CLONING A VPS

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DISCLAIMER

This method is particular to OVH, where we are hosting linux-ottawa. It probably will work for any similar type of provider, but your success may be dependent on factors outside of your control. This is also not the only way.

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APOLOGY

I have not used this in a while, so I'll apologize now for the default centering. I need to edit some CSS to fix it and I considered that as too much work while putting this together. It is now a task before my next talk.

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THE PROBLEM

You want to make changes, but you only have one hosted system.

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MORE PROBLEMS

In addition, you kind of built it in a hurry without a development environment or a well documented plan. It is based on the evolved iterations of previous systems, all built on the bones of others and multiple hardware changes.

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THE LATEST PROBLEM

You need to upgrade it.

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WHAT DO YOU DO NOW?

A great question.

My quick answer: clone it!

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HOW DO WE DO THAT?

Another great question.

The real problem is that none of these services (at the low cost level we use), have any available functionality for doing this without incurring cost. That is something we don't really have the resources for.

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HOWEVER...

We can always do it on the cheap and that is what this talk is about.

A little CLI-fu is necessary and some understanding of what we are doing helps.

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REQUIREMENTS

Assuming you have the necessary disk space, a reasonably fast internet connection, a few useful utilities, and the desire to do this, you can make an image of your running environment - while it is not running of course.

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THE PROCESS

We start with the idea that we can boot a rescue image

Then we do things with the rescue image to make it all work.

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AND THEN...?

You can bring it into your own vm service and work on it.

- Document what you have
- Decide where you want to go with it
- Snapshot it
- etc.

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PREPARATION

Like anything, the prep work makes it easy.

For this to work, we need to take down our VPS, boot a rescue image, add some software to the rescue image, add a maintenance web page and log in remotely. Easy stuff…

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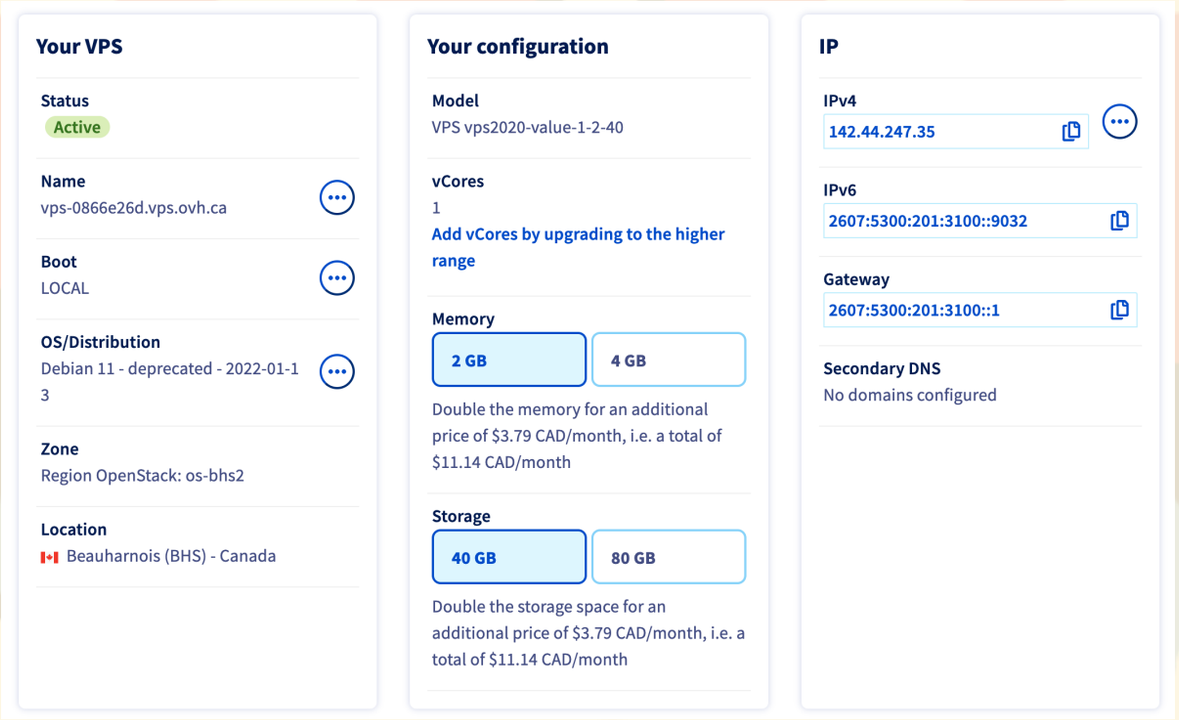
OUR VPS INFO



Your VPS

Status
Active

Name
vps-0866e26d.vps.ovh.ca

Boot
LOCAL

OS/Distribution
Debian 11 - deprecated - 2022-01-13

Zone
Region OpenStack: os-bhs2

Location
Beauharnois (BHS) - Canada

Your configuration

Model
VPS vps2020-value-1-2-40

vCores
1
Add vCores by upgrading to the higher range

Memory
2 GB | 4 GB
Double the memory for an additional price of $3.79 CAD/month, i.e. a total of $11.14 CAD/month

Storage
40 GB | 80 GB
Double the storage space for an additional price of $3.79 CAD/month, i.e. a total of $11.14 CAD/month

IP

IPv4
142.44.247.35

IPv6
2607:5300:201:3100::9032

Gateway
2607:5300:201:3100::1

Secondary DNS
No domains configured

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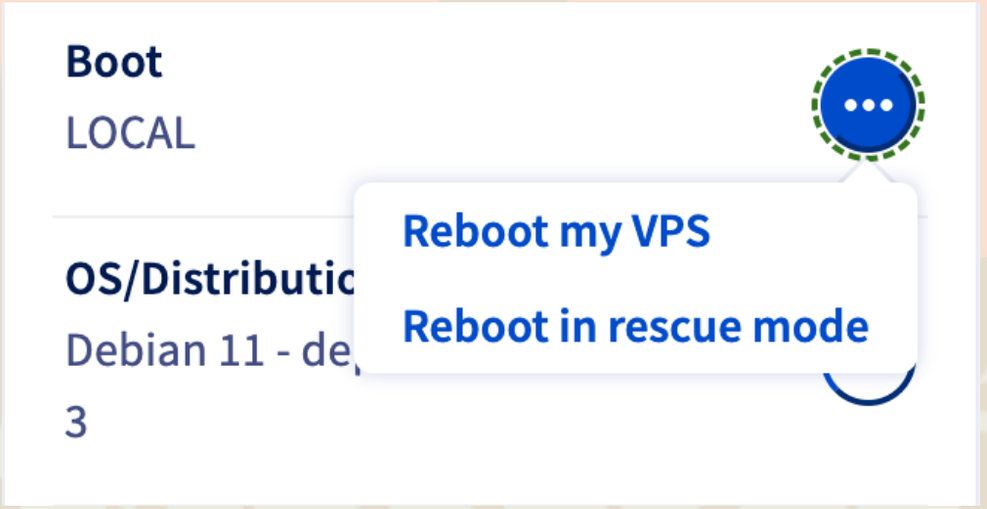
BOOT INTO RESCUE MODE



