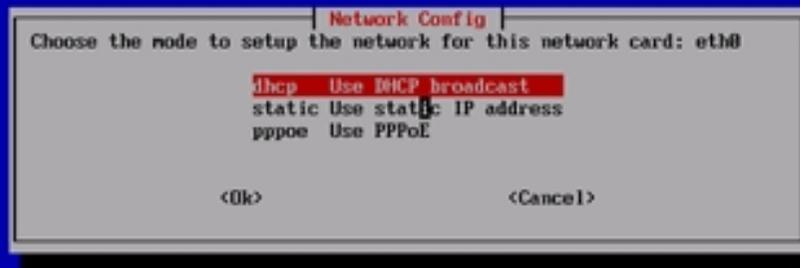
I want to create an image of my hard drive, therefore I select *device-image disk/partition to/from image*:



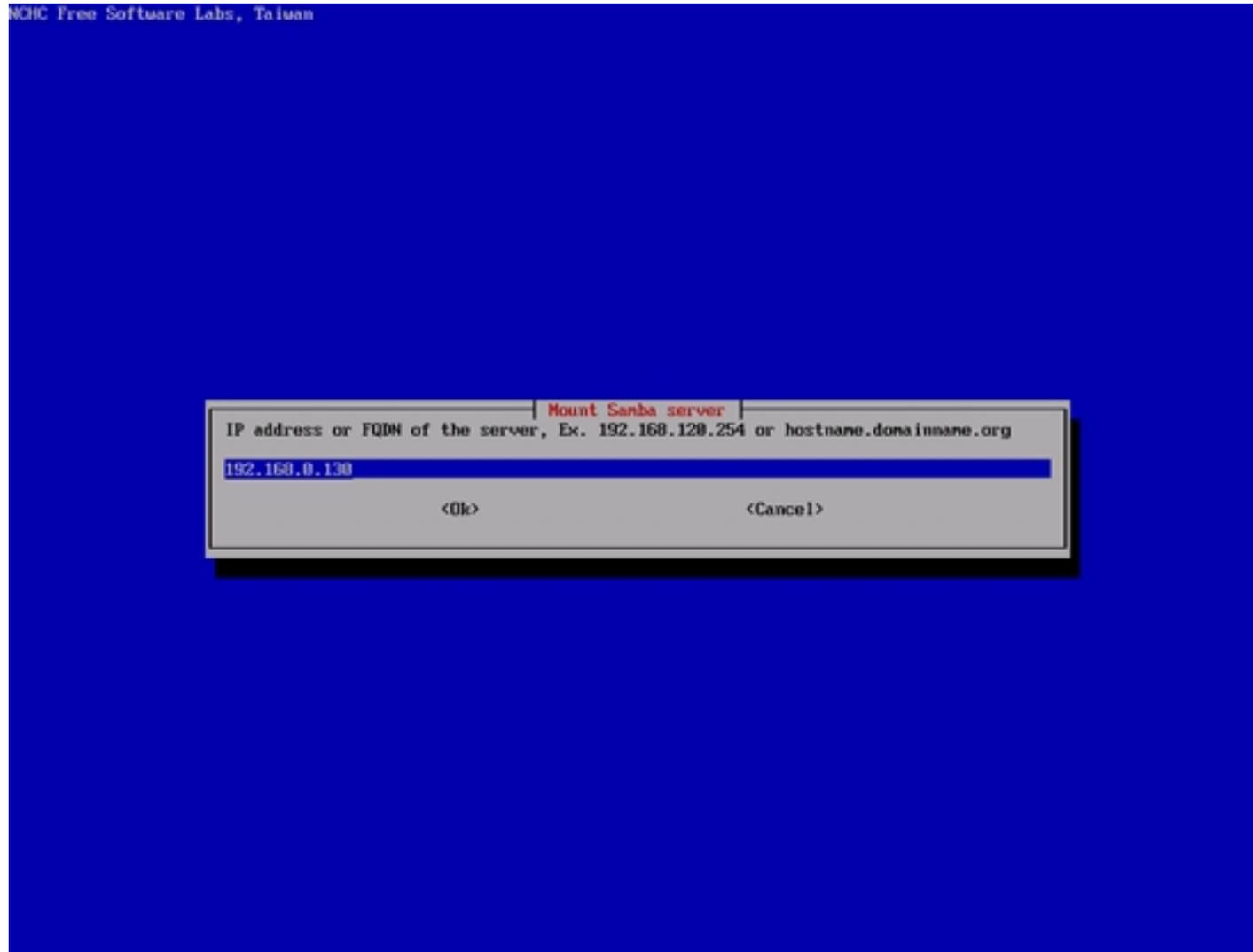
Now you can select where you want to store the hard drive image. You can store it on a local device (hard drive, USB drive), on an SSH server, on a Samba server, or on an NFS server. I have a Samba server in my network that I want to use, therefore I select `samba_server` (make sure that the server or device that you select has enough free space):



If you select SSH, Samba, or NFS, the CloneZilla system needs a network connection. If you are in a local network with a DHCP server, you can select *dhcp* (but you can as well assign a static IP address to the system):



Fill in the IP address or hostname (the hostname must exist in DNS, otherwise the CloneZilla system cannot resolve it) of your Samba server:



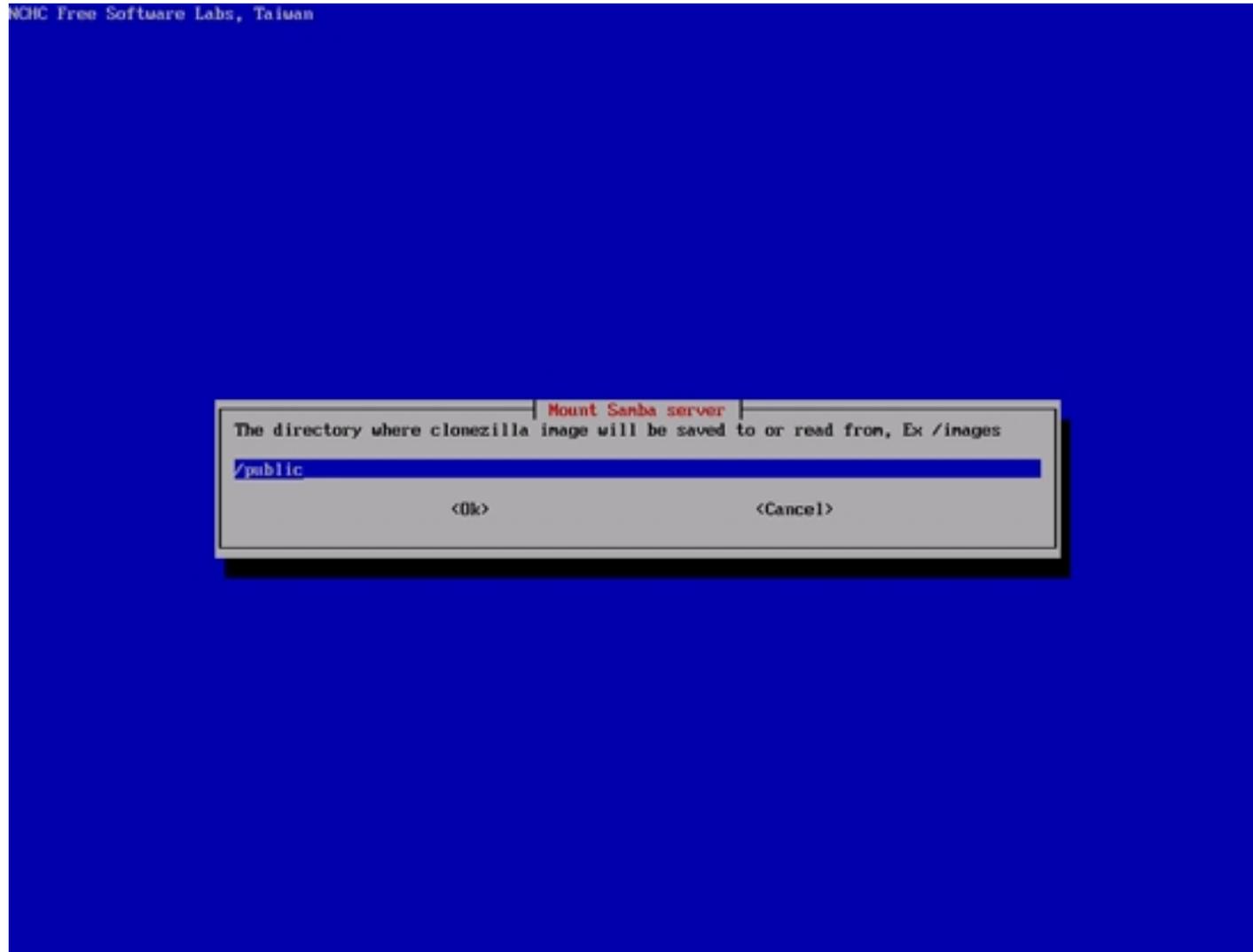
You can leave the Samba domain empty if no domain is set in the Samba server:



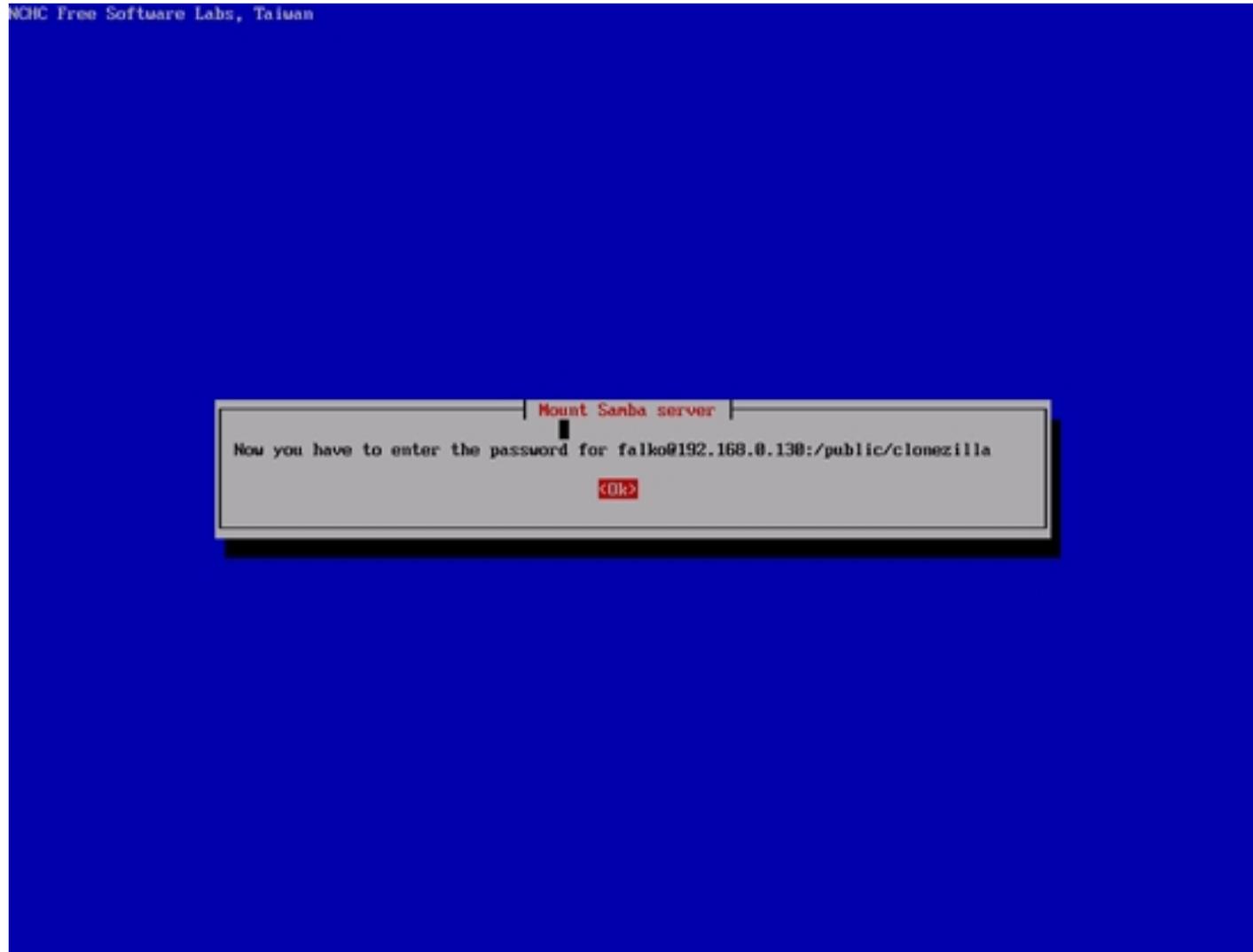
Fill in your Samba user name:



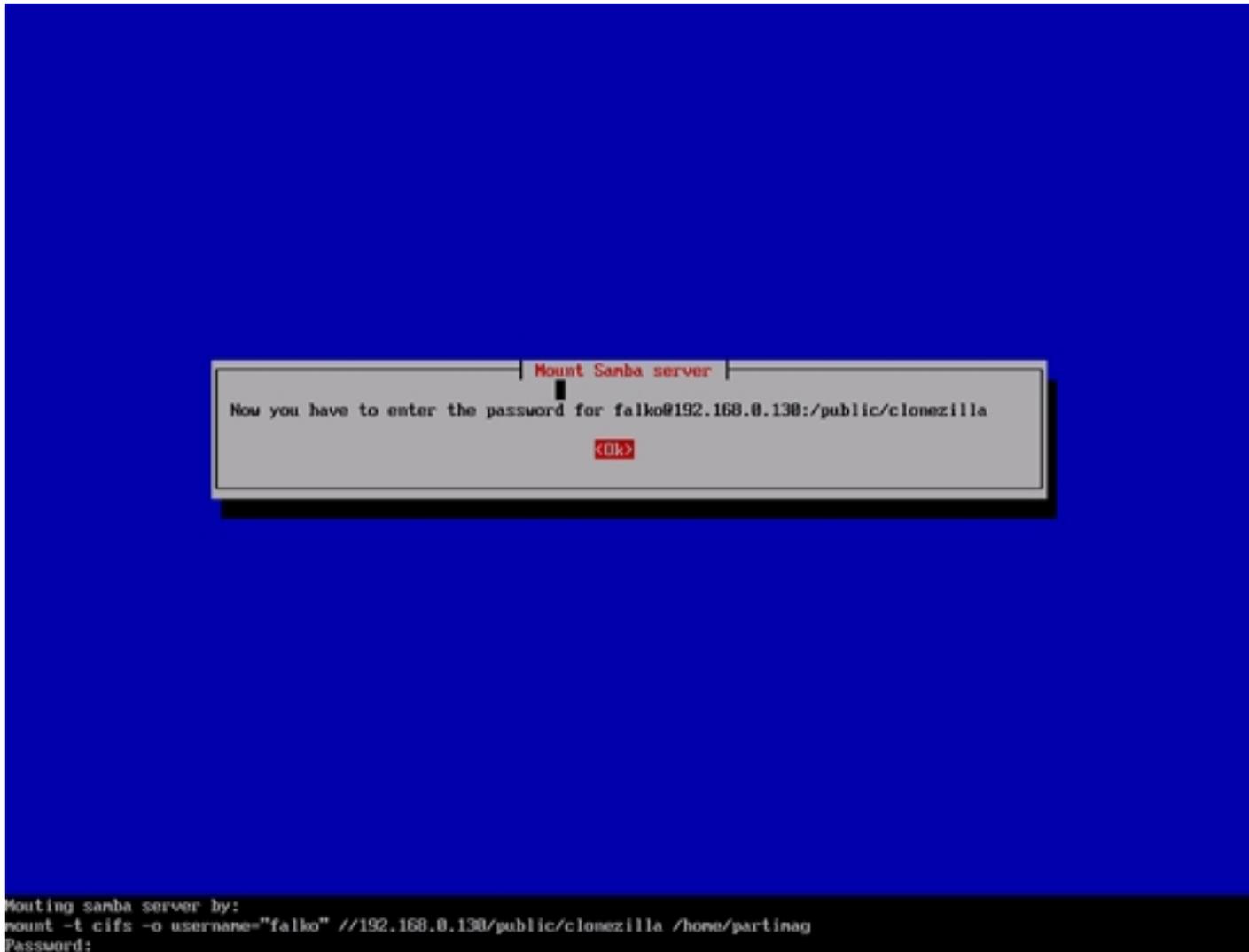
Fill in the directory on the Samba server where you want to store the backup (this directory must already exist):



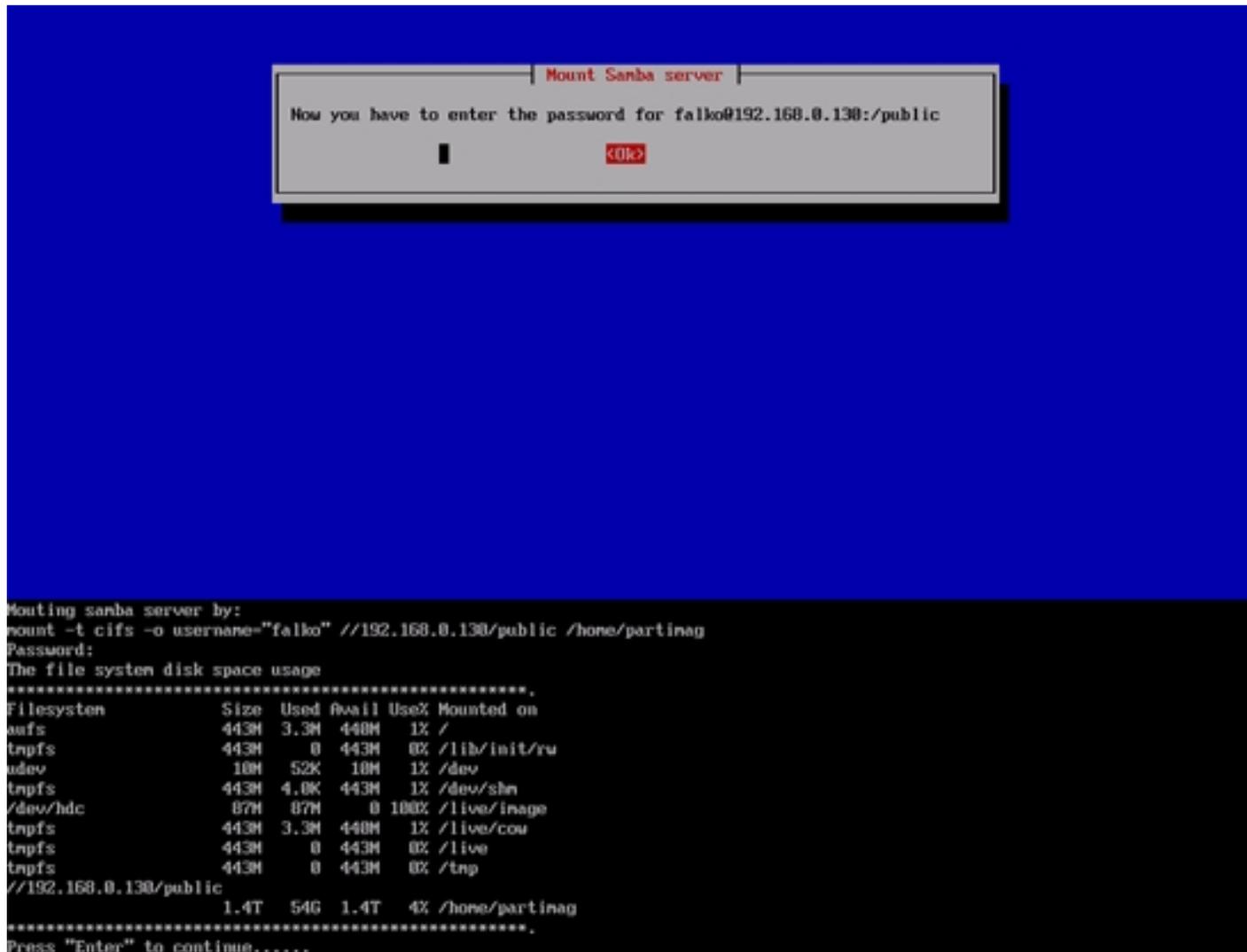
Next click on *Ok*...



