



Linux System Administration

Terminal and Consoles and Out of Band (OoB) Access

Contents

- Virtual terminals
- Mouse daemon buffer (if available)
- Copy/paste between terminals
- OOB and serial console access

(Virtual) Consoles

Less relevant with the explosion of virtual machines...

We tend to connect via SSH to Linux servers.

Still useful for those running Linux on the Desktop.

(Virtual) Consoles

- Usually you have 6:
 - `tty[1-6]`
- `tty7` takes you back to X
- Access them using `ALT-CTRL-F [1-7]`
- Virtual terminals are *very useful*. If you run without a GUI, then they are your friend.
- Some Unix/Linux versions have optional mouse daemons in text mode, such as FreeBSD.

(Virtual) Consoles

Depending on Unix/Linux version these are defined in:

- `/etc/default/console-setup` (Upstart)
- `/etc/init/tty[1-6].conf` (Upstart)
- `/etc/inittab`
- `/etc/ttys`
- `/boot/grub/menu.lst` (*OOB* trick)
- `/etc/init.d/console-setup`
- `/etc/init.d/console-screen.sh`

Copy/Paste Between Consoles

If you boot without a GUI (no gnome, KDE, etc.) *and* you have a mouse-daemon, then you can:

- Highlight text in `tty1`
- Press `ALT-CTRL-2` to access `tty2`
- Place mouse in another file
- Press middle-mouse button to paste text from `tty1`

OOB and Serial Console Access

OOB or “Out Of Band” access:

- *Critical* for remote management of servers.
- How do you access a machine's BIOS remotely?
- How do you access RAID BIOS remotely?

What happens if your server hangs before booting?...

OOB and Serial Console Access

One Option (“Old School”)

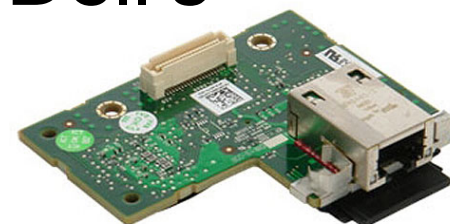
In Linux you can tell the boot loader to pass options to the kernel. The kernel can send output to `ttys0`.

Why is this useful?...

OOB and Serial Console Access

Another Option (“New School”)

You can either purchase an OoB card or use on-board solutions such as Dell’s “iDRAC” solutions



DRAC = Dell Remote Access Controller
IBM, HP, SUN, etc. all have solutions

Allow for even more advanced solutions than serial to Ethernet tricks.

OOB and Serial Console Access

Typical access is via Web Browser using custom Java or ActiveX solution (can be painful).

We will now see what this looks like.

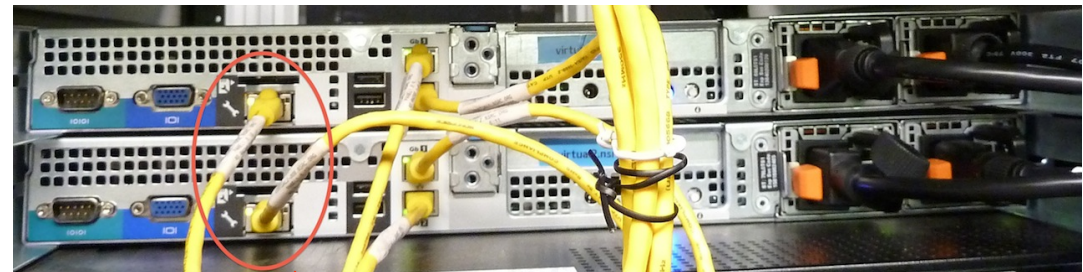
Later in the week we'll see OoB tricks with Virtual Linux instances, SSH and KVM.