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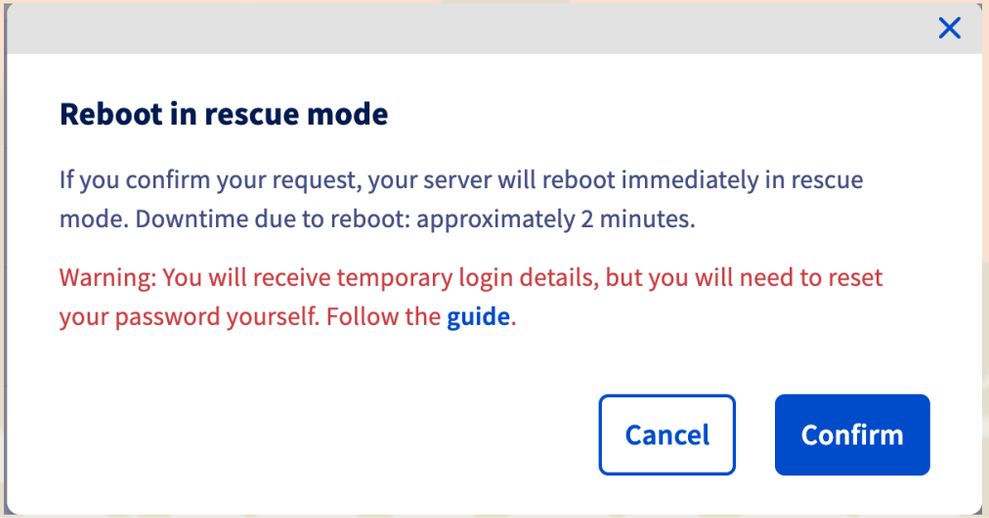
WAITING FOR REBOOT



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AFTER WAITING

We need to get into the console to get info…

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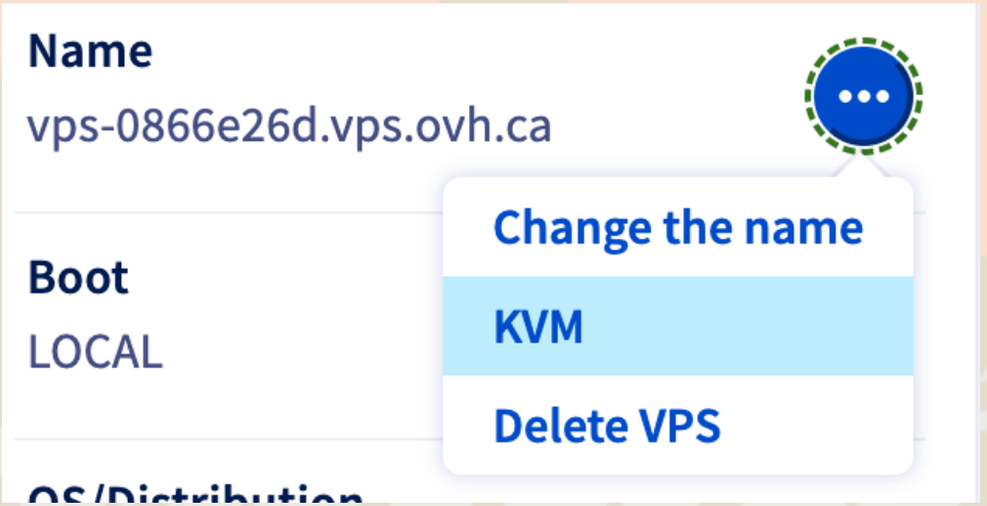
LAUNCHING THE CONSOLE



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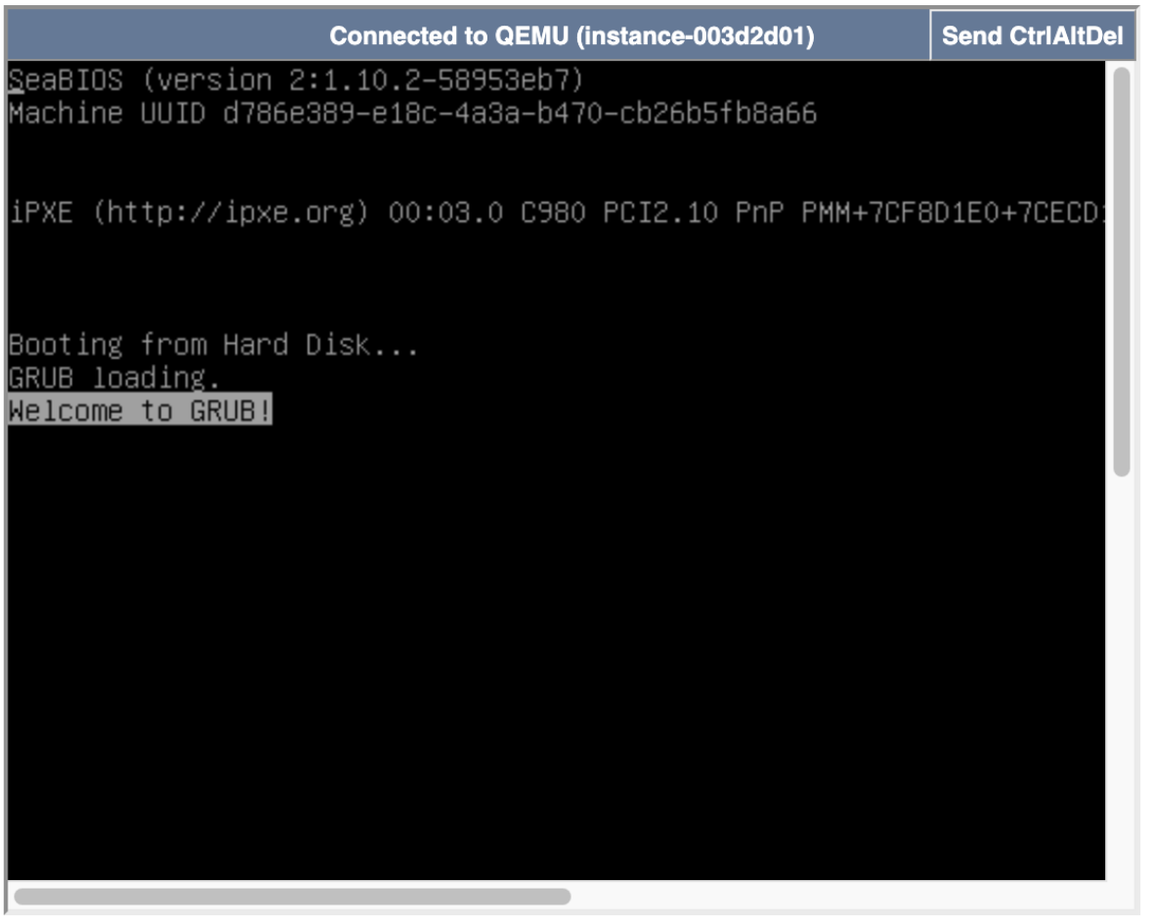
CONSOLE BOOTING