... and type in your Samba password:



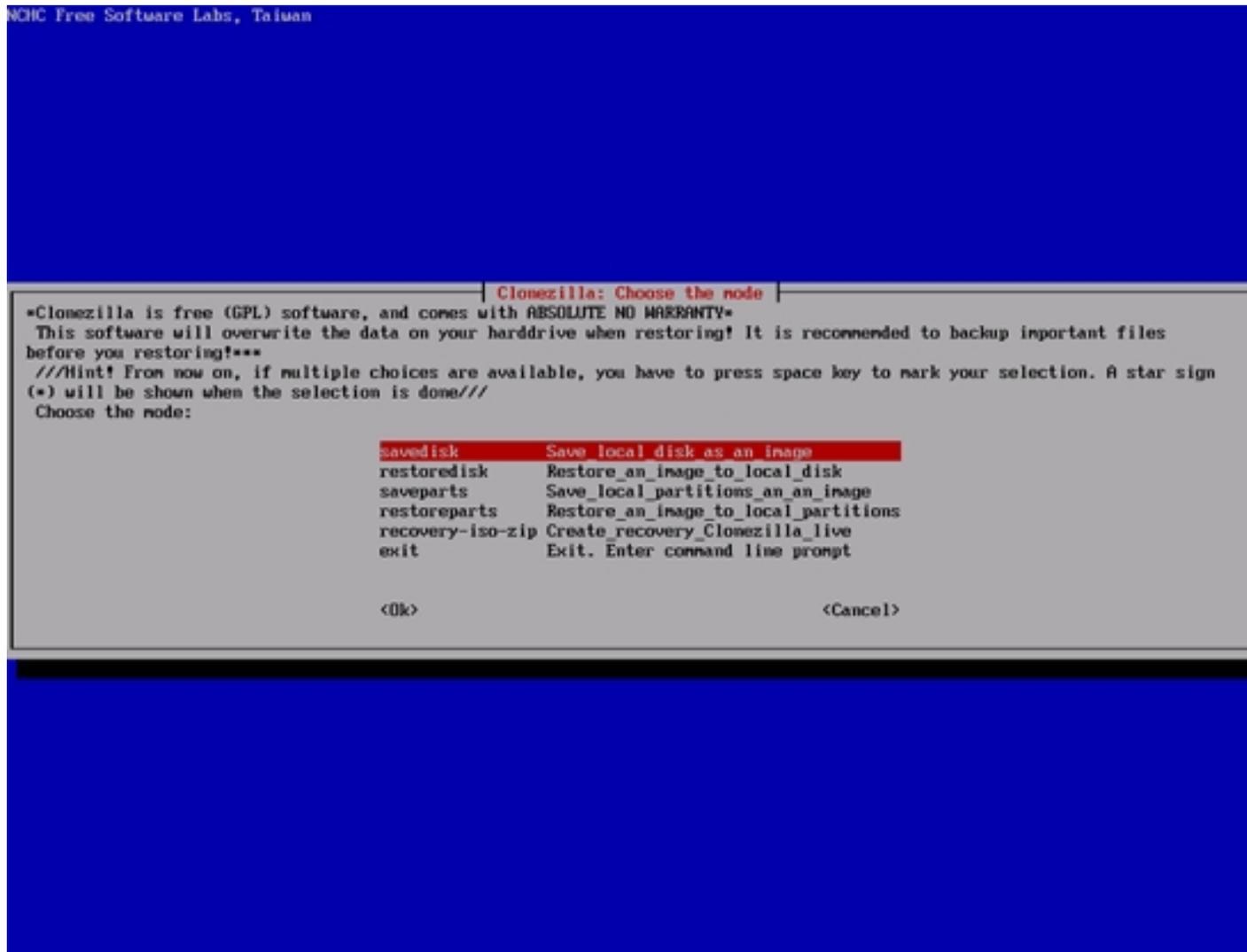
Press *ENTER*...



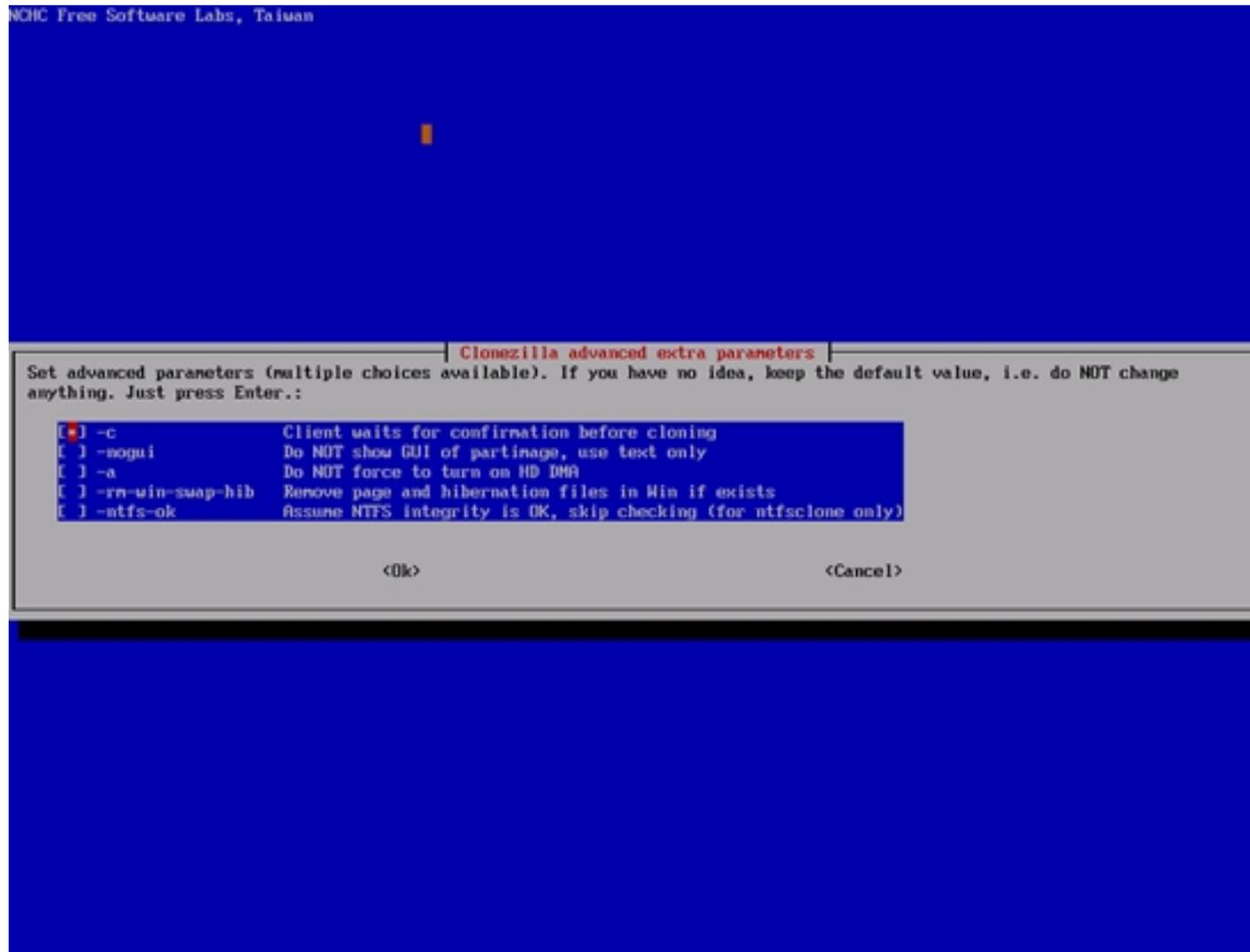
```
Mount Samba server
Now you have to enter the password for falko@192.168.0.130:/public
[OK]

Mounting samba server by:
mount -t cifs -o username="falko" //192.168.0.130/public /hone/partinag
Password:
The file system disk space usage
*****.
Filesystem      Size  Used Avail Use% Mounted on
aufs            443M  3.3M  440M   1% /
tmpfs           443M   0    443M   0% /lib/init/rw
udev            10M   52K   10M   1% /dev
tmpfs           443M  4.0K  443M   1% /dev/shm
/dev/hdc        87M   87M   0 100% /live/image
tmpfs           443M  3.3M  440M   1% /live/cou
tmpfs           443M   0    443M   0% /live
tmpfs           443M   0    443M   0% /tmp
//192.168.0.130/public
1.4T  54G  1.4T   4% /hone/partinag
*****.
Press "Enter" to continue.....
```

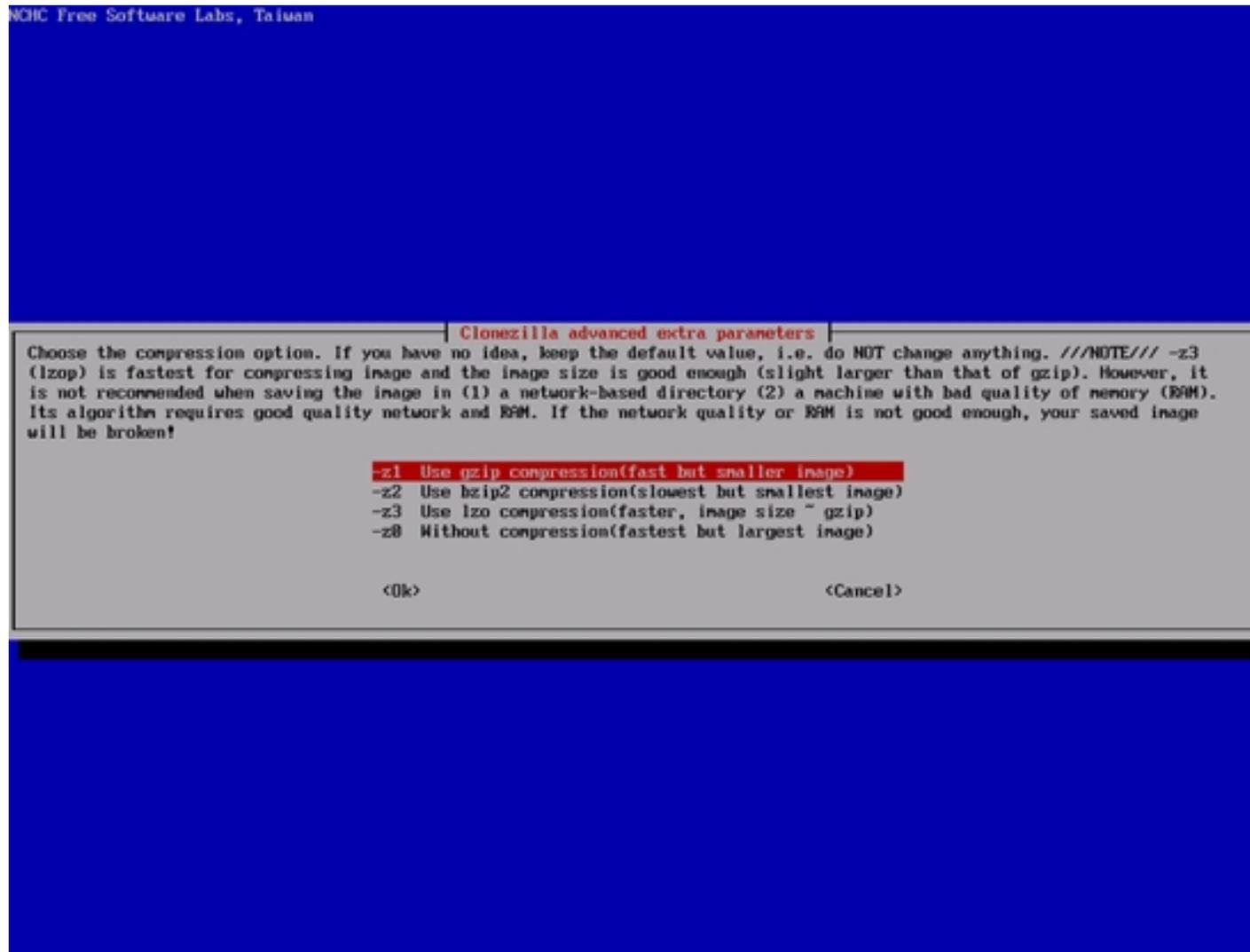
... and select *savedisk* if you want to create an image of your full hard drive:



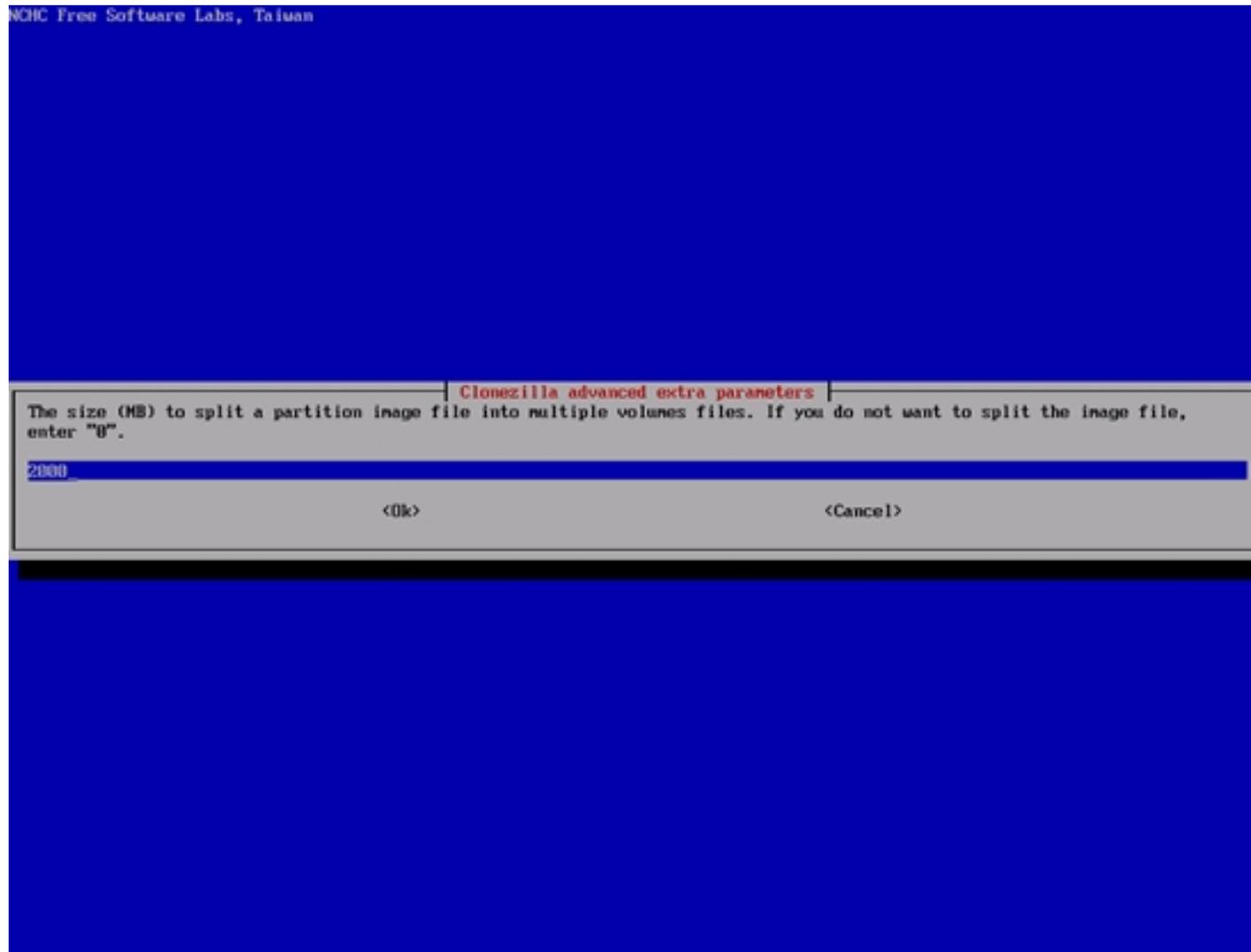
You can now select additional parameters for the image creation process. Usually the default values should work:



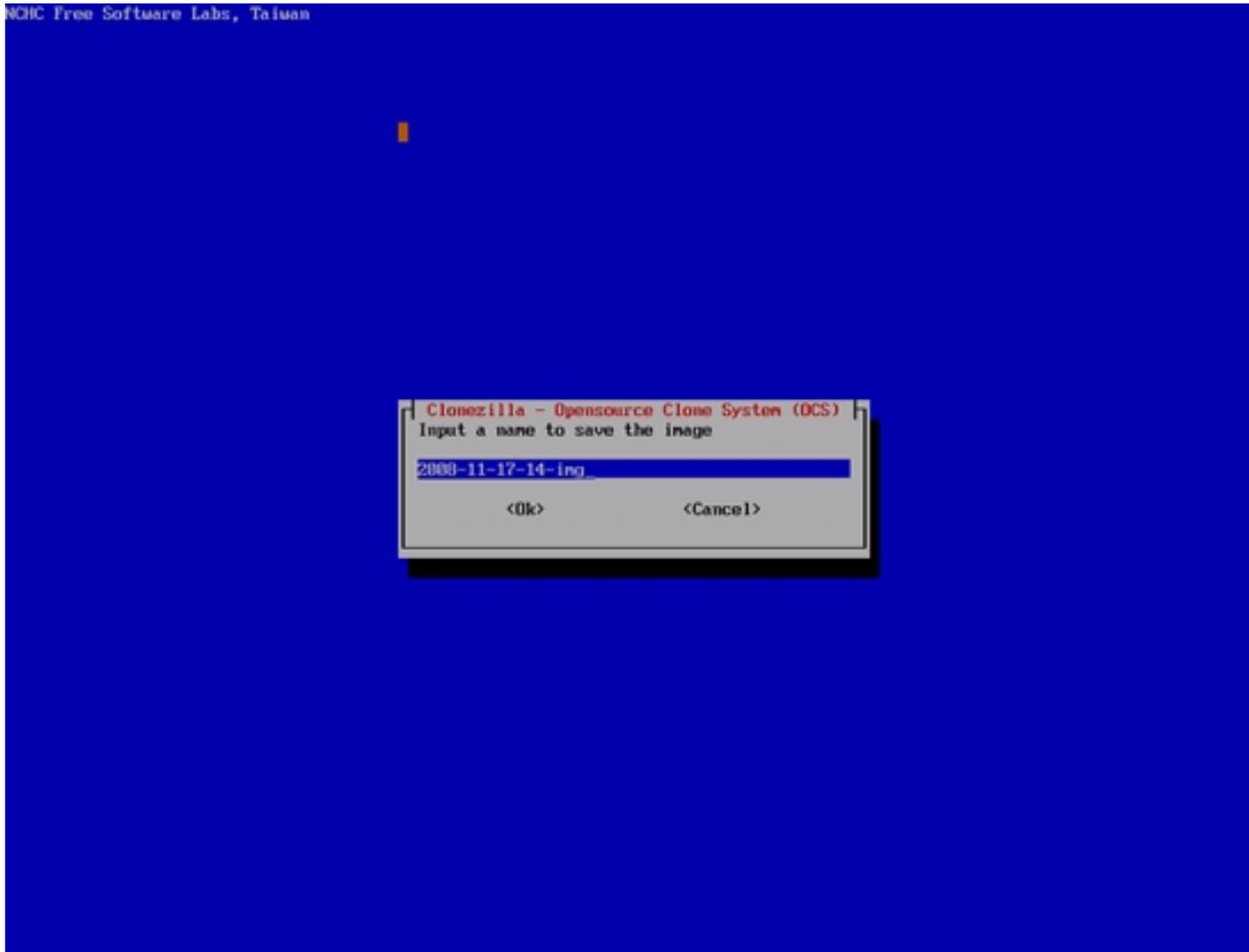
Choose the compression level of the image on the Samba server. *gzip* is the default and should usually work fine:



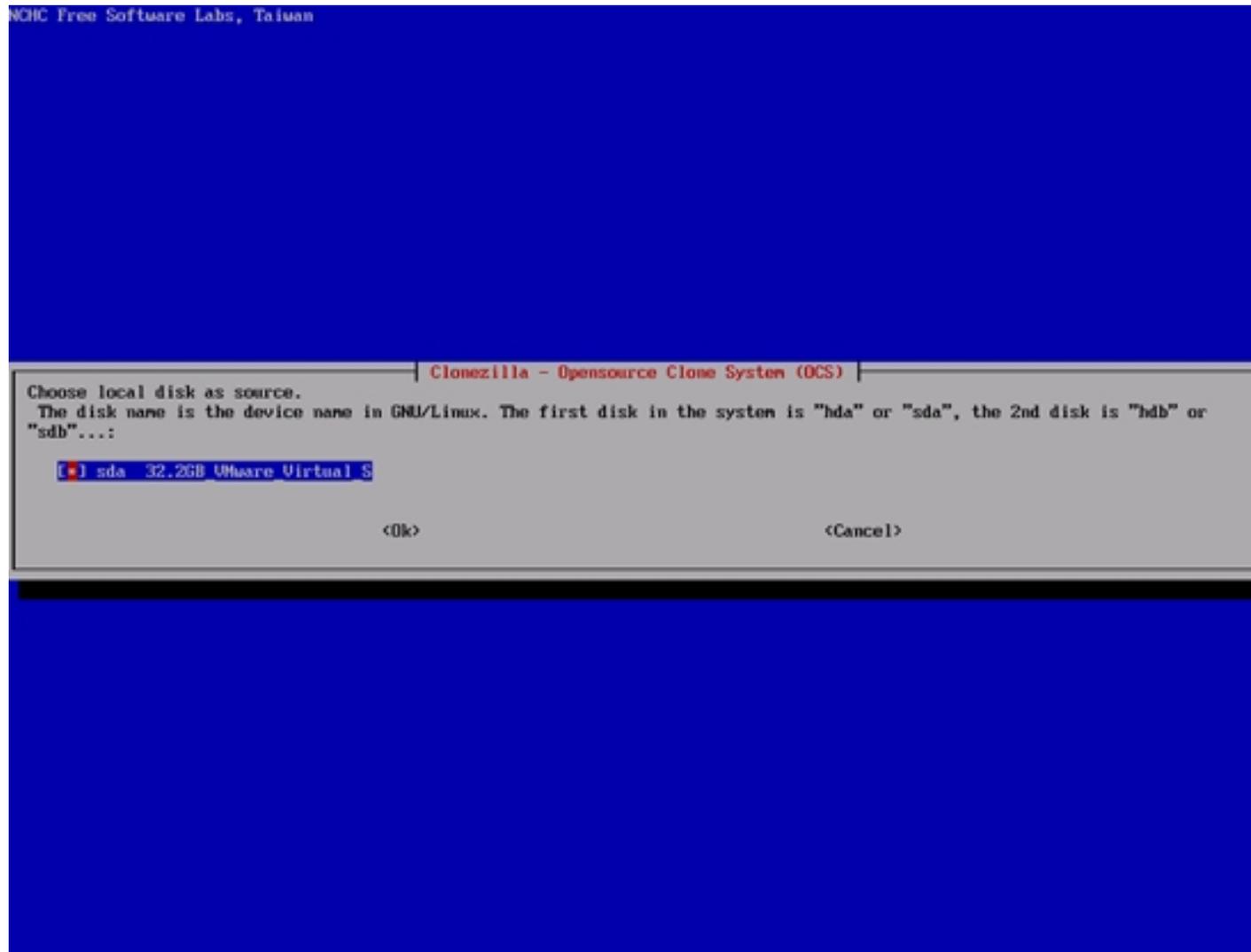
You can split your image into multiple files. 2000MB is the default max. value for such a file - if the image is bigger, a further file is created:



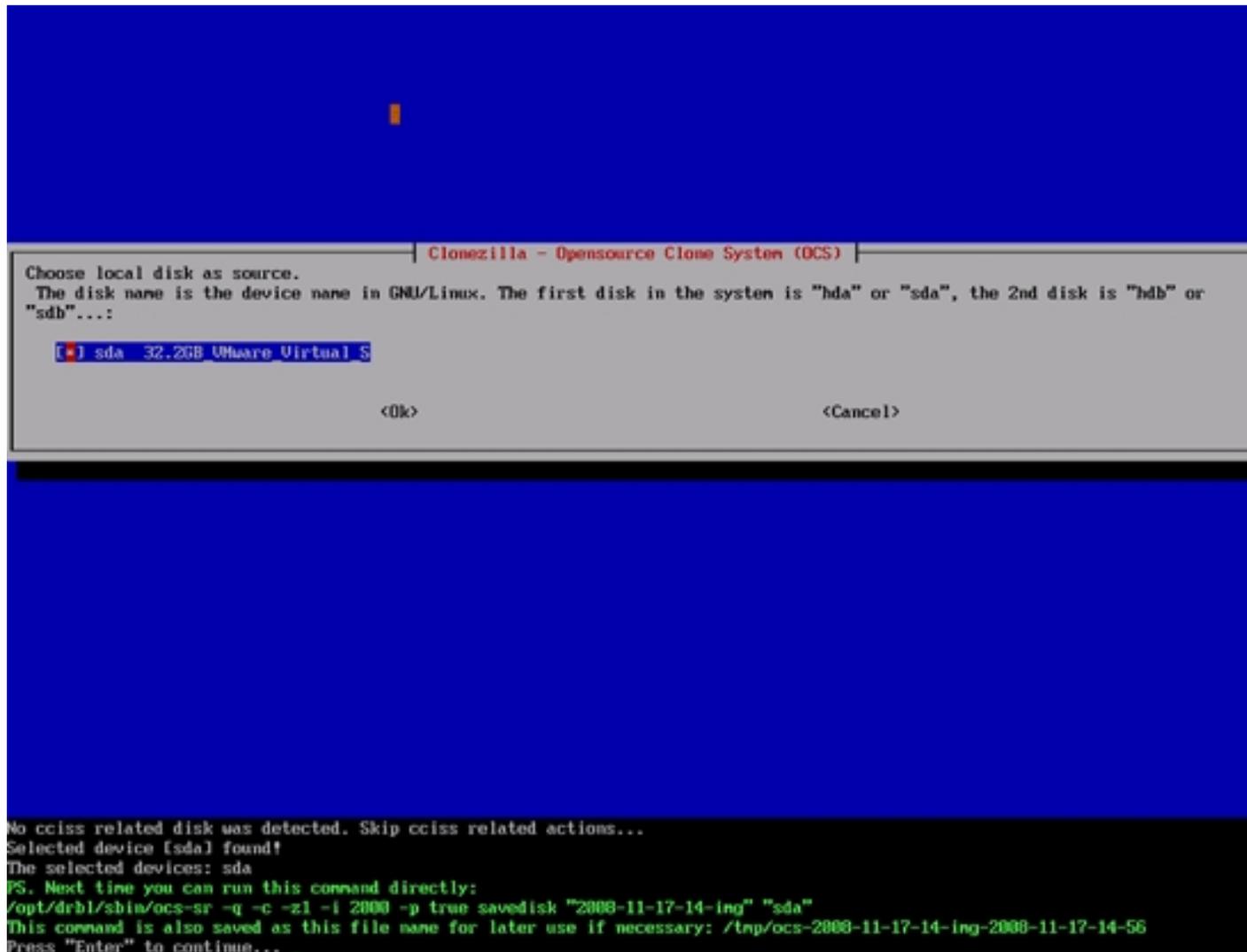
You can fill in a name for the image (or leave the default value as is):



Select the hard drive of which you want to create an image:



Press *ENTER*...



... and then *y* to start creating the image:

```
No cciss related disk was detected. Skip cciss related actions...
Selected device [sda] found!
The selected devices: sda
PS. Next time you can run this command directly:
/opt/drbl/sbin/ocs-sr -q -c -zl -i 2008 -p true savedisk "2008-11-17-14-img" "sda"
This command is also saved as this file name for later use if necessary: /tmp/ocs-2008-11-17-14-img-2008-11-17-14-56
Press "Enter" to continue...
Activating the partition info in /proc... done!
No cciss related disk was detected. Skip cciss related actions...
Selected device [sda] found!
The selected devices: sda
Searching for data partition(s)...
No cciss related disk was detected. Skip cciss related actions...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sda1 sda2 sda5
Getting /dev/sda1 info...
Getting /dev/sda2 info...
Getting /dev/sda5 info...
Searching for swap partition(s)...
No cciss related disk was detected. Skip cciss related actions...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sda1 sda2 sda5
Getting /dev/sda1 info...
Getting /dev/sda2 info...
Getting /dev/sda5 info...
The data partition to be saved: sda1
The swap partition to be saved: sda5
Activating the partition info in /proc... done!
No cciss related disk was detected. Skip cciss related actions...
Selected device [sda1] found!
The selected devices: sda1
No cciss related disk was detected. Skip cciss related actions...
Getting /dev/sda1 info...
*****
The following step is to save the haddisk/partition(s) in this machine as image:
*****
sda (32.2GB VMware_Virtual_S)
sda1 (30.8GB_ext3(In_Vmware_Virtual_S))
*****
-> "/home/partimg/2008-11-17-14-img".
Are you sure you want to continue ? ? (y/N) _
```

After the image has been created (please be patient, this can take quite some time), press *ENTER*...

```

1+0 records in
1+0 records out
512 bytes (512 B) copied, 0.00611145 seconds, 83.8 kB/s
.....
Starting saving /dev/sda1 as /home/partinag/2008-11-17-15-1ng/sda1.XXX...
/dev/sda1 filesystem: ext3.
.....
Checking file system integrity in /dev/sda1... done!
Use gzip to compress the image.
Image file will be split with size limit 2000 MB.
.....
Volume size: 0 bytes (0 MiB)
partinag: status: initializing the operation.
partinag: status: Partinag: 0.6.1
partinag: status: Image type: NONE
partinag: status: Saving partition to the image file...
partinag: status: reading partition properties
partinag: status: writing header
stdout      S: 4M partinag: status: copying used data blocks
File Name   Size      T:Elapsed/Estimated Rate/min Progress
stdout      S:7.81G ^T:03:29:01/00:00:00 R: 34M/min P:100%

partinag: status: commiting buffer cache to disk.
>>> Time elapsed: 12547.49 secs (~ 209.124 mins)
.....
Finished saving /dev/sda1 as /home/partinag/2008-11-17-15-1ng/sda1.XXX
.....
Saving swap partition sda5 info in /home/partinag/2008-11-17-15-1ng/swappt-sda5.info if it exists...
.....
Saving swap /dev/sda5 info in /home/partinag/2008-11-17-15-1ng/swappt-sda5.info...
.....
.....
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...

.....
If you want to use clonezilla again:
(1) Stay in this console (console 1), enter command line prompt
(2) Run command "exit" or "logout"
.....
When everything is done, remember to use 'poweroff', 'reboot' or follow the menu to do a normal poweroff/reboot procedure. Other
wise if the boot media you are using is a writable device (such as USB flash drive), and it's mounted, poweroff/reboot in abnorm
al procedure might make it FAIL to boot next time!
.....
Press "Enter" to continue...

