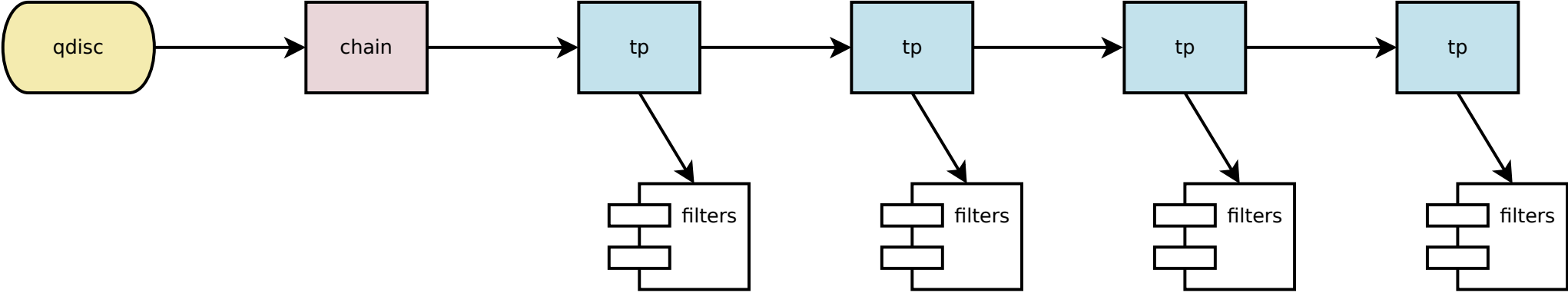


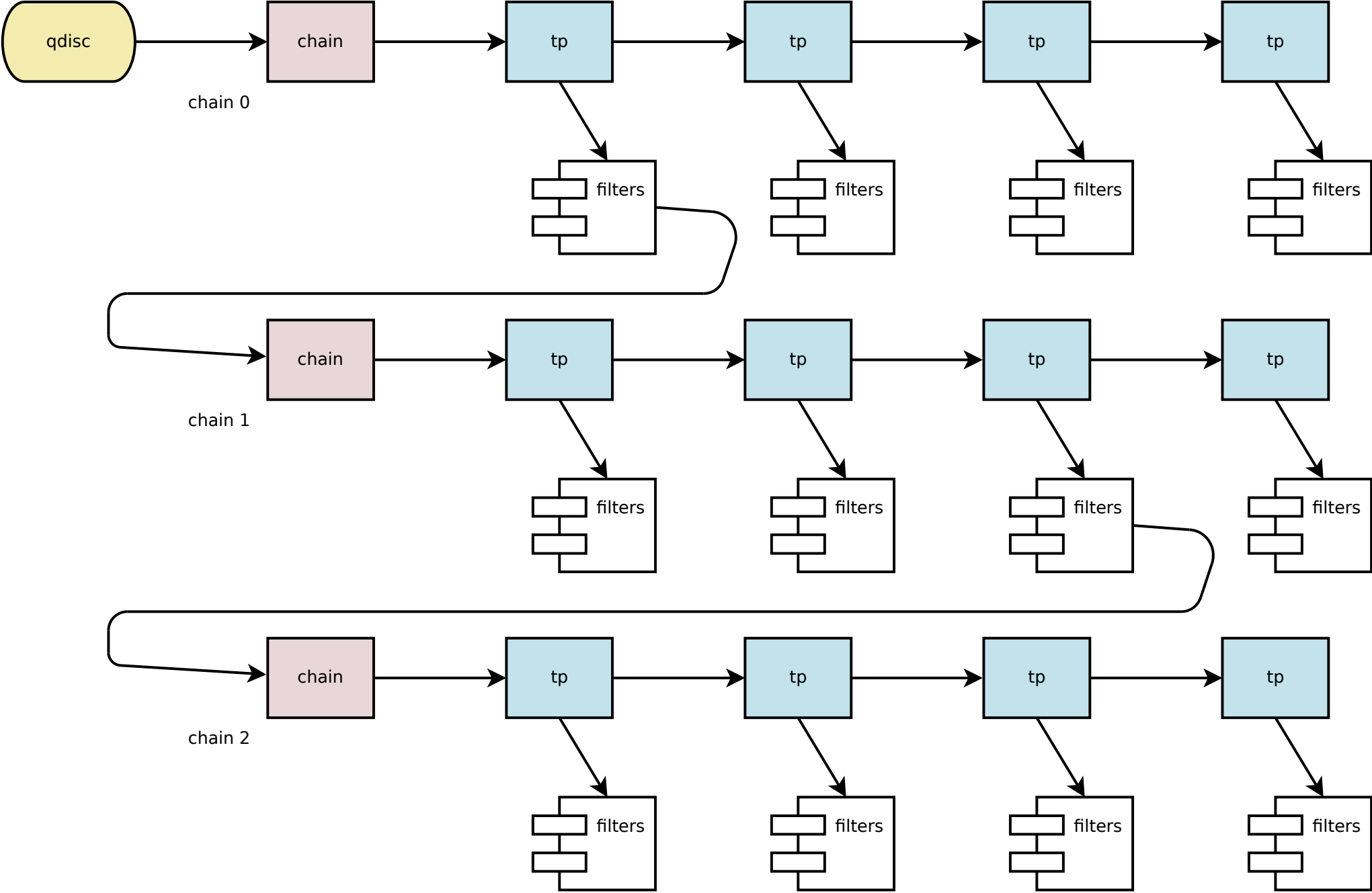
TC classifier-action subsystem
Update since netdevconf 2.1
WIP, future work

