Introducing Stallion CS-2 appliance

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Agenda

- The idea behind CS-2
- What is CS-2 and what is it capable of
- CS-2 hardware tech specs
- Software insights
- Deployment scenarios
- Roadmap
- Live demo
- Q&A

The idea

- Remote location SLA is somewhat important

- How to fulfill SLA when multiple locations need repair or replacement at the same time?

- What are the costs and reasonable time of fixing faulty equipment (firewall, VPN device)?

- In most cases, all you need is TFTP server, console connection and power on/off switch

The idea

What would you do in this case?

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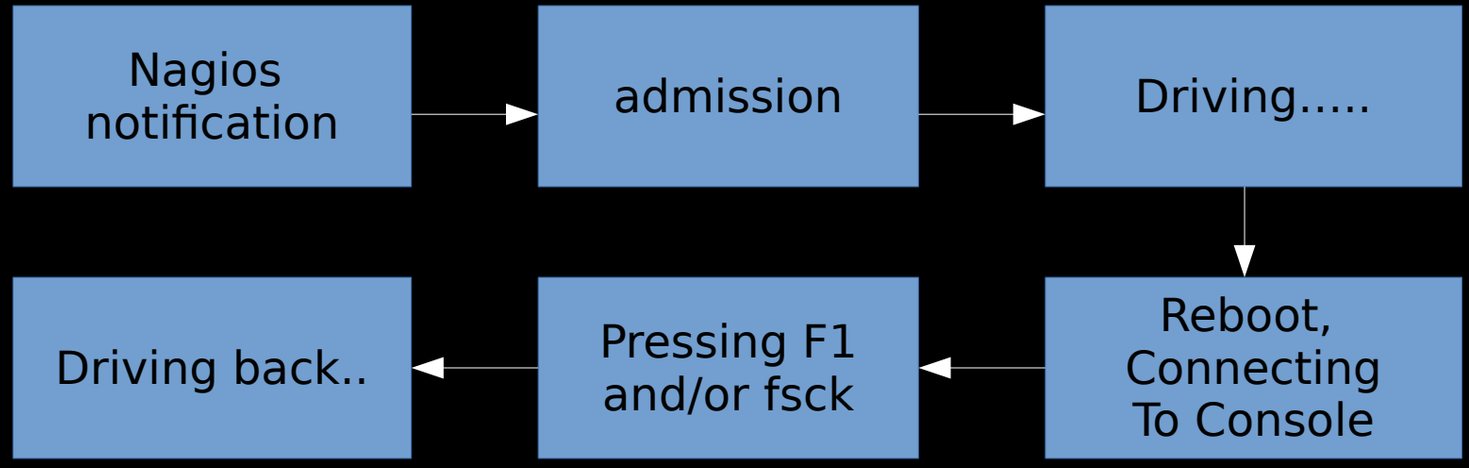
The idea

How fulfilling SLA usually looks like:



The idea

Resolution time is crucial – are there any ways to improve it?

The idea

- Sometimes, the internet and/or power goes offline
- This creates uncertainty for the monitoring system – is device really broken or just temporarily offline?
- How can we know for sure, what happened at the remote location?
- We need to eliminate the uncertainty as well