```

... and then type `o` to shut down the CloneZilla Live system. Don't forget to remove the CloneZilla Live CD from the CD drive.

```

/dev/sda1 filesystem: ext3.
.....
Checking file system integrity in /dev/sda1... done!
Use gzip to compress the image.
Image file will be split with size limit 2000 MB.
.....
Volume size: 0 bytes (0 MiB)
partinago: status: initializing the operation.
partinago: status: Partinago: 0.6.1
partinago: status: Image type: NONE
partinago: status: Saving partition to the image file...
partinago: status: reading partition properties
partinago: status: writing header
stdout      S: 4M partinago: status: copying used data blocks
File Name   Size    T:Elapsed/Estimated Rate/min Progress
stdout      S:7.01G ^T:03:29:01/00:00:00 R: 34M/min P:100%

partinago: status: commiting buffer cache to disk.
>>> Time elapsed: 12547.49 secs (~ 209.124 mins)
.....
Finished saving /dev/sda1 as /home/partinag/2008-11-17-15-ing/sda1.XXX
.....
Saving swap partition sda5 info in /home/partinag/2008-11-17-15-ing/swappt-sda5.info if it exists...
.....
Saving swap /dev/sda5 info in /home/partinag/2008-11-17-15-ing/swappt-sda5.info...
.....
.....
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...

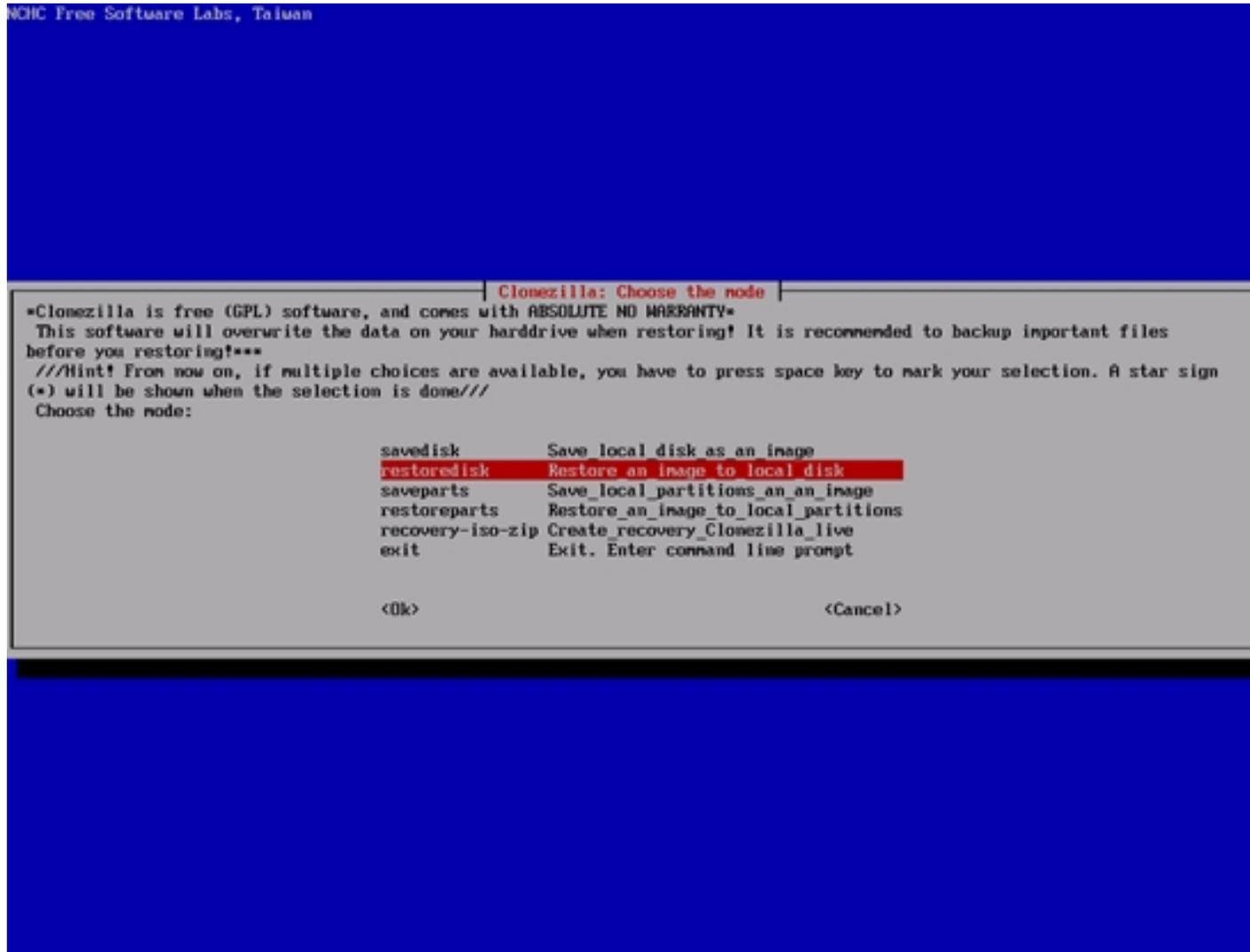
.....
If you want to use clonezilla again:
(1) Stay in this console (console 1), enter command line prompt
(2) Run command "exit" or "logout"
.....
When everything is done, remember to use 'poweroff', 'reboot' or follow the menu to do a normal poweroff/reboot procedure. Other
wise if the boot media you are using is a writable device (such as USB flash drive), and it's mounted, poweroff/reboot in abnorm
al procedure might make it FAIL to boot next time!
.....
Press "Enter" to continue...
Now you can choose to:
(0) Poweroff
(1) Reboot
(2) Enter command line prompt
(3) Start over
[2] 0

```

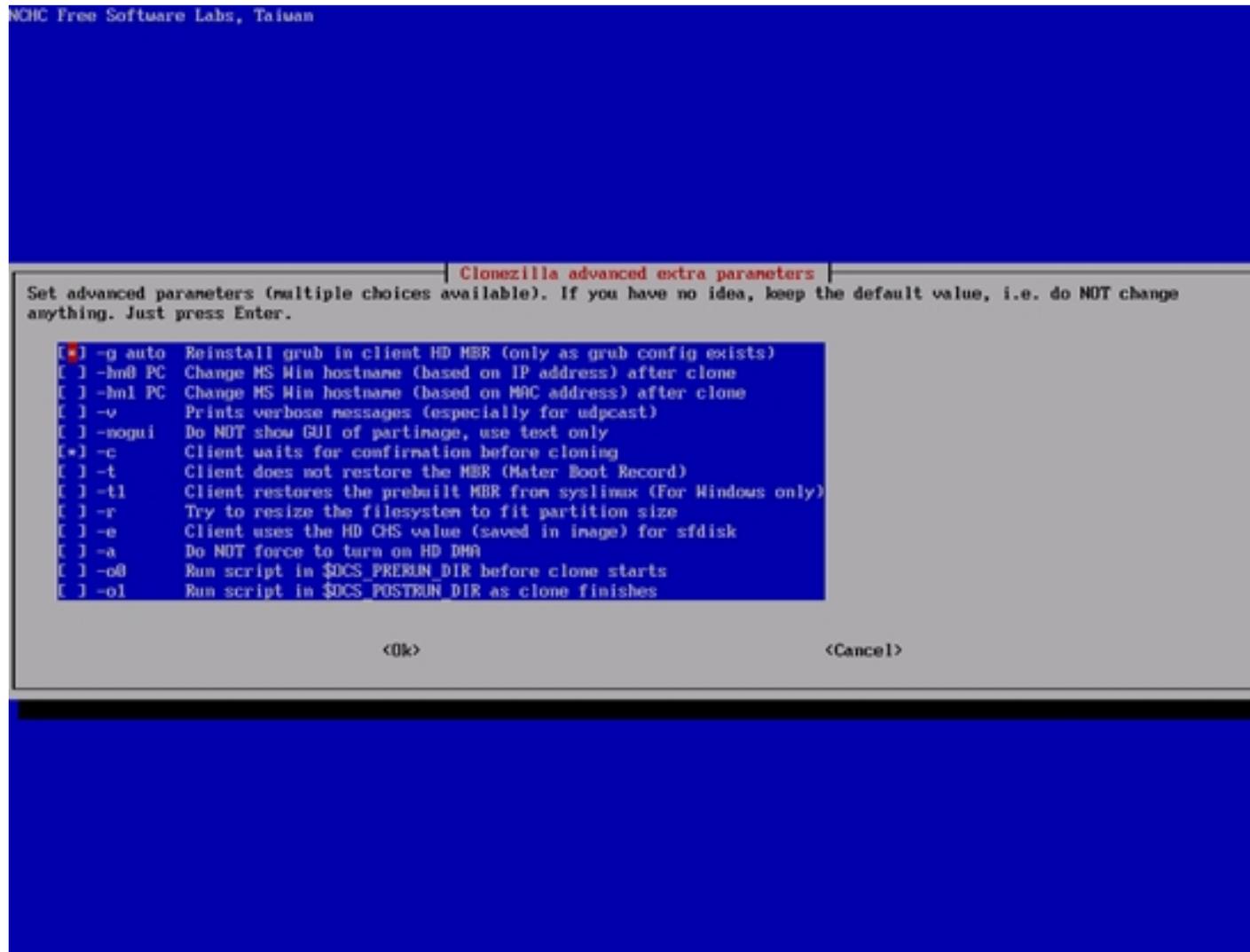
You now have an image of your hard drive on the Samba server, and if your system should crash, you can restore it from that image.

