

Serial Console



Use cases

- Access VMs
- Full system backups remotely
- Configure network configurations
- Control Grub/kernel options
- Diagnose problems on boot/shutdown
- Recording console messages (startup/shutdown)
- Use instead of a monitor/keyboard in your rack
- Embedded computers

Pros

- Do more remotely
- Life line when network fails
- See more diagnostic information
- Control more
- Save space in racks

Cons

- No BIOS control usually
- Extra cables
- Must have a serial port of some kind
- Not encrypted / no password

Cables

Single



Quad

<https://www.amazon.co.uk/NEWLink-Serial-Quad-Cable-Adaptor/dp/B003DA5TG4>



Installing on Debian



debian

Configure GRUB

1. Add to the /etc/default/grub

```
GRUB_CMDLINE_LINUX="console=ttyS0,115200 console=tty0"  
GRUB_TERMINAL="serial console"  
GRUB_SERIAL_COMMAND="serial --speed=115200 --unit=0 --word=8 --parity=no --stop=1"
```

NOTE: I had to put serial in front of console otherwise it wouldn't show anything.

2. Update the grub

```
sudo grub-mkconfig -o /boot/grub/grub.cfg
```

3. Enable through systemd

```
systemctl enable serial-getty@ttyS0.service
```

4. Reboot

Configure USB to Serial

1. Connect USB to Serial (DB9) connector + null modem cable
2. Enter your user into the dialout group to have access to /dev/ttyUSB0

```
sudo adduser <user> dialout  
su <user>
```

3. login again

FIX: Issue with using USB to Serial

Edit /etc/systemd/system/getty.target.wants/serial-getty@ttyUSB0.service Change

```
ExecStart=-/sbin/agetty --keep-baud 115200,38400,9600 %I $TERM
```

to

```
ExecStart=-/sbin/agetty 115200 %I $TERM
```

Connect via cable

The serial connection is on /dev/ttyUSB0

```
minicom -D /dev/ttyUSB0
```

OR screen (which is better as it displays colors)

```
screen /dev/ttyUSB0 115200
```

FreeBSD



Setup

Make sure COM1 is activated in the BIOS

Check that sio0 is coming up in the BIOS

```
dmesg | grep sio
```

Configure boot loader

Backup /boot/loader.conf and do the following

```
cp /boot/loader.conf /boot/loader.conf.bak
sudo echo 'console="vidconsole,comconsole"' >> /boot/loader.conf
```

Explained:

vidconsole	Allows local keyboard to work
comconsole	Allows serial computers keyboard to work

Note: In single user mode it will only select the first in the console list to interact with.

Edit /boot.config and add

-D

The '-D' allows output/input from both local and serial connections.

Setup TTY

Edit /etc/ttys and check this line

```
ttyd0  "/usr/libexec/getty std.9600"  vt100  on secure
```

Reboot

Reboot, this worked but the keyboard locally doesn't work only the serial computers keyboard.

Serial to Net

`ser2net` allows you to connect via telnet instead of using screen directly. This means you could setup scripts to connect to multiple servers on any machine on the network.

Installing ser2net

```
sudo apt-get install ser2net
```

Configure

Edit `/etc/ser2net.conf`, replace the lines down the bottom with

```
2000:telnet:600:/dev/ttyUSB0:115200 8DATABITS NONE 1STOPBIT banner
```

Connect

Test it from another computer on the network with

```
telnet 10.1.1.138 2000
```

Raspberry PI as serial server

One of my ideas

- Setup a Raspberry PI to monitor multiple servers in a Rack
- With 4 quad serial cables I could monitor 16 servers from one PI.
- Monitor more than servers, connect up UPS etc.

References

- Debian
 - [Debian 9: GRUB2 and Linux with serial console - Narrow Escape](#)
 - [Serial to USB systemd fix under Debian \(Paul Hutch post on 9/5/2018\)](#)
- FreeBSD
 - [Setting Up the Serial Console on FreeBSD](#)
 - <http://freebsdhowtos.com/84.html>
- <http://ser2net.sourceforge.net/>
- <https://mellowd.co.uk/ccie/?p=1314>

Questions

Email	map7777@gmail.com
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Twitter	@map7
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Github	github: map7
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