KVM



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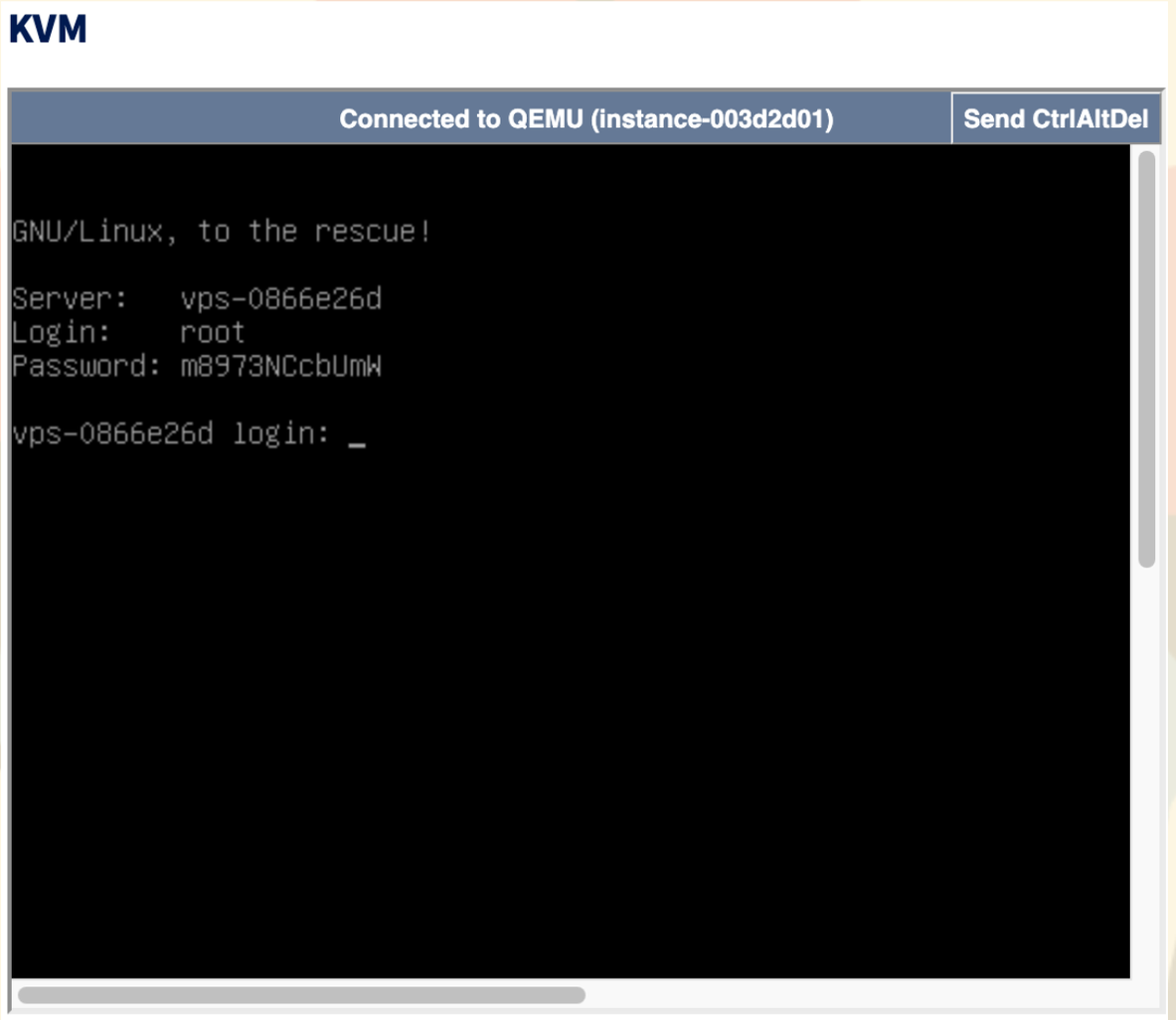
CONSOLE LOGIN



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WE CAN REMOTE IN NOW

Since this is a rescue image and cut/paste is a problem with these virtual consoles, we should ssh in. We have the creds from the console (and there is an email). This lets us get started with the cloning.

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WORKING WITH THE RESCUE BOOT

We need to copy over a maintenance website, to explain the outage.

```
scp -q linux-ottawa_maint.tar root@linux-ottawa.org:
```

We will use this in a moment.

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LOG IN REMOTELY

So now we need to set up a reverse proxy for the first tool, `sshfs` to be used.

```
ssh -q root@linux-ottawa.org -R
10000:127.0.0.1:22
```

As a side effect, we are now logged in and ready to get started

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THE PROCESS

Install the utilities you need. `ddrescue` is called `gddrescue` in Debian. After install, the nginx service starts automatically. At least on Debian.

- apt install sshfs
- apt install gddrescue
- apt install nginx

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THE PROCESS

Extract the maintenance info page

- cd /
- tar xf /root/linux-ottawa_maint.tar

Restart the web server

- systemctl restart nginx

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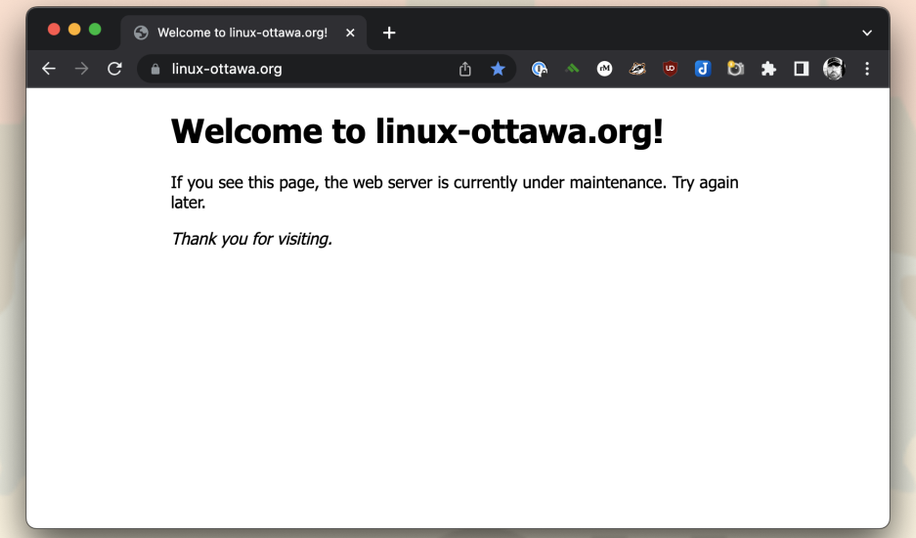
WEB SITE MAINTENANCE

If you visited the site at this point, this is what you would have seen.



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THE PROCESS

Technical details time…

Get the disk info

- lsblk

Make the mount point for sshfs

- mkdir /dump

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THE PROCESS

Launch sshfs and tunnel the target directory to the mount point

- sshfs -p 10000 user@127.0.0.1:/home/user/current/linux_ottawa_backup/d /dump

Show it is there

- df

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THE PROCESS

Start the process. There is a time summary at the end, but this way I have a bracketed time stamp.

- date
- ddrescue -d /dev/sdb /dump/linuxott_20230924.img /dump/linuxott_20230924.logfile
- date

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THE PROCESS

Show we have the info

- ls -als /dump
- df

Remove the sshfs mount point

- fusermount -u /dump
- df

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THE PROCESS

Remove the directory & logout

- rmdir /dump
- exit

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THE RESULT

We now have a dumped image of the drive that can be restored in a similar fashion. It is stored on your local system in the directory you provided for the sshfs mount.

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SCREEN RECORDING

I'll show an asciicast of the process next , with chunks taken out of the long running ddrescue process. I kept 1 out of 60 frames so a minute passes in a second. It is a little tedious to watch in real time. It is about 70s.

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LIVE(ISH) SESSION

This is greatly accelerated to show the actual process.

```
    996968   0% /sys/fs/cgroup
user@127.0.0.1:/home/user/current/linux_ottawa_backup/dump  51290592      24  48
652744   1% /dump
[RESCUE] root@vps-0866e26d:/ $ lsblk
NAME    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda       8:0    0  2.5G  0 disk
└─sda1    8:1    0  2.5G  0 part /
sdb       8:16   0   40G  0 disk
├─sdb1    8:17   0 39.9G  0 part
├─sdb14   8:30   0    3M  0 part
└─sdb15   8:31   0  124M  0 part
[RESCUE] root@vps-0866e26d:/ $ date
Sun 24 Sep 2023 07:44:16 PM UTC
[RESCUE] root@vps-0866e26d:/ $ ddrescue -d /dev/sdb /dump/linuxott_20230924.img
/dump/linuxott_20230924.logfile
GNU ddrescue 1.23
Press Ctrl-C to interrupt
     ipos:   31373 MB, non-trimmed:        0 B,  current rate:  29949 kB/s
     opos:   31373 MB, non-scraped:        0 B,  average rate:  28625 kB/s
non-tried:   11576 MB,  bad-sector:        0 B,    error rate:       0 B/s
  rescued:   31373 MB,   bad areas:        0,        run time:     18m 16s
pct rescued:   73.04%, read errors:        0,  remaining time:          6m
                              time since last successful read:          0s
Copying non-tried blocks... Pass 1 (forwards)
```

This is not live on the pdf!