3 Restoring A System From An Image

If you want to restore a system from an image, boot the system from the CloneZilla Live CD. The procedure is the same as in the first 14 screenshots of the previous chapter, i.e., select Samba, fill in your user name and password, etc. When you see the *Choose the mode* screen, don't select *savedisk*, but *restoredisk* instead:



You can now select additional parameters to pass to the restoration process - usually the default values are fine:



Select *Use the partition table from image:*

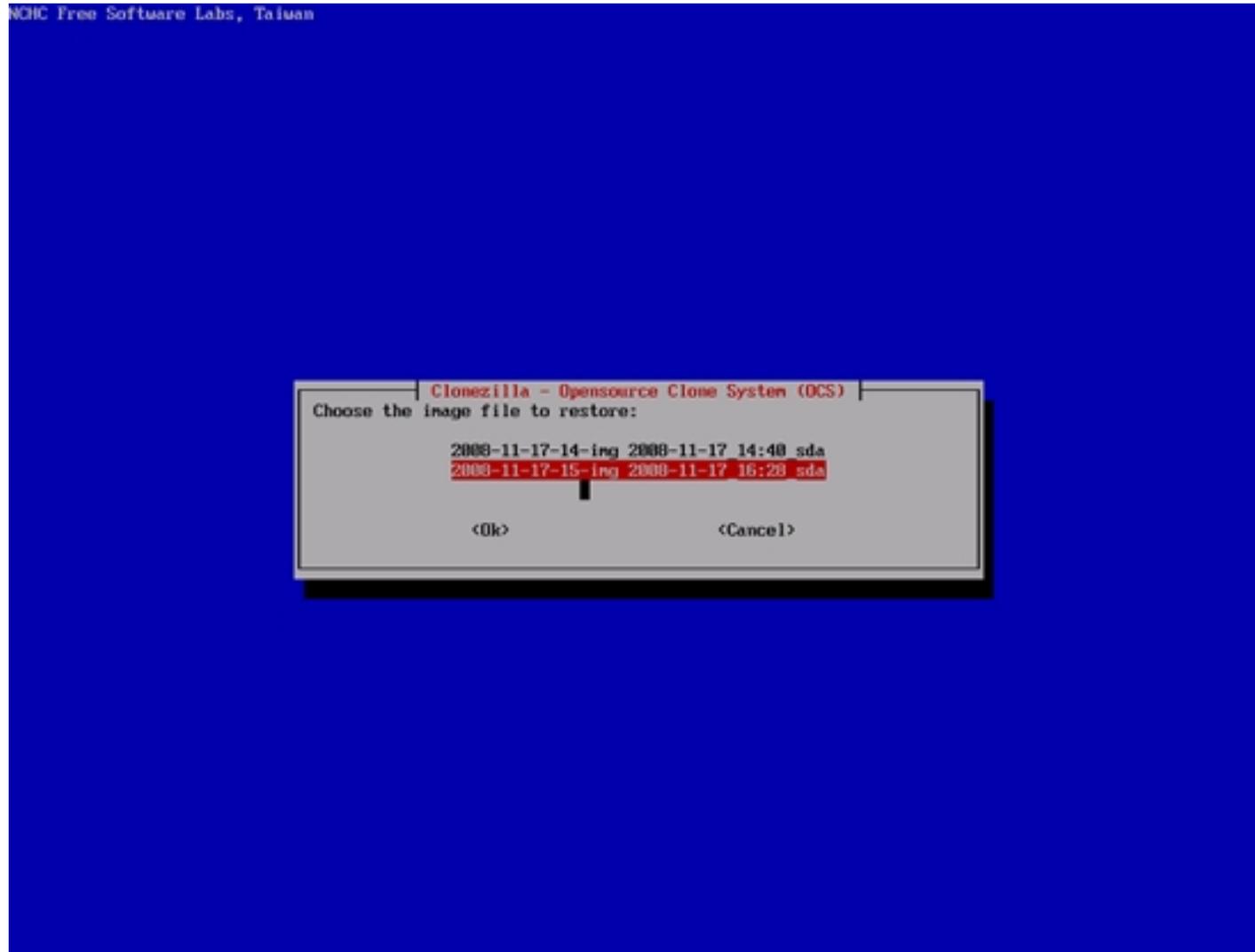
```
NCCH Free Software Labs, Taiwan

Clonezilla advanced extra parameters
Set advanced parameters. If you have no idea, keep the default value, i.e. do NOT change anything. Just press Enter.
Choose the mode to create the partition table on the target disk: ***ATTENTION***(1) TO CREATE A NEW PARTITION TABLE IN
THE TARGET DISK. ALL THE DATA ON THE TARGET DEVICE WILL BE ERASED!!! (2) Clonezilla will not restore an image from large
disk (partition) to smaller disk (partition). However, it can restore an image from small disk (partition) to larger disk
(partition). (3)If you do NOT want clonezilla to create partition table, check -k:

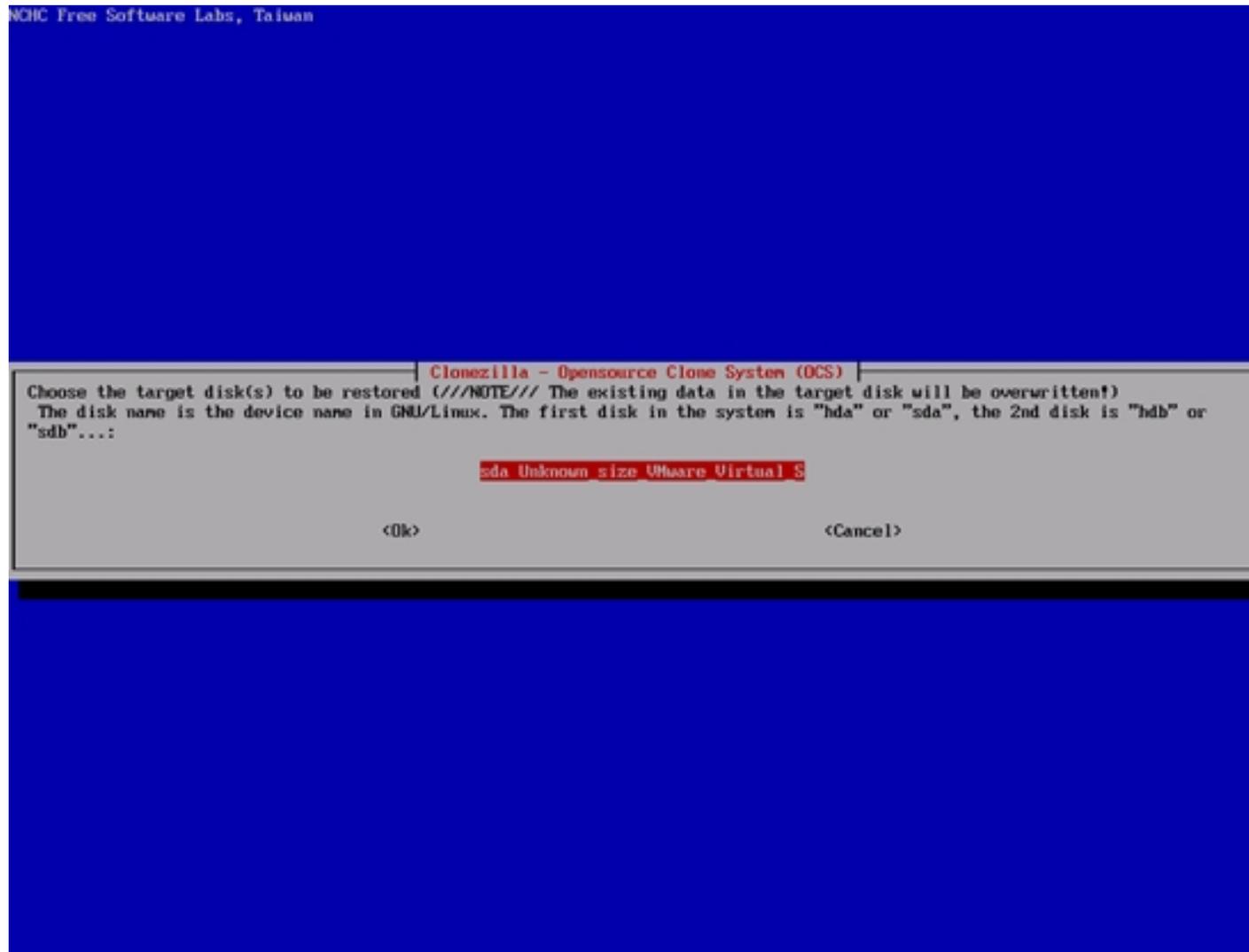
Use the partition table from image
-k Do NOT create partition table in target disk
-k1 Create partition table proportionally (OK for MBR format, not GPT)
-k2 Enter command line prompt to create partition manually later
-j0 Use dd to create partition table (NOT OK as logical drives exist)
exit Exit

<Ok> <Cancel>
```

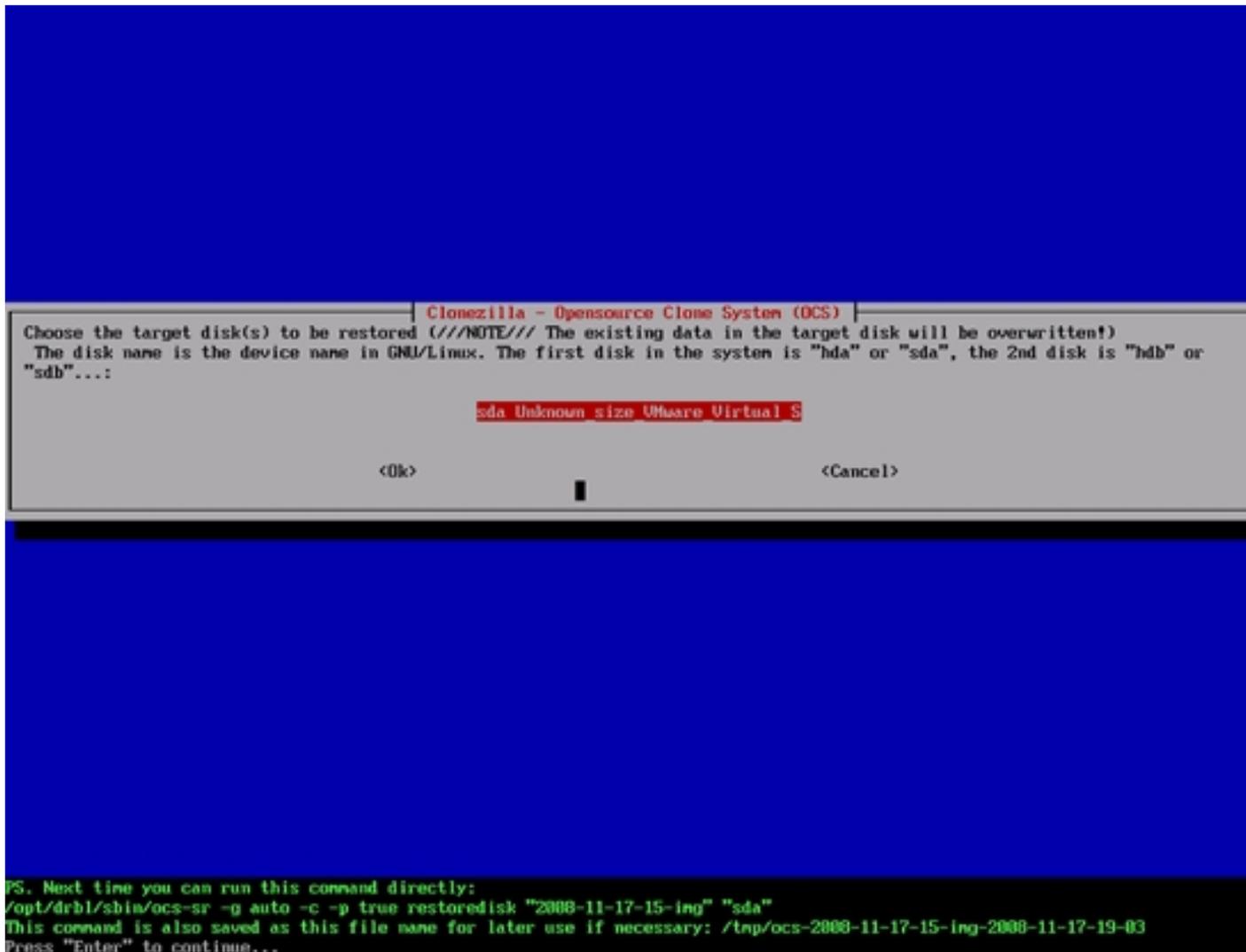
Select the image that you want to restore:



Select the hard drive on which you want to restore the image:



Then press *ENTER*...



