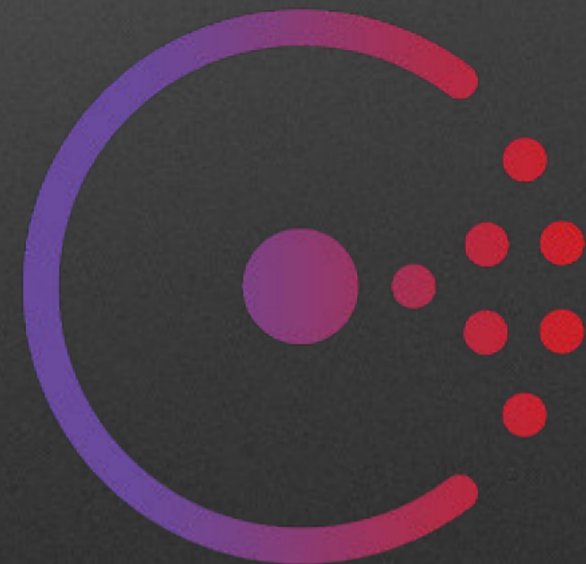
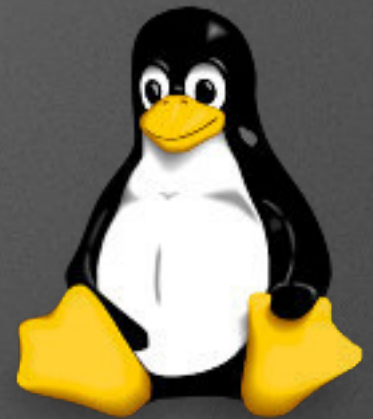
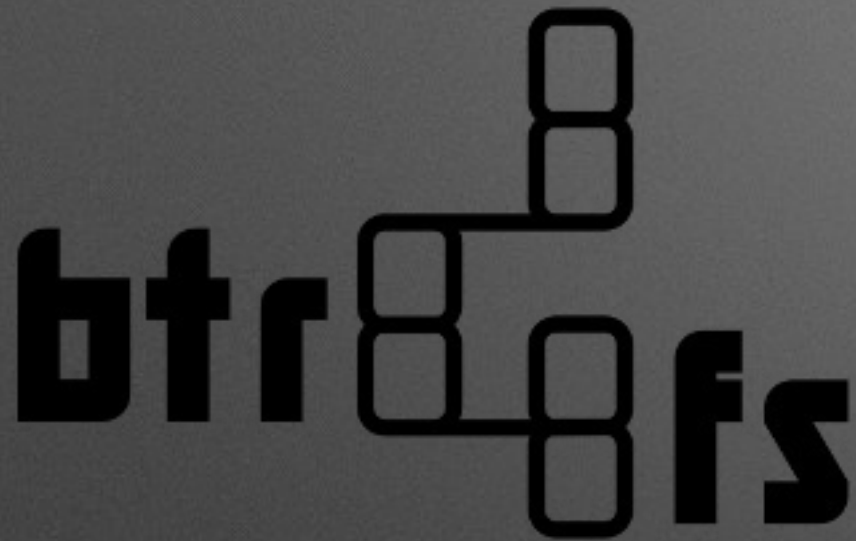


It's all about size: Bareos

SLOC	Directory	SLOC-by-Language (Sorted)
36681	src_dird	ansic=36681
36643	src_ndmp	ansic=36643
34841	src_lib	ansic=34841
27613	src_stored	ansic=27613
14210	src_cats	ansic=12584,sh=810,lisp=721,perl=95
12797	src_qt-console	cpp=12784,sh=13
12040	src_plugins	ansic=10689,python=1351
11246	autoconf	sh=11227,python=11,awk=8
10475	src_filed	ansic=10475
9225	src_win32	ansic=9063,sh=162
8821	src_findlib	ansic=8821
7959	src_lmdb	ansic=7959
2681	src_console	ansic=2681
2459	src_tools	ansic=2459
2150	platforms	sh=1523,ansic=408,python=189,sed=30
2005	scripts	sh=1944,perl=61
1668	src_tests	ansic=1668
1583	src_qt-tray-monitor	cpp=1583
1558	src_include	cpp=1020,ansic=538
953	debian	sh=953
32	test	sh=32
16	po	sed=16
1	top_dir	sh=1
0	manpages	(none)
0	src_defaultconfigs	(none)
0	src_images	(none)
0	src_top_dir	(none)