The idea

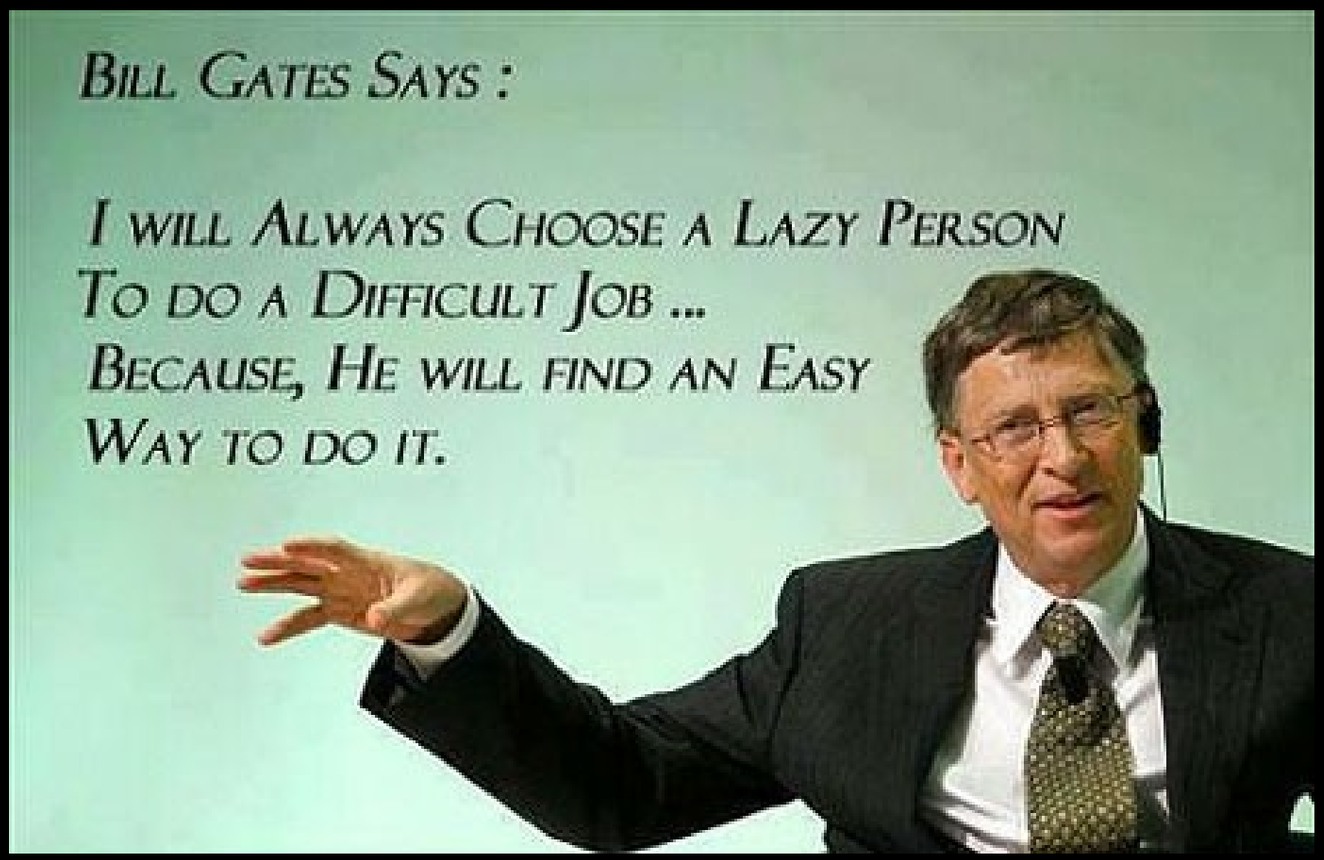
What if there WAS configuration error while updating devices?

Do you have last rescue configuration in place?

Are you sure device will revert to it and you will see it online again? Typical scenario:

The idea

- The main idea is simple: I am lazy
- Some wisdom about laziness:



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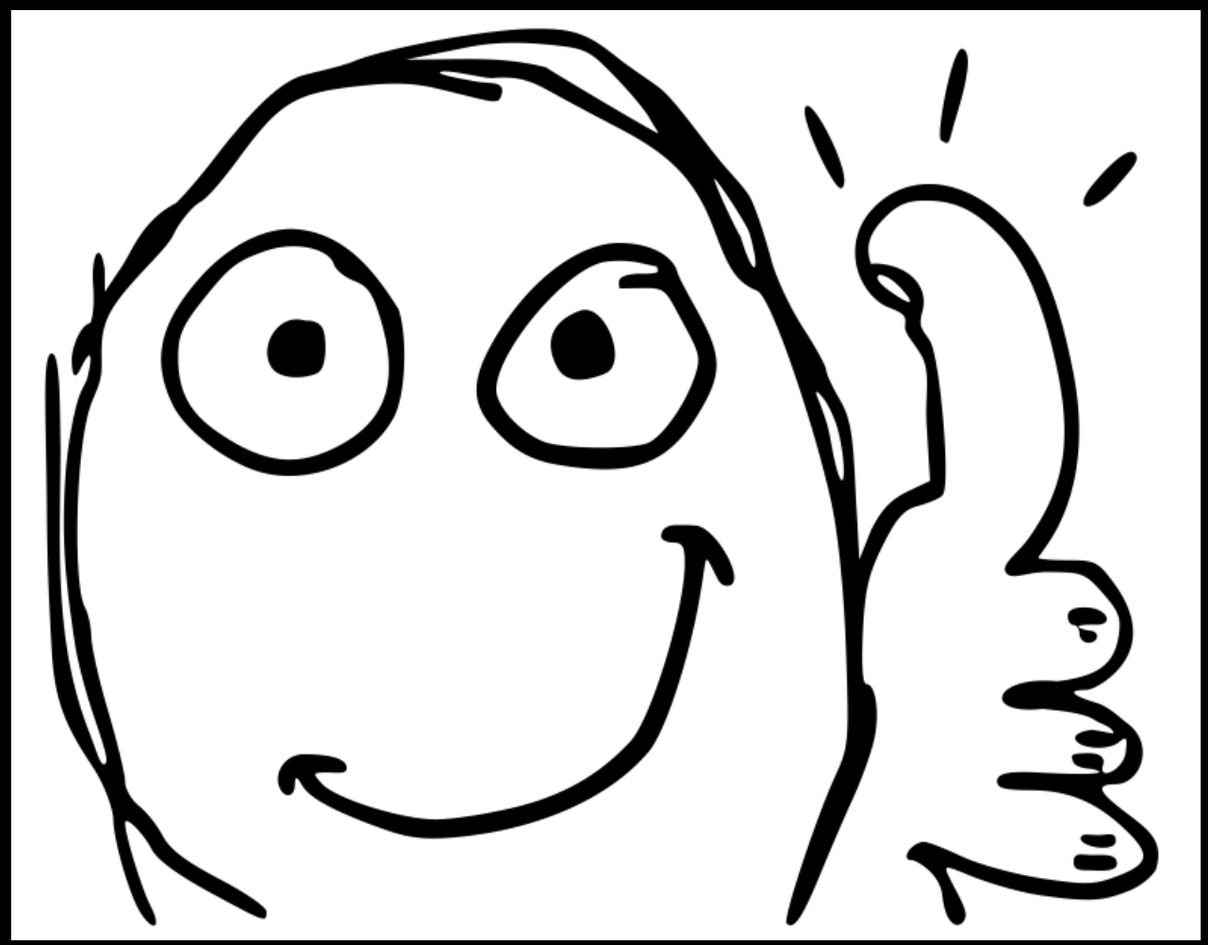
The idea

- There is an easy way to do it!



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cs-2 capabilities

- Console server for 2 devices
- Remote controlled electrical relay with 2 outputs
- 3G/4G router, secondary ISP use in case of link failure
- Remote device monitor, capable of doing sophisticated health checks and eliminating monitoring uncertainty
- Many more as it is full-blown Debian Linux
- Your hand extension to the most distant deployments

cs-2 hardware tech specs

CS-2 consists of 2 electronic parts:

- Raspberry Pi model 2
- Custom made electronic appliance

Inputs and outputs:

- 1 x 100 Mbps RJ-45
- 4 x USB 2.0
- 2 x RS232 8P8C connectors
- 4 x status LEDs
- 230V power in (15A)
- 2 x 230V power out (each 10A)

cs-2 hardware tech specs

CS-2 has official CE certification (EVS-EN 55022, EN-61000-4)

Hardware components:

- Low-current equipment is isolated from 230V schematic

- Power LED is controlled directly by board itself

- All other LEDs/components are controlled using GPIO

- Board is equipped with supercapacitor, thus is capable of performing on it's own for ~20-30 seconds after power is cut

- 230V schematic remembers the last state and is capable of running even when RPi is offline

- Varistor is placed in front of AC/DC PCB unit for extra protection

cs-2 hardware tech specs

Custom enclosure:

- Robust, made from milled aluminium sheets

- Special paint makes it galvanically isolated

- Is suitable for single device, also can house 2 devices in standard 19'' rack mount, has special attachments for that

cs-2 hardware tech specs

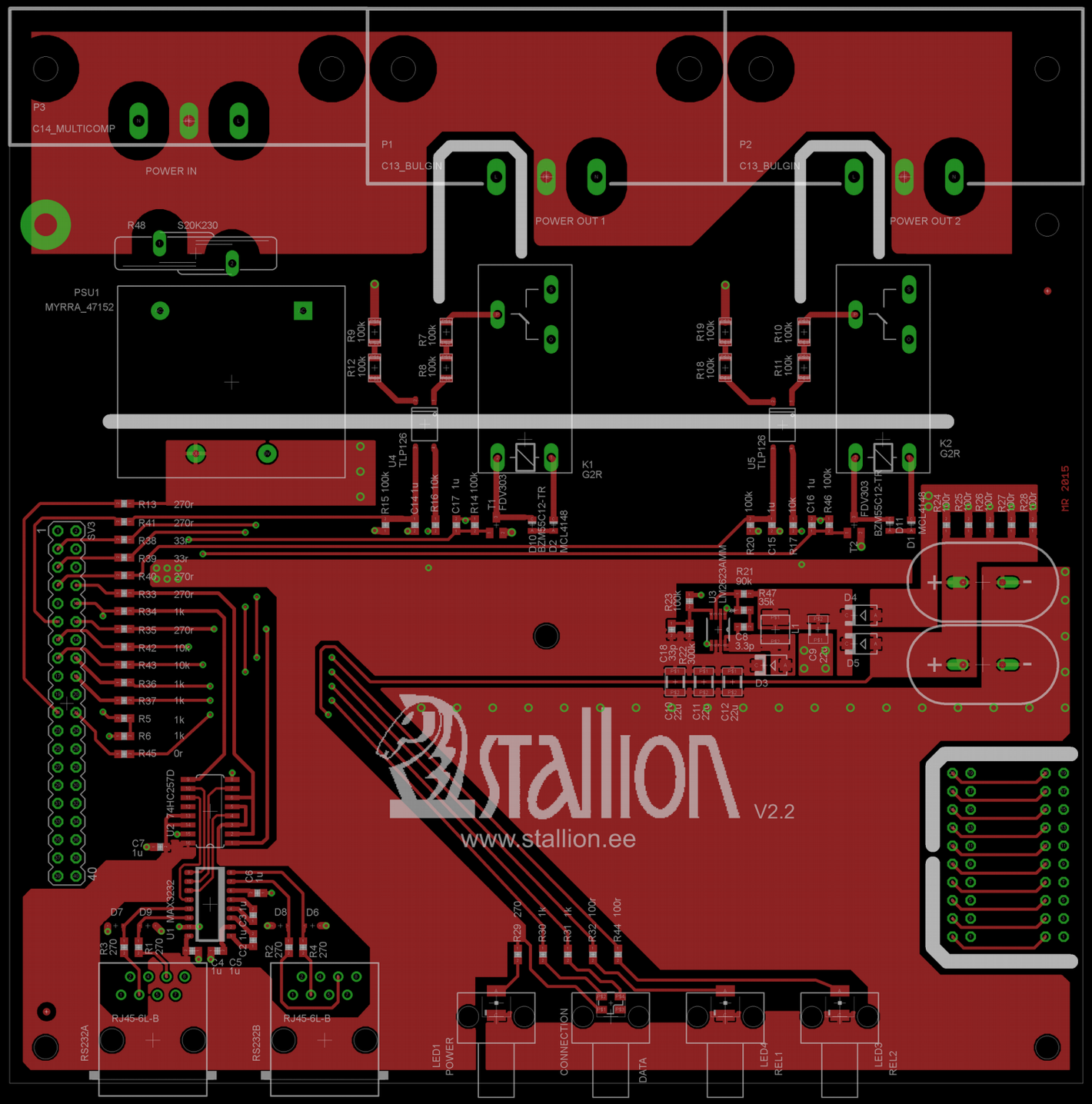
- Environmental compliant (RoHS)

- Produced and assembled in Estonia (full production cycle)

- Current hardware version is v2.2 meaning that there were 4 previous prototypes which went through comprehensive testing routine

- 10A output makes it possible to power up even 48 POE+ ports simultaneously

CS-2 board v2.2



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Software insights

- Designed to be fault-tolerant
- Debian minimal installation
- Executable code written in Python and daemonized
- Supervisor daemon and inittab as watchdogs
- SD memory write cycle problem is solved
- Sophisticated logic ensuring device is always on and reachable

Software insights

Main components:

- Electrical relay check daemon (Python, 10 checks per second)

- Data and LED status daemon (Python)