OoB / Sample console solution



virtual1.nsrc.org ➔ 128.223.157.32

virtual2.nsrc.org ➔ 128.223.157.34



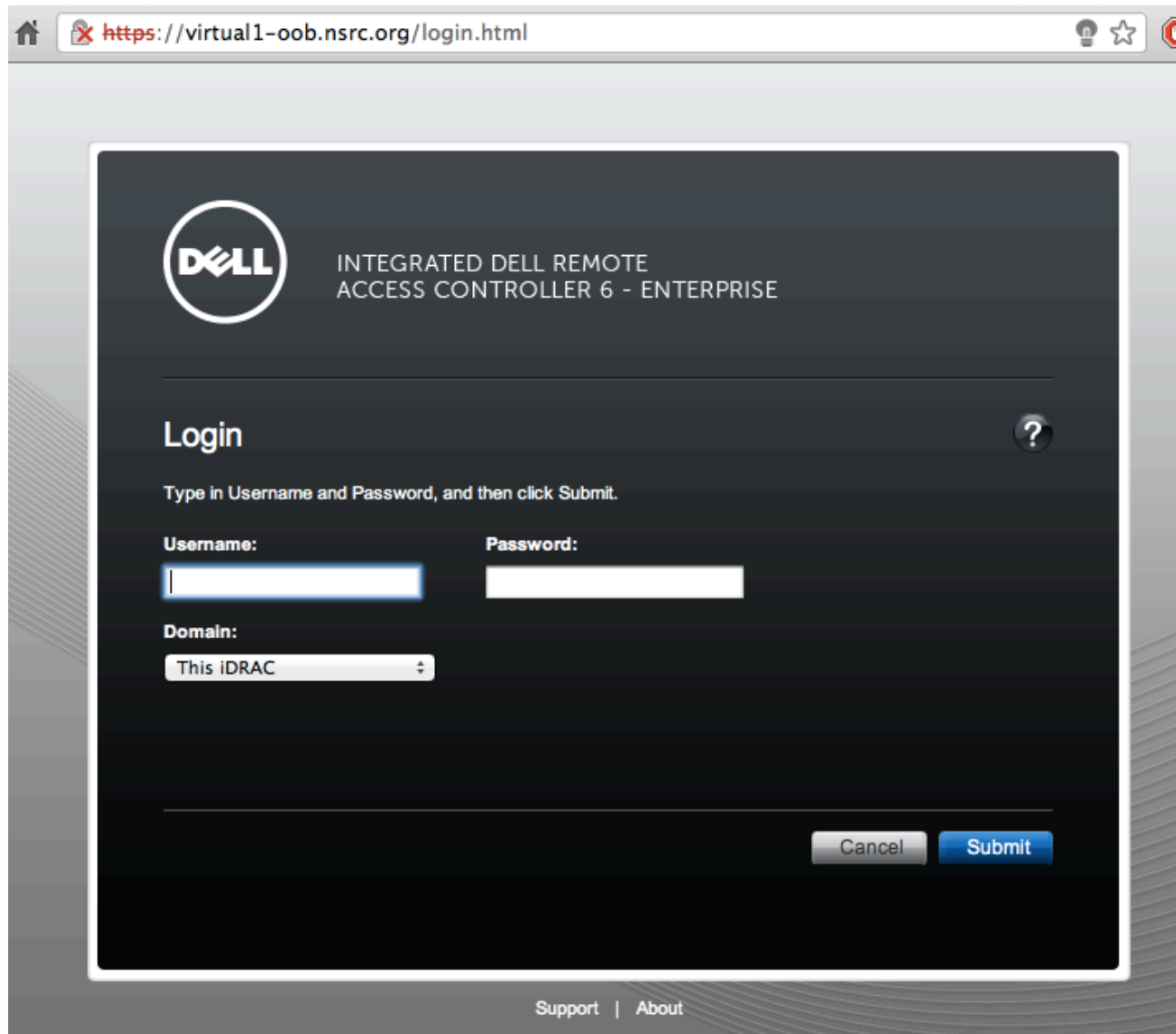
Back of servers. iDrac interfaces.

virtual1-oob.nsrc.org ➔ 128.223.157.33

virtual2-oob.nsrc.org ➔ 128.223.157.35

Go to [http://virtual1-oob.nsrc.org/...](http://virtual1-oob.nsrc.org/)

The OoB interface: web login



The screenshot shows a web browser window with the address bar displaying `https://virtual1-oob.nsrc.org/login.html`. The page features the Dell logo and the text "INTEGRATED DELL REMOTE ACCESS CONTROLLER 6 - ENTERPRISE". Below this, the "Login" section includes a help icon (question mark) and instructions: "Type in Username and Password, and then click Submit." The form contains three input fields: "Username:" (a text box), "Password:" (a text box), and "Domain:" (a dropdown menu currently showing "This iDRAC"). At the bottom right of the form are "Cancel" and "Submit" buttons. The footer of the page includes links for "Support" and "About".

DELL INTEGRATED DELL REMOTE ACCESS CONTROLLER 6 - ENTERPRISE

Login

Type in Username and Password, and then click Submit.

Username:

Password:

Domain:

[Support](#) | [About](#)

The OoB interface: web form

DELL INTEGRATED DELL REMOTE ACCESS CONTROLLER 6 - ENTERPRISE [Support](#) | [About](#) | [Logout](#)

System
PowerEdge R415
root, Admin

System
iDRAC Settings
Batteries
Fans
Intrusion
Power Supplies
Removable Flash Media
Temperatures
Voltages
Power Monitoring
LCD

Properties | **Setup** | **Power** | **Logs** | **Alerts** | **Console/Media** | **vFlash** | **Remote File Share**

System Summary | System Details | System Inventory

System Summary   

Server Health

Status	Component
✓	Batteries
✓	Fans
✓	Intrusion
✓	Power Supplies
✓	Removable Flash Media
✓	Temperatures
✓	Voltages

Virtual Console Preview
Options : [Settings](#)

[Refresh](#) [Launch](#)