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VPS STATUS

Home | Secondary DNS | Automated backup

Your VPS

Status
In rescue

Name
vps-0866e26d.vps.ovh.ca

Boot
RESCUE

OS/Distribution
Debian 11 - deprecated - 2022-01-13

Zone
Region OpenStack: os-bhs2

Location
Beauharnois (BHS) - Canada

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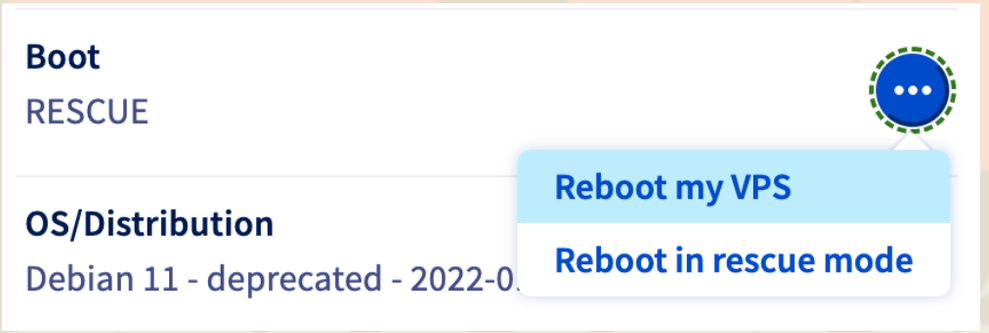
REBOOT INTO NORMAL MODE



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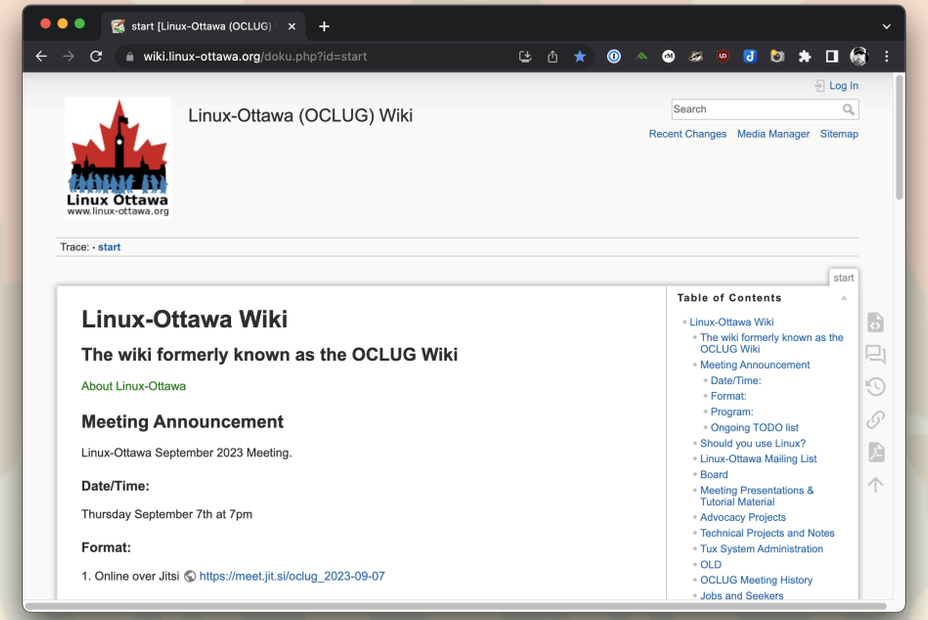
BACK ONLINE



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CREATE A LOCAL VM

This part is up to you. For my own use, I'll be using ProxMox and a blank VM that matches the characteristics of the VPS we cloned.

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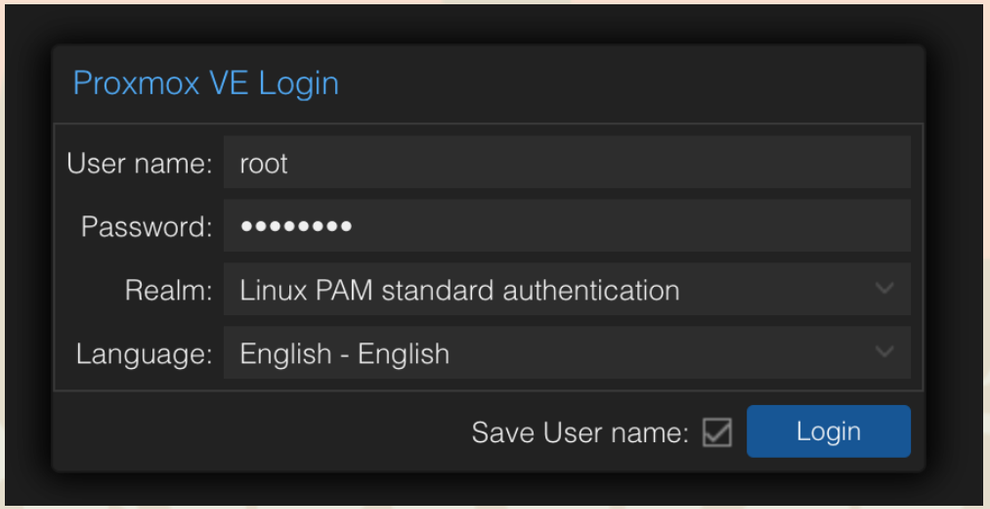
LOGIN PROXMOX



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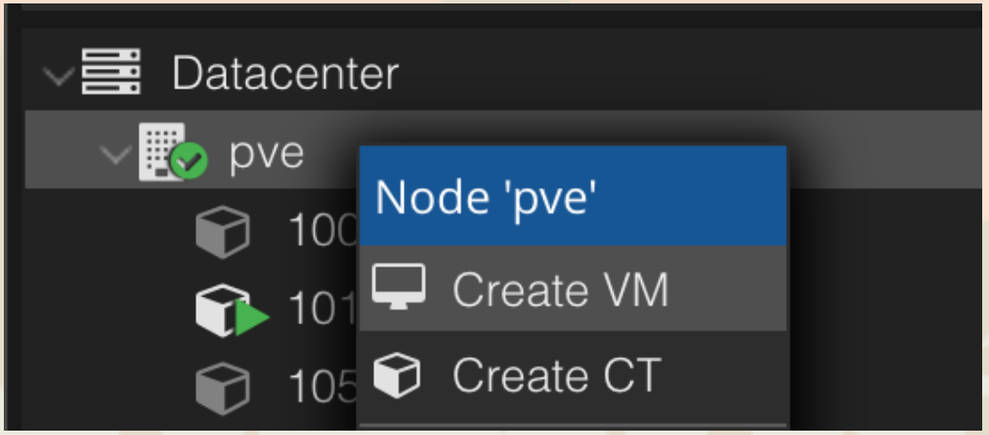
CREATING THE VM



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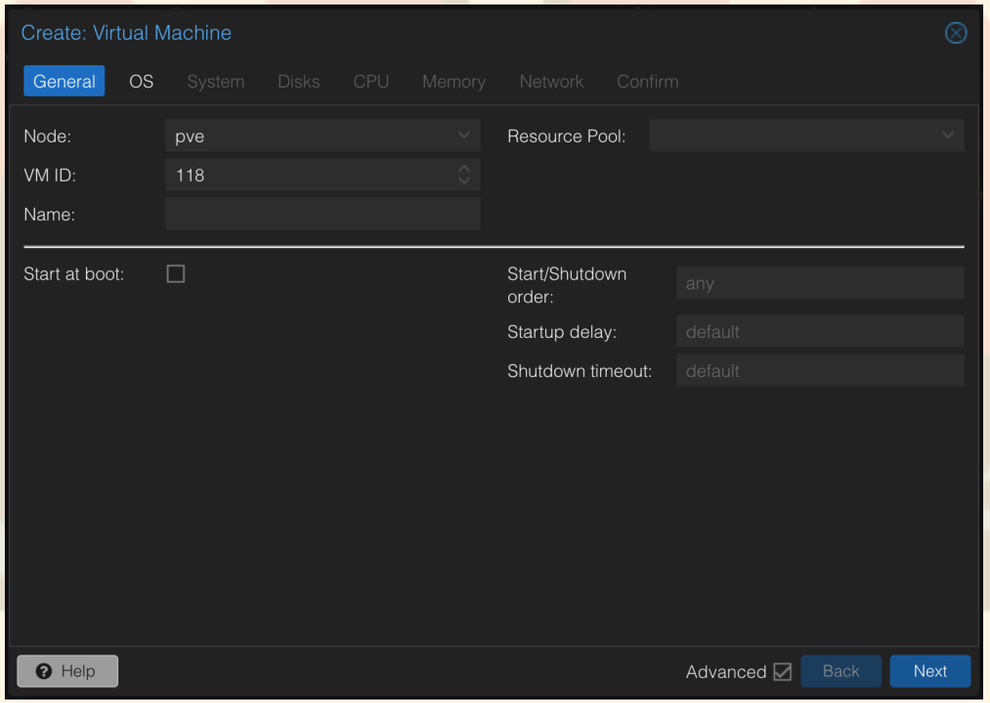
BUILDING THE VM