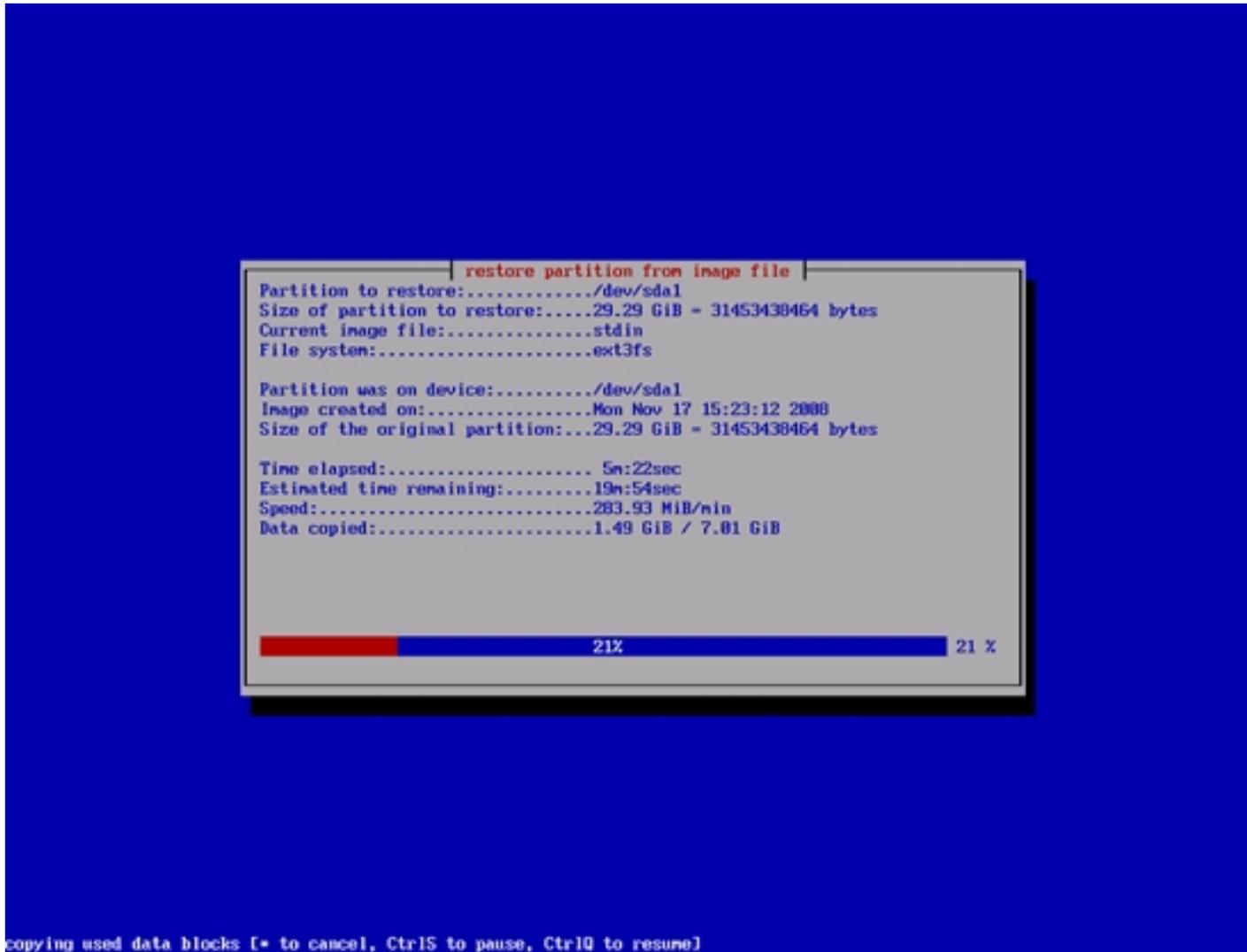
... and type *y* twice to confirm that you want to start the restoration process (this will destroy all data that is on the hard drive that is to be restored):

```
"sdb"...:
sda Unknown size VMware Virtual S
<Ok> <Cancel>

PS. Next time you can run this command directly:
/opt/drbl/sbin/ocs-sr -g auto -c -p true restoredisk "2008-11-17-15-img" "sda"
This command is also saved as this file name for later use if necessary: /tmp/ocs-2008-11-17-15-img-2008-11-17-19-03
Press "Enter" to continue...
No cciss related disk was detected. Skip cciss related actions...
*****
Try to turn on the hddisk "/dev/sda" DMA...
No HD DMA information, maybe this not a IDE device!
*****
Activating the partition info in /proc... done!
No cciss related disk was detected. Skip cciss related actions...
No cciss related disk was detected. Skip cciss related actions...
*****
The following step is to restore image to the hddisk/partition(s) in this machine: "/hone/partinag/2008-11-17-15-img" -> "sda
sda1"
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL BE LOST:
*****
sda (Unknown_size_Vmware_Virtual_S)
*****
Are you sure you want to continue ? ?
[y/N]
```

```
PS. Next time you can run this command directly:
/opt/drbl/sbin/ocs-sr -g auto -c -p true restoredisk "2008-11-17-15-img" "sda"
This command is also saved as this file name for later use if necessary: /tmp/ocs-2008-11-17-15-2008-11-17-19-03
Press "Enter" to continue...
No cciss related disk was detected. Skip cciss related actions...
*****
Try to turn on the harddisk "/dev/sda" DMA...
No HD DMA information, maybe this not a IDE device!
*****
Activating the partition info in /proc... done!
No cciss related disk was detected. Skip cciss related actions...
No cciss related disk was detected. Skip cciss related actions...
*****
The following step is to restore image to the harddisk/partition(s) in this machine: "/hone/partinag/2008-11-17-15-img" -> "sda
sda1"
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL BE LOST:
*****
sda (Unknown_size_Ubuntu_Virtual_S)
*****
Are you sure you want to continue ??
[y/N] y
OK, let's do it!!
This program is not started by clonezilla server.
No cciss related disk was detected. Skip cciss related actions...
The following step is to restore image to the harddisk/partition(s) in this machine: "/hone/partinag/2008-11-17-15-img" -> "sda
(sda1)"
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL BE LOST:
*****
sda (Unknown_size_Ubuntu_Virtual_S)
*****
Let me ask you again, are you sure you want to continue ??
[y/N] _
```

The hard drive is now being restored. This can take a few minutes:



Afterwards press *ENTER*...

```
Finished unicast restoring image 2008-11-17-15-img to /dev/sda1.
*****
Creating swap partition /dev/sda5...
No cciss related disk was detected. Skip cciss related actions...
Found the swap partition /dev/sda5 info in the image dir, create it by:
aksuap-uuid -U 32b41e4e-4d4a-4825-8922-27e8c6aeeb45 /dev/sda5
Setting up swspace version 1, size = 756686 kB
no label, UUID=32b41e4e-4d4a-4825-8922-27e8c6aeeb45
*****
Restoring the first 446 bytes of MBR data, i.e. executable code area, for sda... done!
*****
No cciss related disk was detected. Skip cciss related actions...
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
Found grub partition: /dev/sda1... Trying to run grub-install now...
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
Running: grub-install --no-floppy --root-directory=/tmp/hd_img.004386 /dev/sda
Probing devices to guess BIOS drives. This may take a long time.
The file /tmp/hd_img.004386/boot/grub/stage1 not read correctly.
Failed to install grub!!!
done!
*****
*****
*****
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...

*****
If you want to use clonezilla again:
(1) Stay in this console (console 1), enter command line prompt
(2) Run command "exit" or "logout"
*****
When everything is done, remember to use 'poweroff', 'reboot' or follow the menu to do a normal poweroff/reboot procedure. Other
wise if the boot media you are using is a writable device (such as USB flash drive), and it's mounted, poweroff/reboot in abnorm
al procedure might make it FAIL to boot next time!
*****
Press "Enter" to continue...
```

... and type *o* to shut down the CloneZilla system.

```
Finished unicast restoring image 2008-11-17-15-img to /dev/sdal.
*****
Creating swap partition /dev/sda5...
No cciss related disk was detected. Skip cciss related actions...
Found the swap partition /dev/sda5 info in the image dir, create it by:
mkswap-uuid -U 32b41e4e-4d4a-4825-8922-27e8c6aeeb45 /dev/sda5
Setting up swspace version 1, size = 756686 kB
no label, UUID=32b41e4e-4d4a-4825-8922-27e8c6aeeb45
*****
Restoring the first 446 bytes of MBR data, i.e. executable code area, for sda... done!
*****
No cciss related disk was detected. Skip cciss related actions...
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
Found grub partition: /dev/sdal... Trying to run grub-install now...
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
Running: grub-install --no-floppy --root-directory=/tmp/hd_img.Q04386 /dev/sda
Probing devices to guess BIOS drives. This may take a long time.
The file /tmp/hd_img.Q04386/boot/grub/stage1 not read correctly.
Failed to install grub!!!
done!
*****
*****
*****
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...
*****
If you want to use clonezilla again:
(1) Stay in this console (console 1), enter command line prompt
(2) Run command "exit" or "logout"
*****
When everything is done, remember to use 'poweroff', 'reboot' or follow the menu to do a normal poweroff/reboot procedure. Other
wise if the boot media you are using is a writable device (such as USB flash drive), and it's mounted, poweroff/reboot in abnorm
al procedure might make it FAIL to boot next time!
*****
Press "Enter" to continue...
Now you can choose to:
(0) Poweroff
(1) Reboot
(2) Enter command line prompt
(3) Start over
[2] 0
```

Remove the CloneZilla Live CD and boot from the hard drive. If all goes well, it should boot the system that you have just restored.

4 Links

- CloneZilla: <http://clonezilla.org/>