Totals grouped by language (dom		
ansic:	203123	(85.47%)
sh:	16665	(7.01%)
cpp:	15387	(6.47%)
python:	1551	(0.65%)
lisp:	721	(0.30%)
perl:	156	(0.07%)
sed:	46	(0.02%)
awk:	8	(0.00%)

The giants we stand on

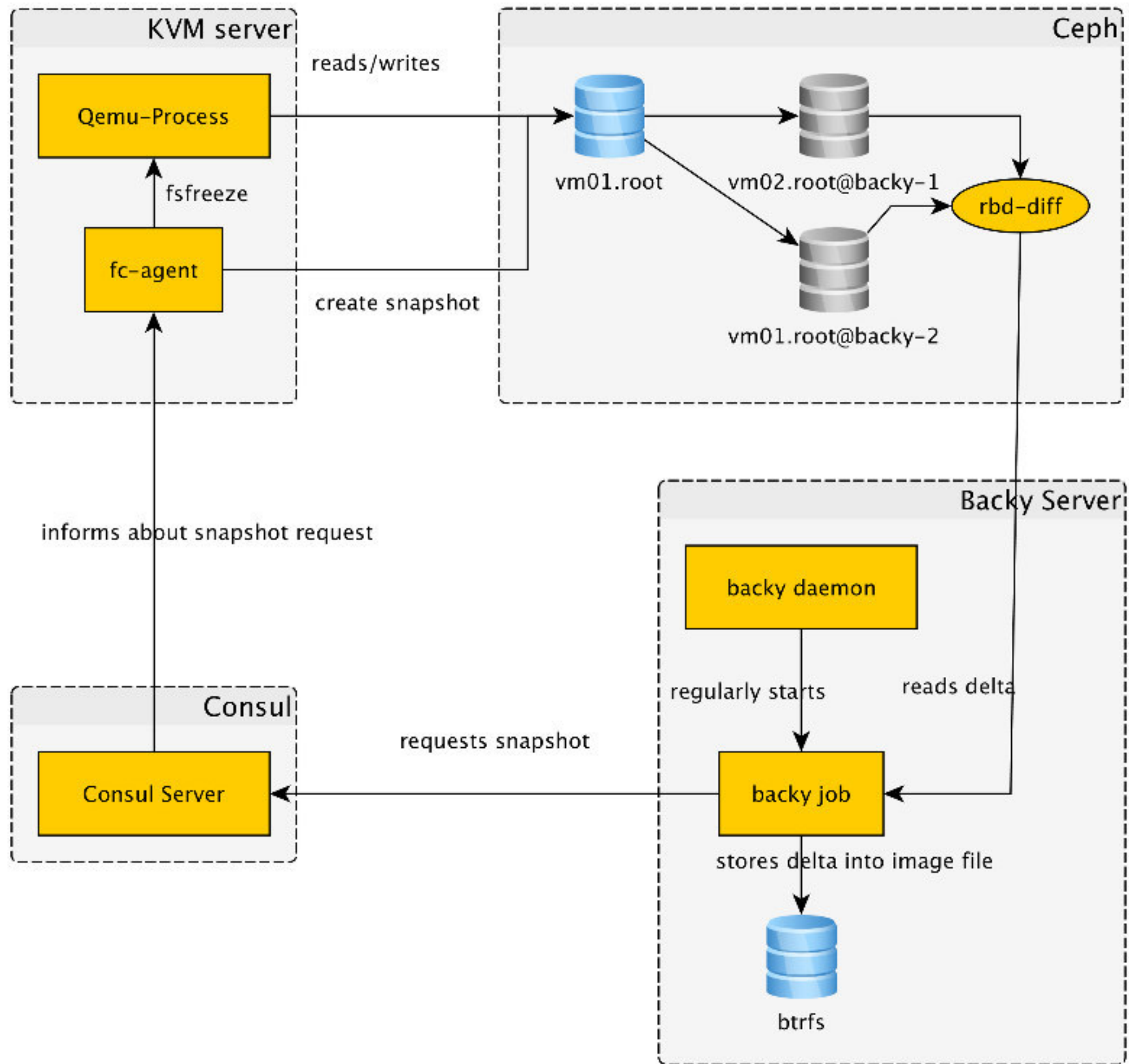


Limits

- Not a general purpose backup system.
- No tapes. No weird hardware.
- Restore without tools.
- Dead-simple configuration.



Let's take a tour



A close-up, top-down view of a massive, tangled mass of electronic wiring. The wires are of various colors including red, blue, yellow, green, black, and white, creating a vibrant but chaotic pattern. Numerous white plastic connectors and small electronic components are interspersed throughout the wire mess. The overall impression is one of extreme complexity and disorganization.

simple!?!?

Hello CLI

```
> bin/backy --help
usage: backy [-h] [-v] [-b BACKUPDIR]
            {init,backup,restore,status,scheduler,check} ...

Backup and restore for block devices.

positional arguments:
  {init,backup,restore,status,scheduler,check}
    init                Initialize backup for a <source> in the backup
                        directory.
    backup              Perform a backup.
    restore             Restore (a given revision) to a given target.
    status              Show backup status. Show inventory and summary
                        information.
    scheduler           Run the scheduler.
    check               Check whether all jobs adhere to their schedules' SLA.

optional arguments:
  -h, --help            show this help message and exit
  -v, --verbose          verbose output (default: False)
  -b BACKUPDIR, --backupdir BACKUPDIR
```


Running a single backup

```