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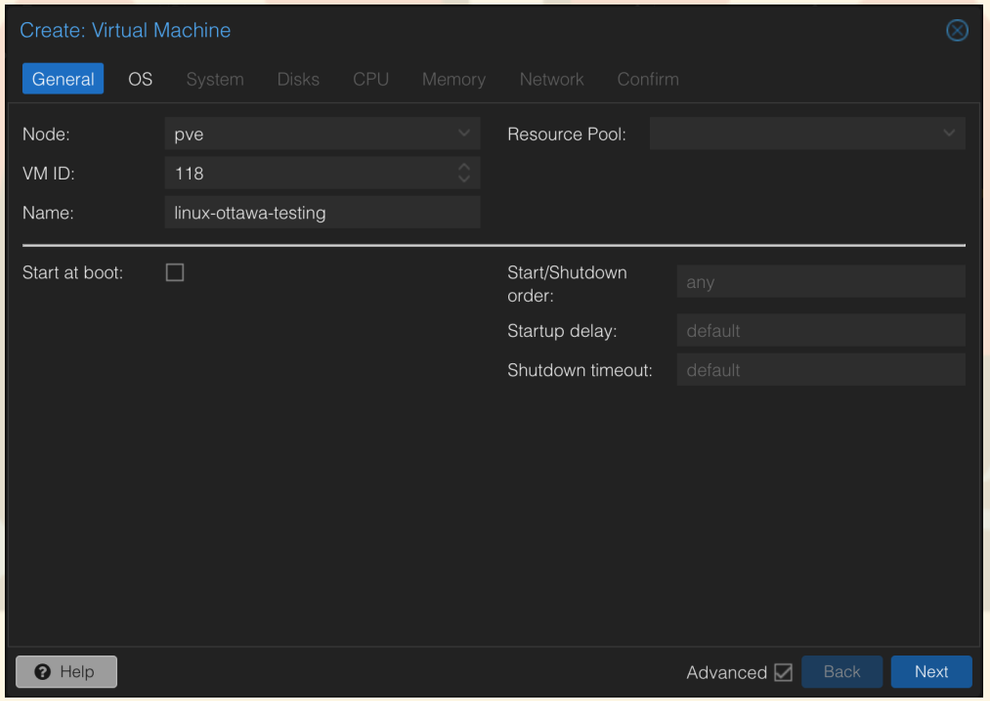
BUILDING THE VM



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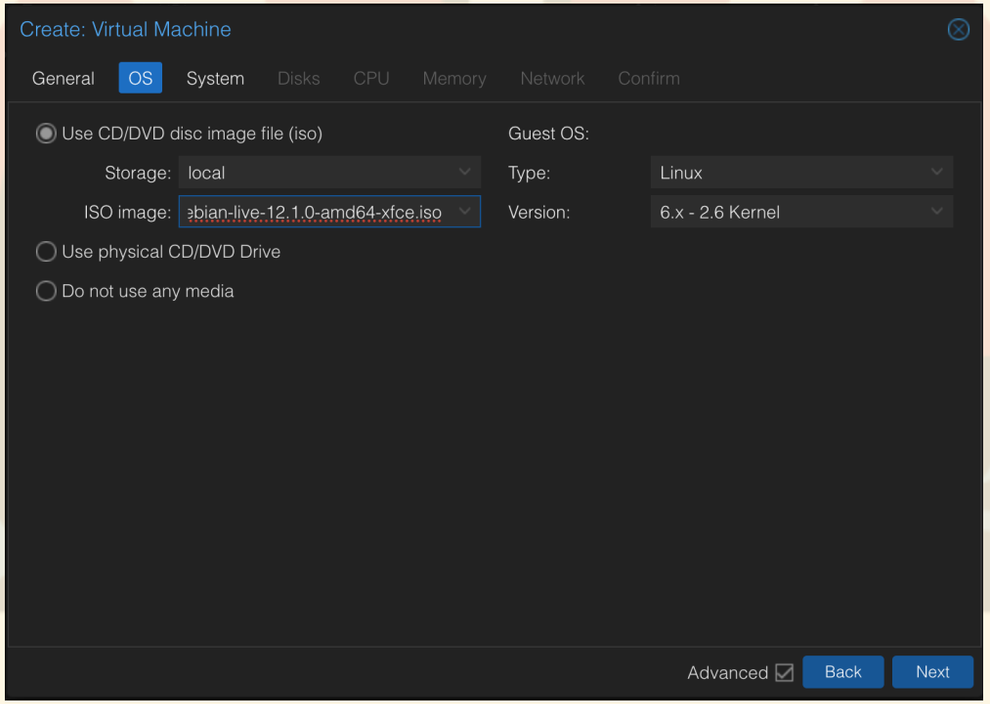
BUILDING THE VM



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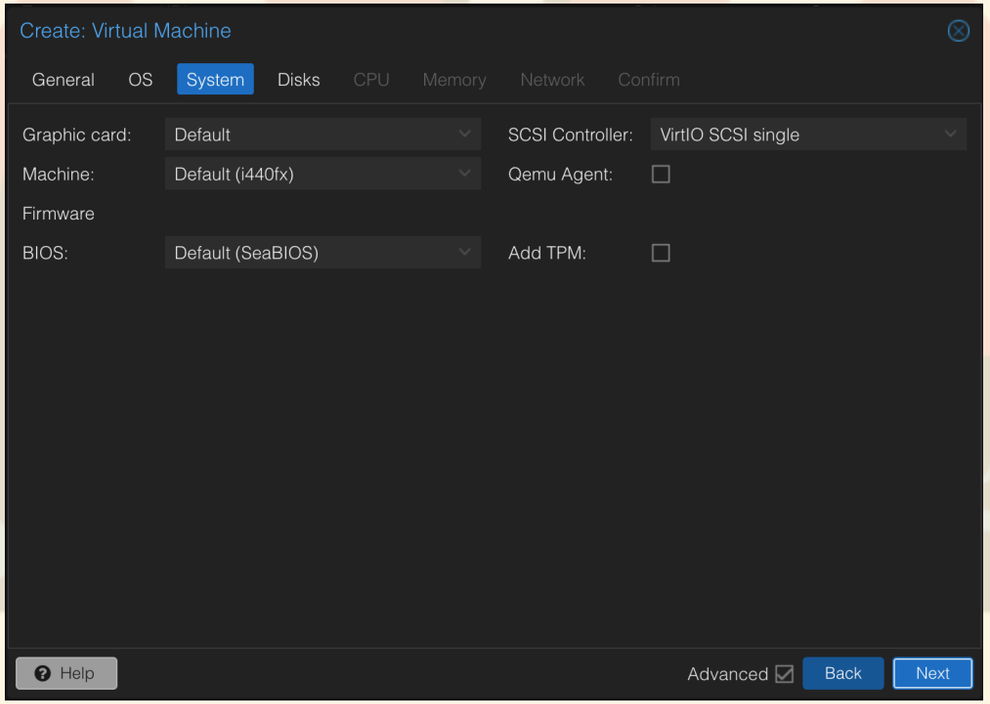
BUILDING THE VM