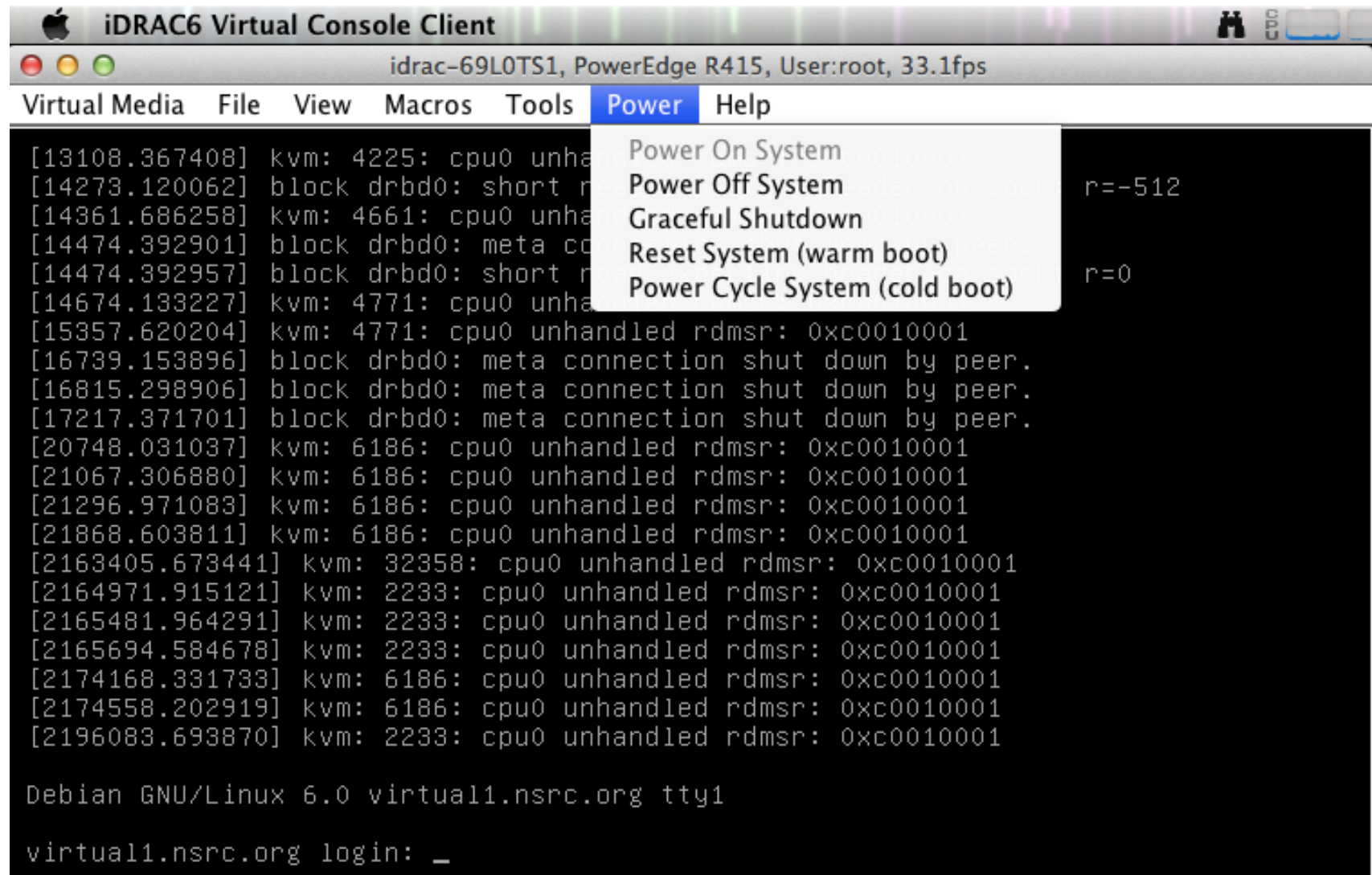
Server Information

Power State	ON
System Model	PowerEdge R415
System Revision	II
System Host Name	virtual1-0ob
Operating System	
Operating System Version	
Service Tag	69L0TS1
Express Service Code	13640200129

Quick Launch Tasks

Power ON / OFF
Power Cycle System (cold boot)
Launch Virtual Console
View System Event Log
View iDRAC Log
Update Firmware
Reset iDRAC

The OoB interface: java console



Questions

?

OOB and Serial Console Access

- Use serial to ethernet converter.
- With an OOB solution connect to separate IP to view your machine's console.
- During boot you can see your machine's console using terminal software connecting to a separate IP (*user* and *password* almost always required as well).
- Set Kernel load options (for instance) in `/boot/grub/menu.lst`

OOB and Serial Console Access

Sample `/boot/grub/menu.lst` file entry:

```
title          Ubuntu 8.04.2, kernel 2.6.24-23-server
root           (hd0,0)
kernel         /vmlinuz-2.6.24-23-server root=UUID=96e73009-3bf7-421e
               -a4bc-6de1d21eaa97 ro console=ttyS0,38400n8 console=tty0
               quiet splash
initrd         /initrd.img-2.6.24-23-server
quiet
```

What does this mean?

Key option for OOB serial console access is:

```
console=ttyS0,38400n8 console=tty0
```