barbrady02 litprod00 # time /home/ctheune/backy/bin/backy -v backup test
$ /home/ctheune/backy/bin/backy -v backup test
New revision NkjcG4wtGr5uRyCsQeWXQd [test]
Requesting consistent snapshot via snapshot/110b0d8f-553e-42d2-b3f3-6ecbffeab123 ...
Starting new HTTP connection (1): localhost
Performing differential backup ...
Performing partial verification ...
Revision NkjcG4wtGr5uRyCsQeWXQd verification OK.
Backup complete.

real    0m8.478s
user    0m1.856s
sys     0m0.675s
```


Inspecting a backup

```
barbrady02 litprod00 # /home/ctheune/backy/bin/backy status
```

Date			ID	Size	Duration	Tags
2015-09-04	11:20:01	UTC	MbN5mhfHYHCospjJN29B96	198.02 MiB	28	monthly
2015-09-09	12:49:52	UTC	KRjkU6LyVBHVkSqCA4GVTR	199.57 MiB	13	weekly
2015-09-16	09:19:33	UTC	FAdaLvCWh2QSMWCdyaQr3W	427.78 MiB	59	weekly
2015-09-22	09:19:33	UTC	znMfTcHPXFLxsedGjB6pC9	580.64 MiB	46	daily
2015-09-23	09:19:33	UTC	cr69TCbaazXgDvFag5wjxh	519.32 MiB	34	weekly, daily
2015-09-24	09:19:33	UTC	DSeXnM9odf67w3hCht4hj4	476.67 MiB	33	daily
2015-09-25	09:19:33	UTC	fgctQPtTzrdzBovsyexfi6	430.03 MiB	31	daily
2015-09-26	09:19:33	UTC	Y8ALt6EJEymZZSpaTCUAVf	346.33 MiB	41	daily
2015-09-27	09:19:33	UTC	zJxzGvnyEmCc4xQ3Rb63G4	347.13 MiB	25	daily
2015-09-28	09:19:33	UTC	rq8KcFStNNfYPLKv6sYVAJ	667.86 MiB	46	daily
2015-09-29	09:19:33	UTC	sGvKCQEd7H9veQpEZXHMd6	757.18 MiB	70	daily
2015-09-29	15:14:06	UTC	A2hqgV2NuSRxJ3Jq9mq2kK	219.84 MiB	15	test
2015-09-29	15:14:36	UTC	DxZf56eGkKhbmY7G3eQbzU	780.00 kiB	9	test
2015-09-29	15:14:50	UTC	NkjcG4wtGr5uRyCsQeWXQd	264.00 kiB	7	test
2015-09-30	09:19:33	UTC	UjD8D4cbcf8bsmAB3Ph2wf	310.19 MiB	26	daily, weekly

```
== Summary
```

```
45 revisions
```

```
18.58 GiB data (estimated)
```


