



# Tuna

## Kernel Tuning UI

Presented by  
Chris Lockfort  
Summer Intern

# About Me

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- 5th year Student at Rochester Institute of Technology studying Applied Networking and Computer Science
- Computer Science House Exec-Board
- RedHat tele-intern from FOSSBox
  - (An Applied Research Lab at RIT Focusing on Free and Open Source Software & Open Web Technologies, <http://foss.rit.edu>)

# Overview

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- Existing Functionality
- Tuned Project
- Improvements
- Demo
- Future Directions

# Existing Functionality



- System process monitor
- System IRQ/wakeups monitor
- Able to edit process/IRQ scheduling options (presumably for performance benefits)

# Tuned Project

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- Able to apply pre-set groups of kernel parameters that RedHat has created for specific, common customer application use-cases to increase performance

# Tuned Issues

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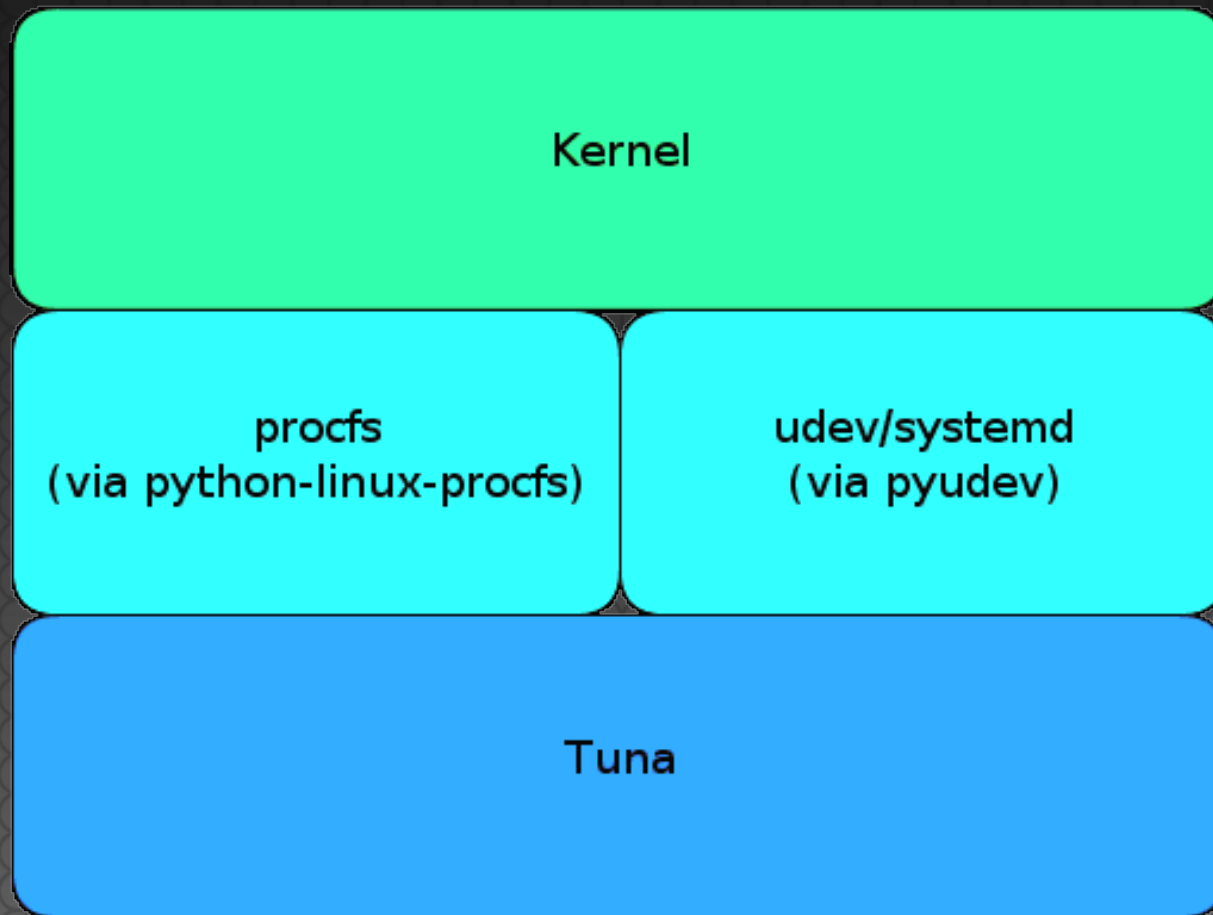
- Not easily configurable
- Applying large groups of settings does not let customer know *which* settings benefit them
  - Makes creating their own profiles even more difficult

# Improvements

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- Bugfixes in original application
- Tuna can modify kernel parameters
- Tuna can import/export tuned profiles
  - Users can make temporary changes to certain parameters and immediately see the effect on system load with tuna
- Has the concept of storage devices / storage device kernel parameters
- More sysadmin / non-kernel-hacker friendly

# Logic Stack







# Demo

Monitoring

Tuning Profiles

Storage Tuning

## Kernel Monitoring

Filter	CPU	Usage	IRQ	Affinity	Events	Users
<input checked="" type="checkbox"/>	0	33	0		<b>4014165</b>	timer
<input checked="" type="checkbox"/>	1	4	1		84570	i8042
			8		1	rtc0

PID	Policy	Priority	Affinity	VolCtxtSwitch	NonVolCtxtSwitch	Command Line
1	OTHER	0	0,1	4237	675	/sbin/init
2	OTHER	0	0,1	598	1	kthreadd
3	OTHER	0	0	30588	6	ksoftirqd/0
6	FIFO	99	0	4219	0	migration/0
7	FIFO	99	0	<b>14036</b>	0	watchdog/0
12	OTHER	0	0,1	2	0	cpuset
13	OTHER	0	0,1	2	0	khelper
14	OTHER	0	0,1	187	0	kdevtmpfs
15	OTHER	0	0,1	2	0	netns
16	OTHER	0	0,1	9358	0	sync_supers
17	OTHER	0	0,1	196	0	bdi-default
18	OTHER	0	0,1	2	0	kintegrityd
19	OTHER	0	0,1	2	0	kblockd
21	OTHER	0	0,1	2	0	ata_fff

Monitoring

Tuning Profiles

Storage Tuning

Tuning Profiles

## Loaded Profiles

## Preloaded Configurations

Profile Name

/usr/lib/tuned/balance

/usr/lib/tuned/latency-performance

/usr/lib/tuned/powersave

/usr/lib/tuned/throughput-performance

/usr/lib/tuned/virtual-guest

/usr/lib/tuned/virtual-host

## Tunable Profile Settings

kernel.nmi\_watchdog

vm.laptop\_mode

vm.dirty\_writeback\_centisecs



Save Configuration to File



Apply

Monitoring

Tuning Profiles

Storage Tuning

**Storage**

## Device

```
/sys/devices/pci0000:00/0000:00:1f.2/ata1/host0/target0:0:0/0:0:0/block/sda
```

```
/sys/devices/pci0000:00/0000:00:1e.0/0000:03:01.0/0000:04:00.0/mmc_host/mmc0/mmc0:0007/block/mmcblk0
```

**Device Attributes**

Type: 0

Blocks (512-byte): 117231408

Power Async: Disabled

# Future Directions

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- Ship with RHEL7
- Improve upon tuned config file format
  - Replace semi-hackish shell-script integration
  - Add storage concept

# Questions?



Contact:  
clockfort@redhat.com

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# Special Thanks

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- KTune / Performance Team / Kernel Team
- Luke Macken
- Steven Jacobs