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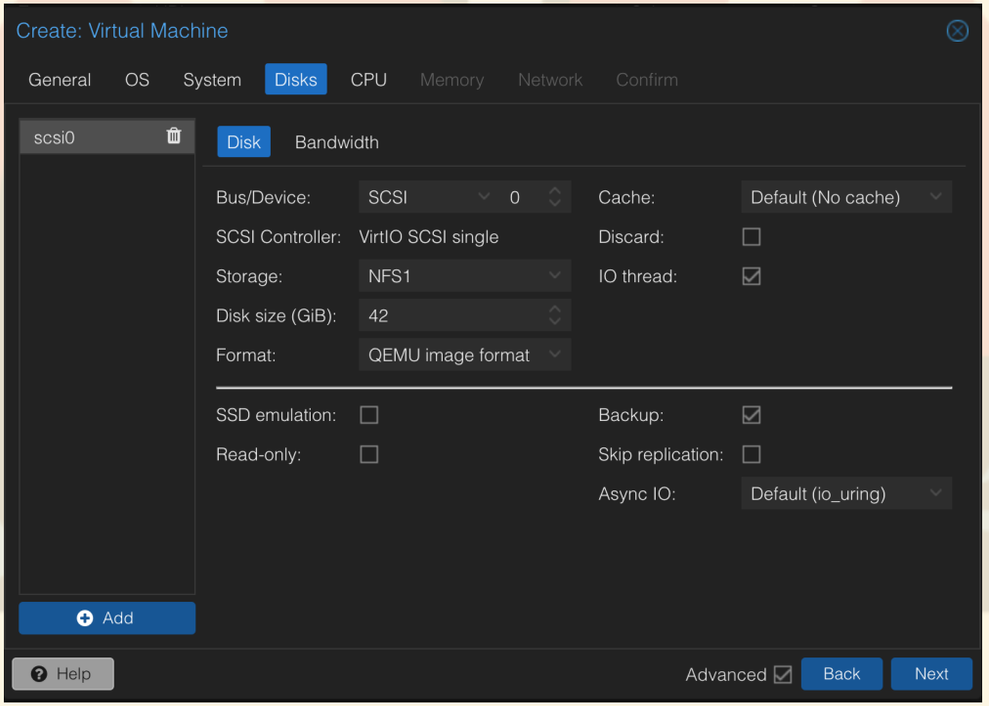
BUILDING THE VM



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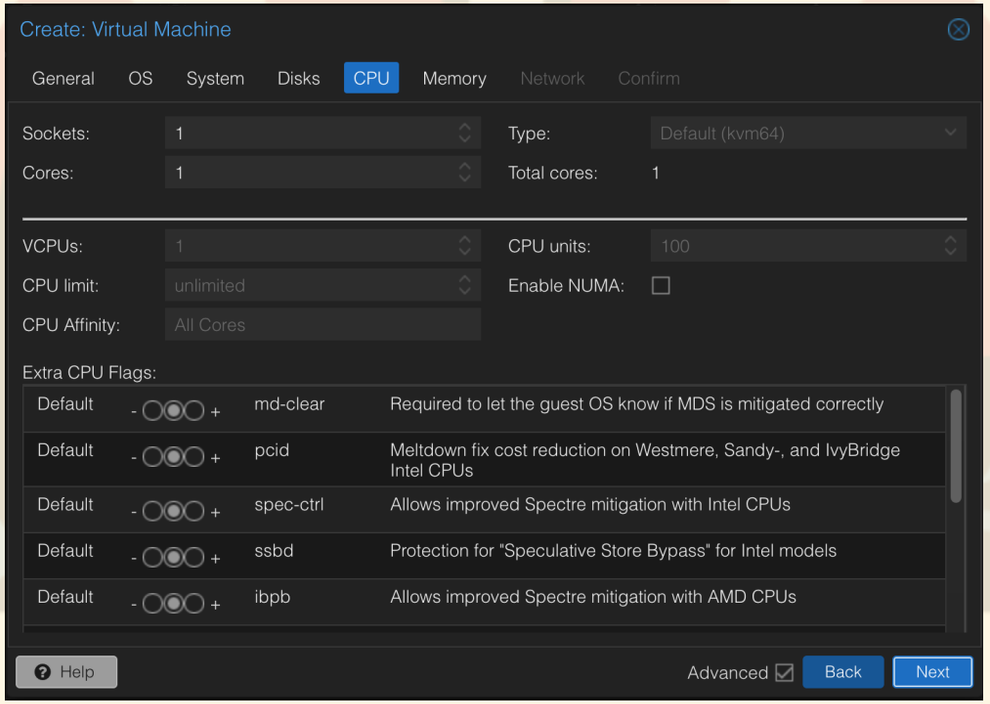
BUILDING THE VM



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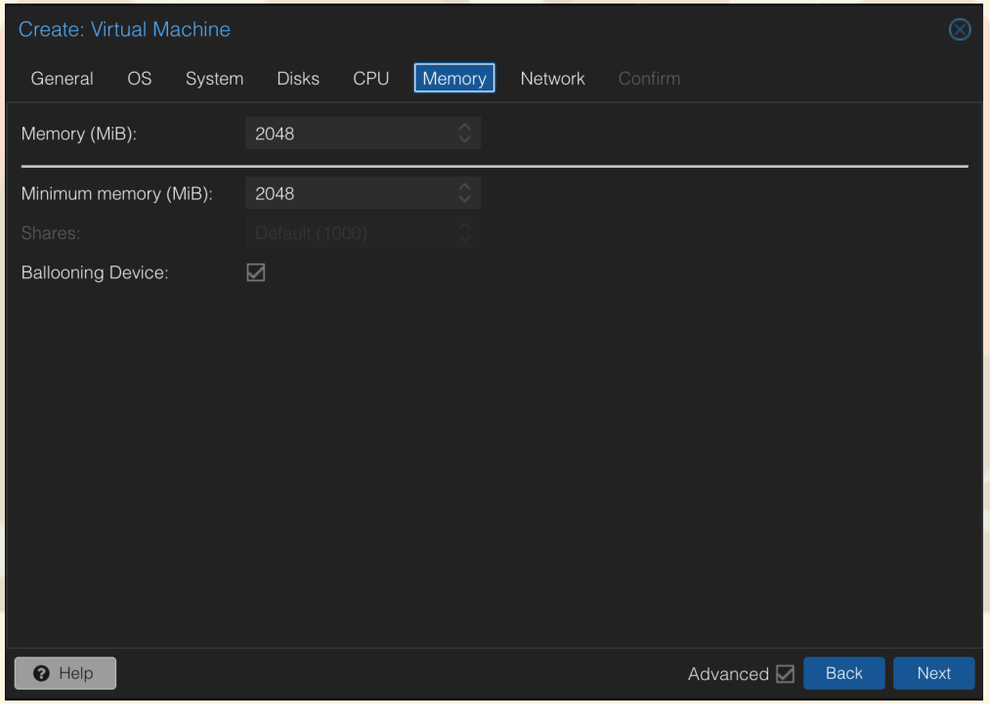
BUILDING THE VM