Inspecting a backup

```
barbrady02 litprod00 # ls -laht
total 451G
drwxr-xr-x 1 root root 198 Sep 29 17:21 ..
-rw-r--r-- 1 root root 38M Sep 29 17:14 backy.log
drwxr-xr-x 1 root root 4.3K Sep 29 17:14 .
-r--r----- 1 root root 205 Sep 29 17:14 NkjcG4wtGr5uRyCsQeWXQd.rev
lrwxrwxrwx 1 root root 22 Sep 29 17:14 last -> NkjcG4wtGr5uRyCsQeWXQd
lrwxrwxrwx 1 root root 26 Sep 29 17:14 last.rev -> NkjcG4wtGr5uRyCsQeWXQd.rev
-r--r----- 1 root root 10G Sep 29 17:14 NkjcG4wtGr5uRyCsQeWXQd
-r--r----- 1 root root 205 Sep 29 17:14 DxZf56eGkKhhmY7G3eQbzU.rev
-r--r----- 1 root root 10G Sep 29 17:14 DxZf56eGkKhhmY7G3eQbzU
-r--r----- 1 root root 209 Sep 29 17:14 A2hqqV2NuSRxJ3Jq9mq2kK.rev
-r--r----- 1 root root 10G Sep 29 17:14 A2hqqV2NuSRxJ3Jq9mq2kK
-r--r----- 1 root root 209 Sep 29 11:20 sGvKCQEd7H9veQpEZXHMD6.rev
-r--r----- 1 root root 10G Sep 29 11:20 sGvKCQEd7H9veQpEZXHMD6
-rw-r--r-- 1 root root 92 Sep 29 11:19 config
-r--r----- 1 root root 209 Sep 28 11:20 rq8KcFStNNfYPLKv6sYVAJ.rev
-r--r----- 1 root root 10G Sep 28 11:20 rq8KcFStNNfYPLKv6sYVAJ
-r--r----- 1 root root 210 Sep 27 11:19 zJxzGvnyEmCc4xQ3Rb63G4.rev
-r--r----- 1 root root 10G Sep 27 11:19 zJxzGvnyEmCc4xQ3Rb63G4
-r--r----- 1 root root 209 Sep 26 11:20 Y8ALt6EJEymZZSpaTCUAVf.rev
-r--r----- 1 root root 10G Sep 26 11:20 Y8ALt6EJEymZZSpaTCUAVf
```


Hello, daemon!

```
$ bin/backy scheduler -c backy.conf
Worker limit: 2
Backup location: /tmp/backy
Status location: /tmp/backy/status
Available schedules: default
Starting to work on queue
services04: started task generator loop
services04: waiting
services05: started task generator loop
services05: waiting
services07: started task generator loop
services07: waiting
services03: started task generator loop
services03: waiting
services06: started task generator loop
services06: waiting
services03: submitting to worker queue
```