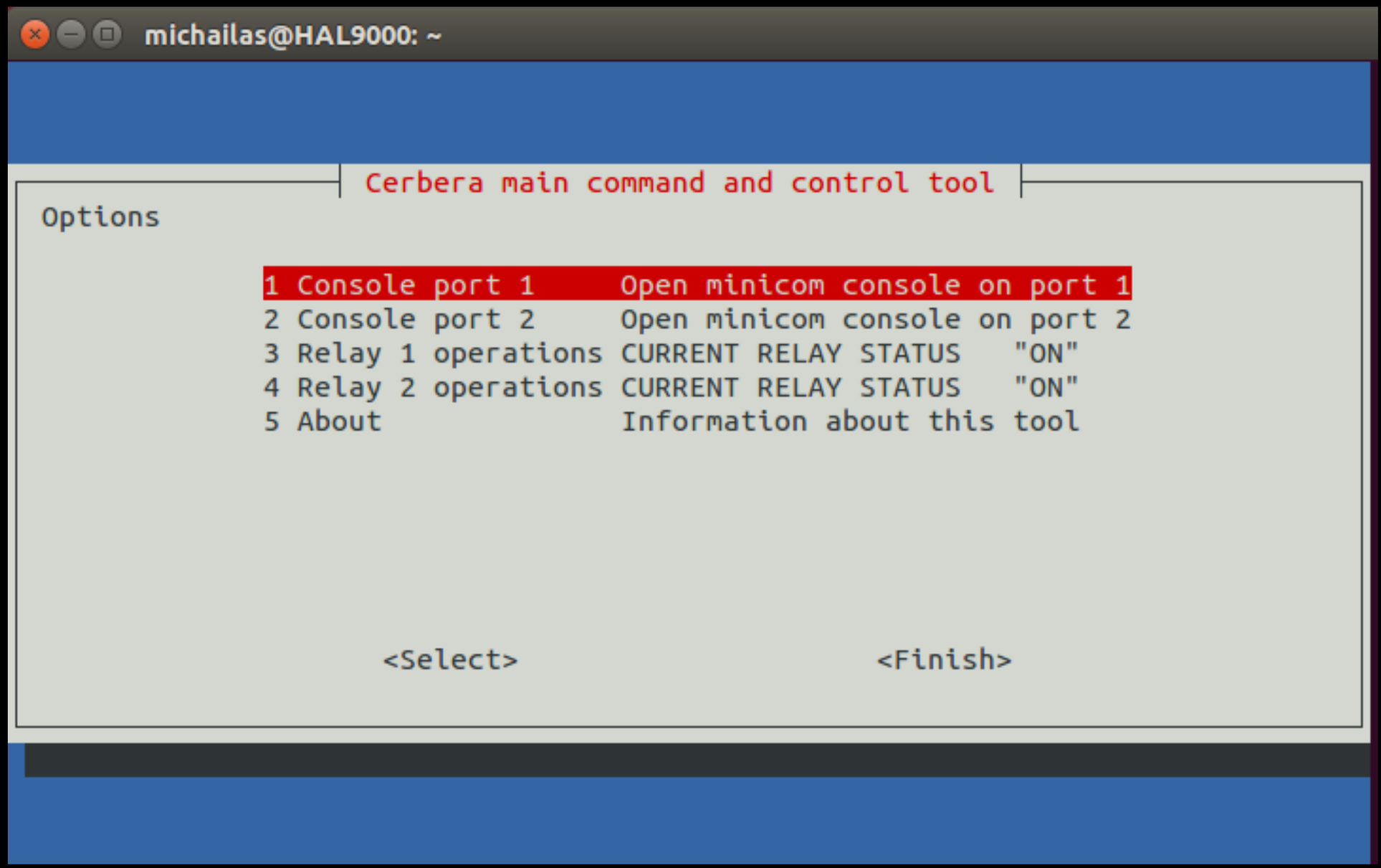
- Network connection state daemon (Python)

- CLI interface (written in bash)

- Web interface (Python flask)