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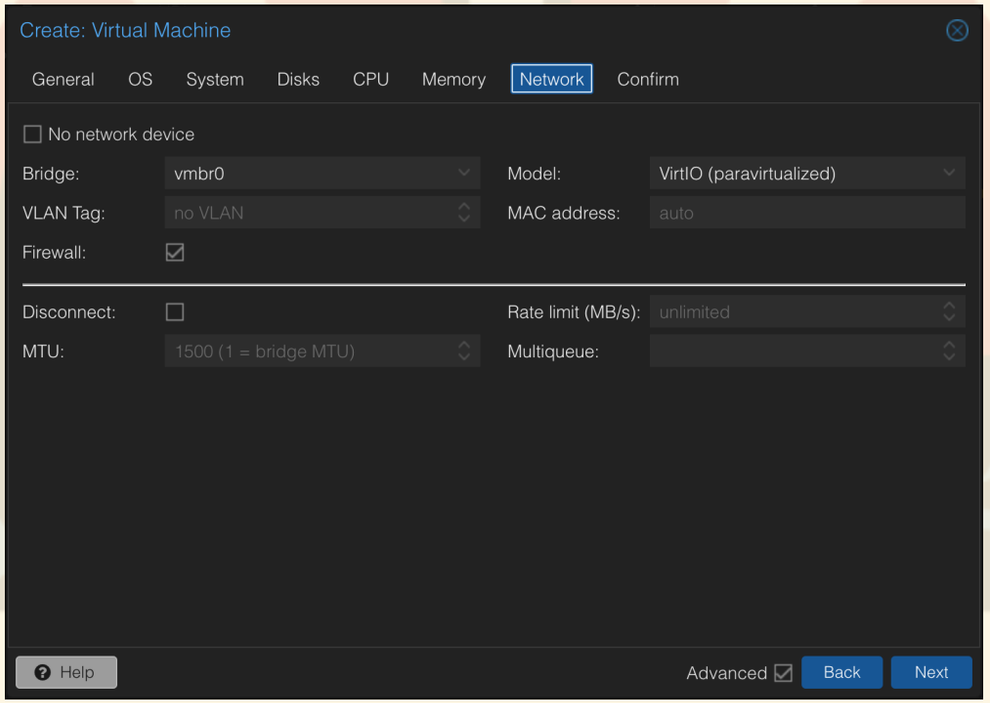
BUILDING THE VM



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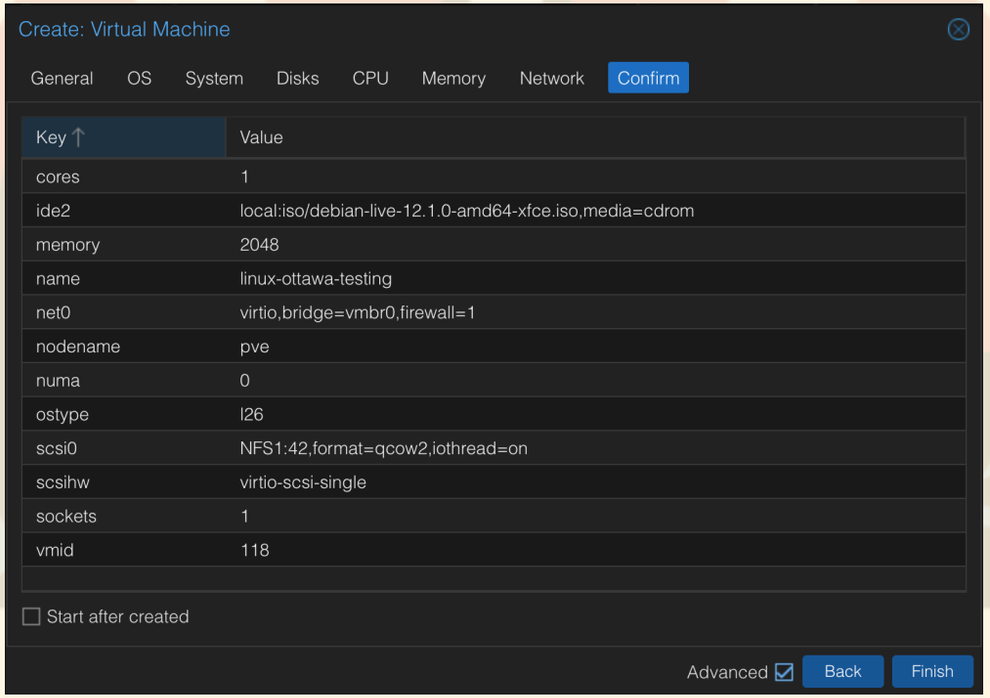
BUILDING THE VM



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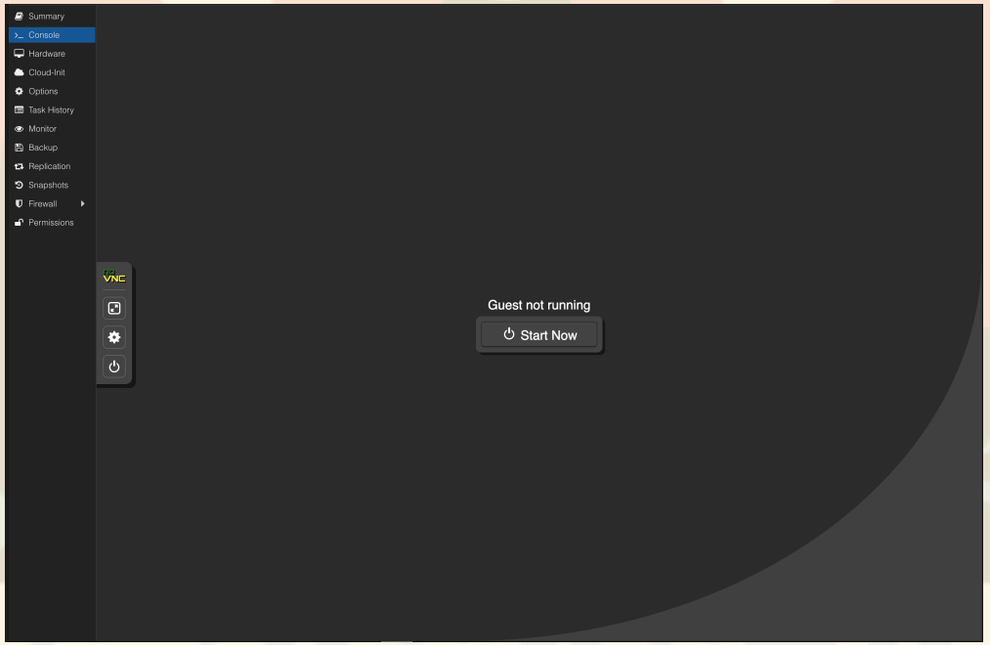
START THE CLONE



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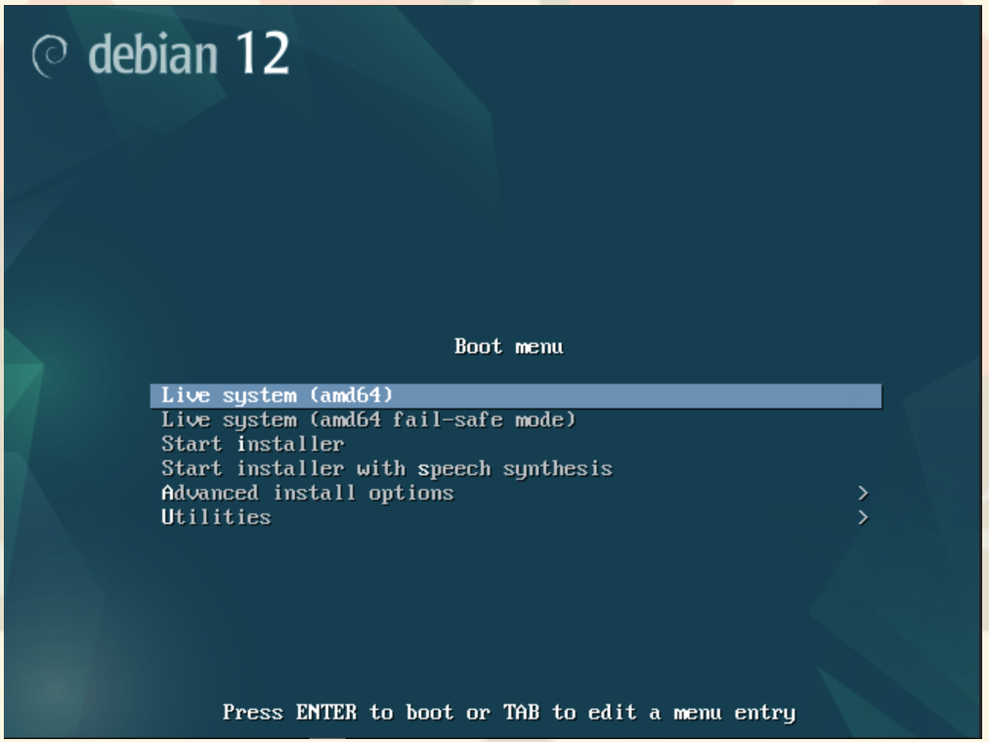
READY FOR START