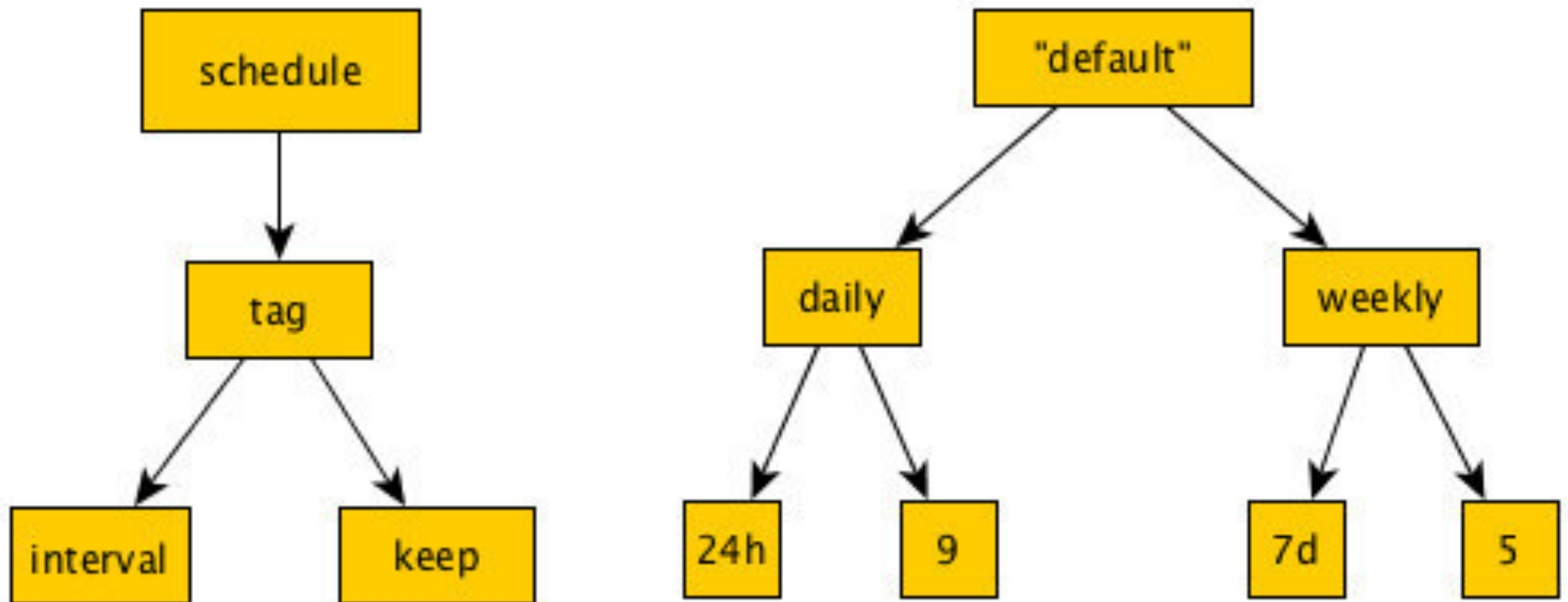

Daemon configuration

```
---
global:
    base-dir: /tmp/backy
    worker-limit: 2

jobs:
    services03:
        source:
            type: file
            filename: /tmp/services03
        schedule: default

schedules:
    default:
        minute:
            interval: 60s
            keep: 9
        2minute:
            interval: 120s
            keep: 5
        5minute:
            interval: 300s
            keep: 4
```


Scheduling



Scheduling

barbrady02 gocept06 # /home/ctheune/backy/bin/backy status									
Date				ID	Size		Duration	Tags	
2015-09-14	07:53:48	UTC		cstjv2D9d2mpQYfAZ3KgaV	350.00	GiB	4910	monthly, weekly	
2015-09-20	02:45:49	UTC		Ng5pWcmsF5wwcnxBX8y3uB	168.75	MiB	210	weekly	
2015-09-21	02:45:49	UTC		UcpdLbNoNMwGeodPfLwYzf	167.70	MiB	214	daily	
2015-09-22	02:45:49	UTC		RYaS2FB9pAffFhaEMv5mee	171.28	MiB	224	daily	
2015-09-23	02:45:49	UTC		NMJKreuzFo5ttDfUmpcJpP	171.96	MiB	221	daily	
2015-09-24	02:45:49	UTC		bmodjWsV6Vnaa8PCjkfCyS	172.62	MiB	212	daily	
2015-09-25	02:45:49	UTC		7hh6e8rVgkksbcLtBAmBa9	181.47	MiB	235	daily	
2015-09-26	02:45:49	UTC		ExHJHHBTYQTgADLSSzc6Qa	405.65	MiB	263	daily	
2015-09-27	02:45:49	UTC		6RHbBVEWzjkdJYNKB85i8	355.32	MiB	264	daily, weekly	
2015-09-28	02:45:49	UTC		yk2NwXXaNsGhTtgaNorgtb	165.73	MiB	229	daily	
2015-09-28	14:45:49	UTC		PK4MXKtWnEFE5sBjZJD3k4	345.43	MiB	1181	hourly	
2015-09-28	15:45:49	UTC		KhXpxE2vXA7pzW2UDQp2bS	463.83	MiB	1245	hourly	
2015-09-28	16:45:49	UTC		hxeusrEE65fESmhRBvZUiW	397.31	MiB	492	hourly	