- Configuration stored in json files

Software insights



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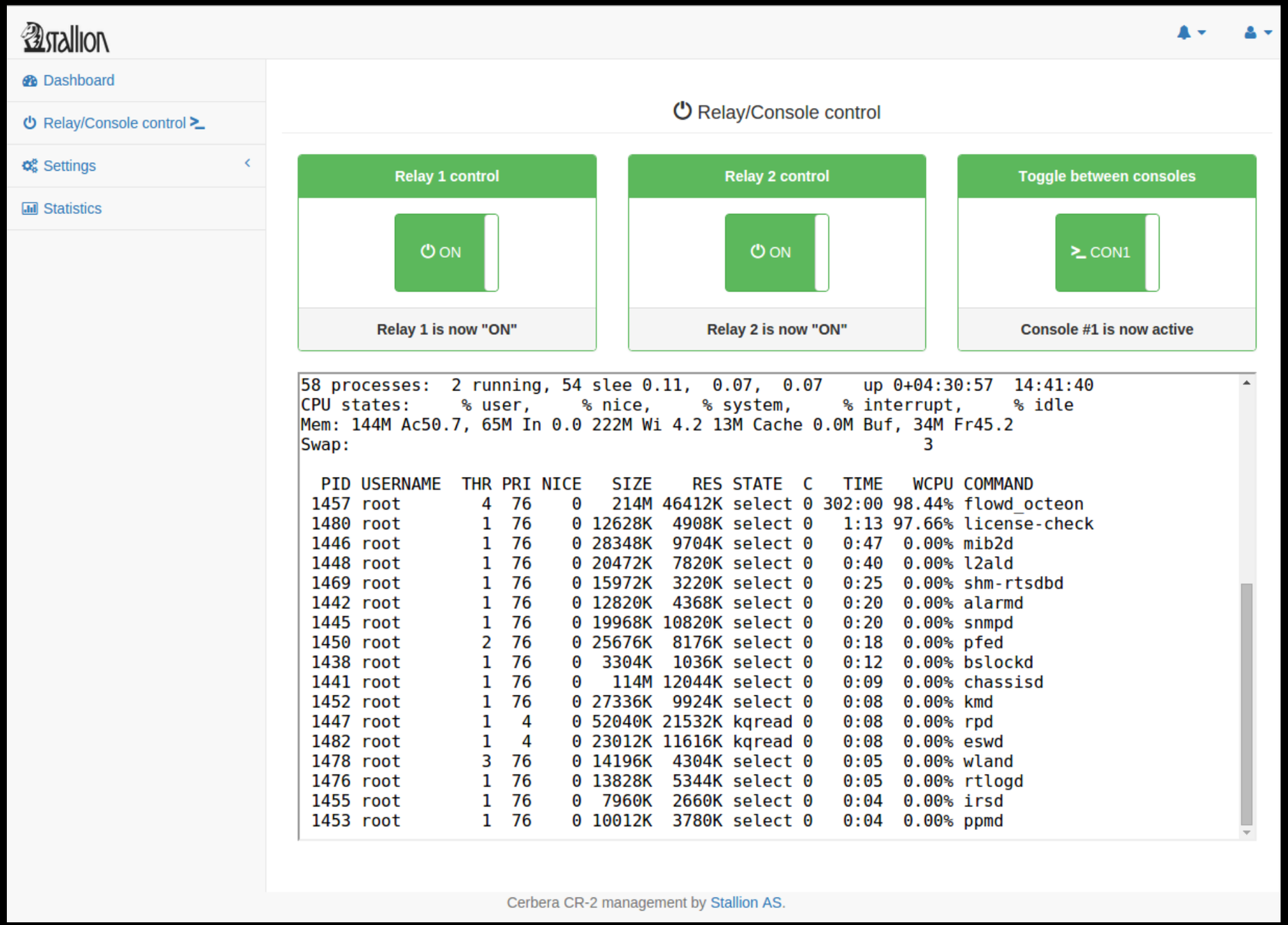
Software insights



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Software insights

Case 1: power loss

→ Detection in under 1 second

→ Sending SNMP trap out 3G/4G interface

→ Turning off 3G/4G modem

→ Closing all daemons, syncing logs to SD card

→ Rebooting

Software insights

Case 2: ISP blackout

→ No detection is needed

→ Configured by default as a router, performs source nat for outbound traffic and destination NAT to a dedicated LAN address

→ Is capable of providing up to 50 Mpbs link over 3G/4G modem

Deployment scenarios

- Intended to be used in remote locations

- Thanks to rugged design can be used in rough and dusty environments (-25 .. +80C)

- Can also be used in datacenters as OOB management/console server

- ATM machines and other specific locations

Q & A

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THANK YOU!

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