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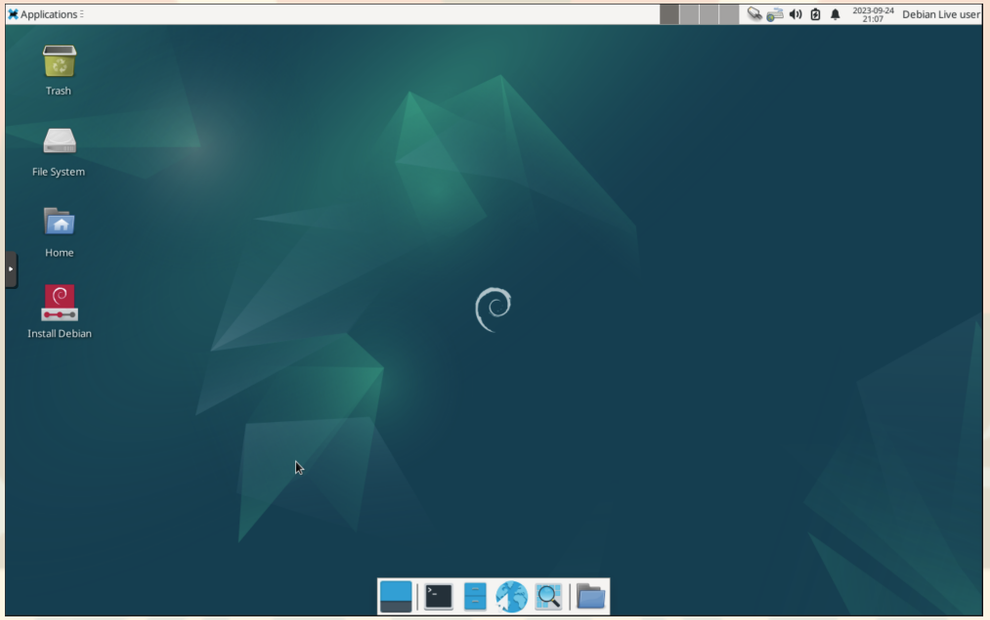
LIVE IMAGE RUNNING



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Q&D RESTORE

Well, really quick. We are doing the same process as the dump, but in reverse.

In this case:

- From the console edit the ssh config to allow root logins
- Set a root password
- Install gddrescue
- Install sshfs

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Q&D RESTORE

- From the system holding the image, ssh in with the port forwarding just like before.
- Create the directory to mount the remote directory
- Start sshfs with the parameters from before

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Q&D RESTORE

Now we restore with ddrescue, just a little different this time

ddrescue -f /dump/linuxott_20230924.img /dev/sda /dump/restore.log

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Q&D RESTORE

When completed:

- Unmount the sshfs file system
- Shutdown the VM
- Remove the livecd image
- Start the VM

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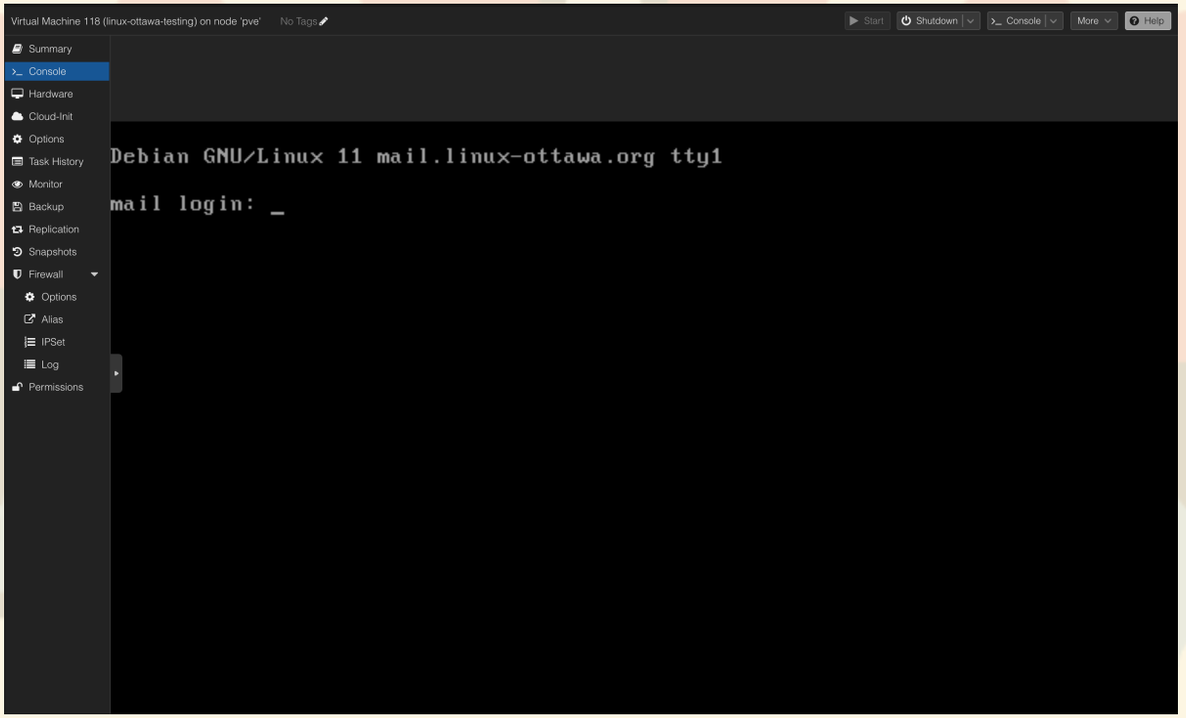
POST CLONE BOOT



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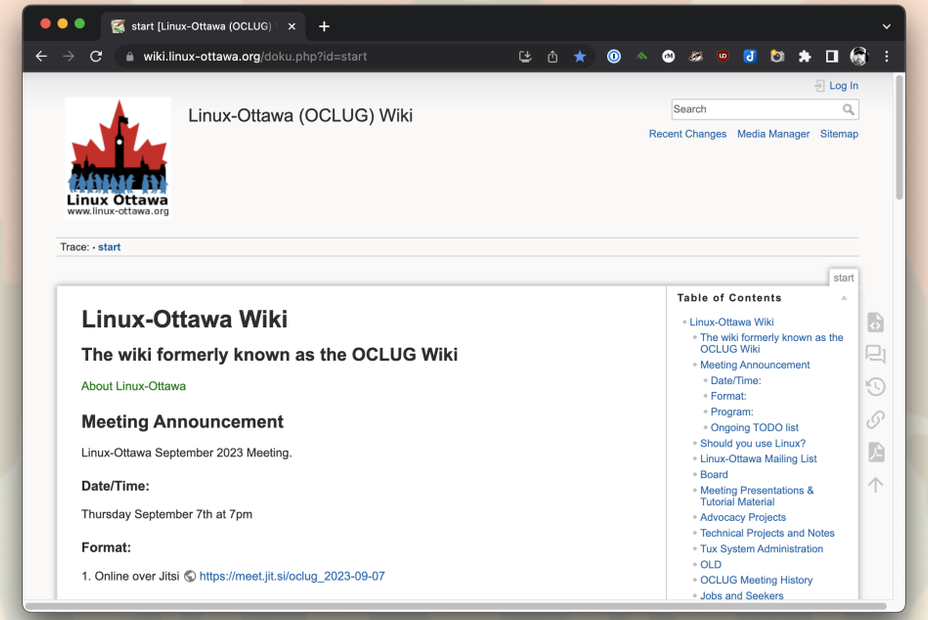
THE HOMEPAGE



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UTILITIES USED

- sshfs
- ddrescue
- proxmox
- debian 12 live image

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QUICK DEMO

I added the local vm ip address to my /etc/hosts file so that I can connect by name and it works the same.

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