Purging

Purging

barbrady02 gocept06 # /home/ctheune/backy/bin/backy status									
Date				ID	Size		Duration	Tags	
2015-09-14	07:53:48	UTC		cstjv2D9d2mpQYfAZ3KgaV	350.00	GiB	4910	monthly, weekly	
2015-09-20	02:45:49	UTC		Ng5pWcmsF5wwcnxBX8y3uB	168.75	MiB	210	weekly	
2015-09-21	02:45:49	UTC		UcpdLbNoNMwGeodPfLwYzf	167.70	MiB	214	daily	
2015-09-22	02:45:49	UTC		RYaS2FB9pAffFhaEMv5mee	171.28	MiB	224	daily	
2015-09-23	02:45:49	UTC		NMJKreuzFo5ttDfUmpcJpP	171.96	MiB	221	daily	
2015-09-24	02:45:49	UTC		bmodjWsV6Vnaa8PCjkgfCyS	172.62	MiB	212	daily	
2015-09-25	02:45:49	UTC		7hh6e8rVgkksbcLtBAmBa9	181.47	MiB	235	daily	
2015-09-26	02:45:49	UTC		ExHJHHBTYQTgADLSSzc6Qa	405.65	MiB	263	daily	
2015-09-27	02:45:49	UTC		6RHbBVEWzjkdJYNKB85i8	355.32	MiB	264	daily, weekly	
2015-09-28	02:45:49	UTC		yk2NwXXaNsGhTtgaNorgtb	165.73	MiB	229	daily	
2015-09-28	14:45:49	UTC		PK4MXKtWnEFE5sBjZJD3k4	345.43	MiB	1181	hourly	
2015-09-28	15:45:49	UTC		KhXpxE2vXA7pzW2UDQp2bS	463.83	MiB	1245	hourly	
2015-09-28	16:45:49	UTC		hxeusrEE65fESmhRBvZUiW	397.31	MiB	492	hourly	

Scrubbing

- partial, random verification during backup against source
- btrfs scrubbing
- Raid-6

Deleting a VM

- rewrite config, reload master
- `rm -rf`

Monitoring

- old state is uninteresting
- do I have to act?

Monitoring

backy-2.0b2.dev0 % jobs

Job	SLA	Status	Last Backup	Last Tags
antiquariat00	OK	waiting	2015-09-29 01:44:06 UTC	daily, weekly, monthly
antiquariat01	OK	waiting	2015-09-29 05:20:24 UTC	daily
antiquariat02	OK	waiting	2015-09-29 11:25:38 UTC	daily
bliss00	OK	waiting	2015-09-28 19:46:16 UTC	daily, weekly
certadmin01	OK	waiting	2015-09-29 04:19:37 UTC	daily, weekly
gocept06	OK	running	2015-09-29 15:45:49 UTC	hourly
litprod00	OK	waiting	2015-09-29 15:14:50 UTC	test
nullprov01	OK	waiting	2015-09-29 14:56:33 UTC	hourly
osfkarl01	OK	waiting	2015-09-29 15:37:46 UTC	hourly

[backy SLA](#)



OK

2015-09-29 17:46:01

2d 4h 47m 14s

1/4

OK: 3 jobs within SLA



What did we leave out?

- Physical host backup
- Guesstimating achievable backup storage ratio

Future

- trim-ready - waiting for our whole stack (Guest, Hypervisor, Ceph, ...) to pass this through
- Hot reload of scheduler
- Ensuring we can move VM backup directories between different backup hosts

Having your backup and eating it!





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MAKELITT

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