TC cls-act changes since netdev2.1 - multichain

net: sched: introduce multichain support for filters

```
$ tc qdisc add dev eth0 ingress
$ tc filter add dev eth0 ingress protocol ip pref 33 \
  flower dst_mac 52:54:00:3d:c7:6d action goto chain 1
$ tc filter add dev eth0 ingress protocol ip pref 22 \
  chain 1 flower dst_ip 192.168.40.1 action drop
```





TC cls-act changes since netdev2.1 – the rest

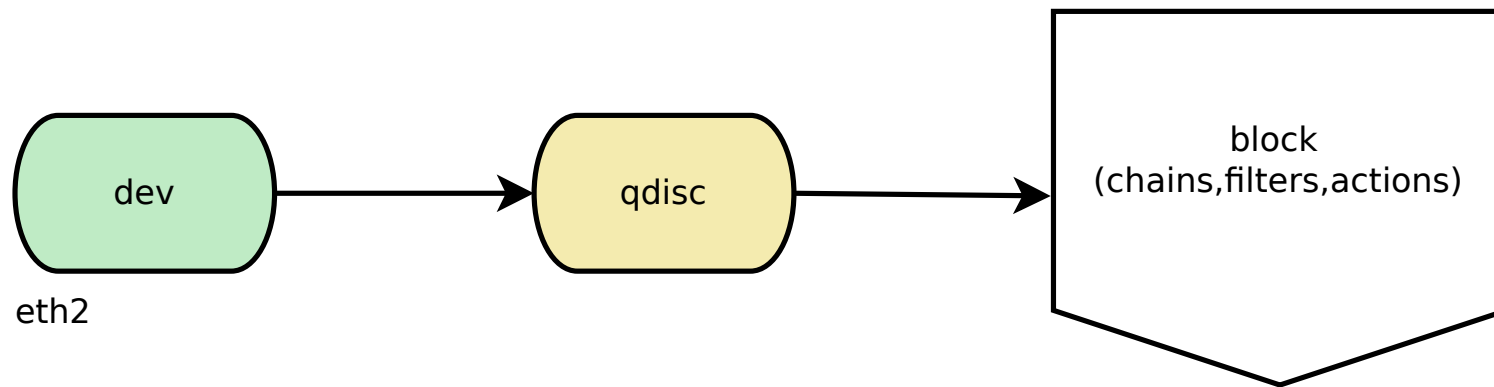
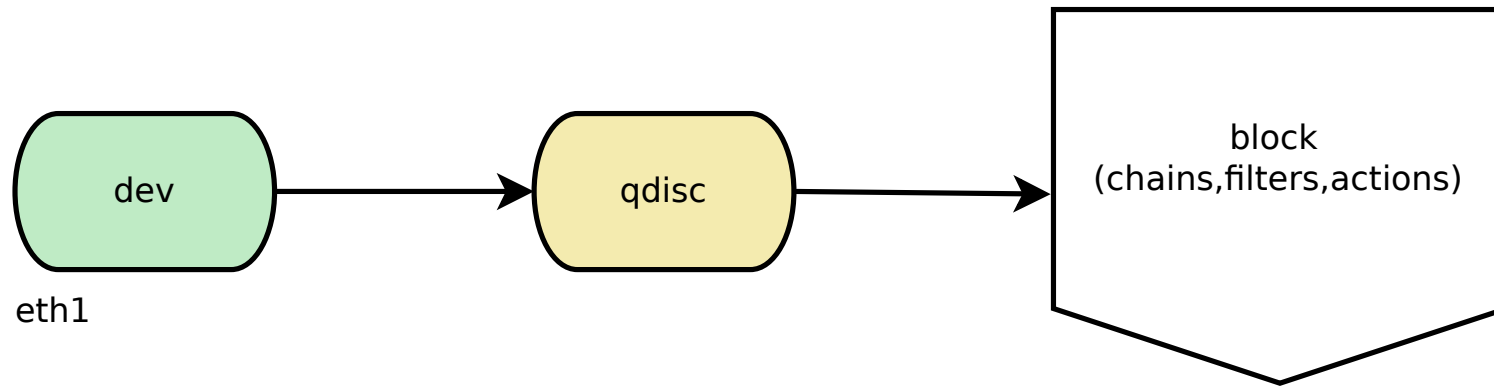
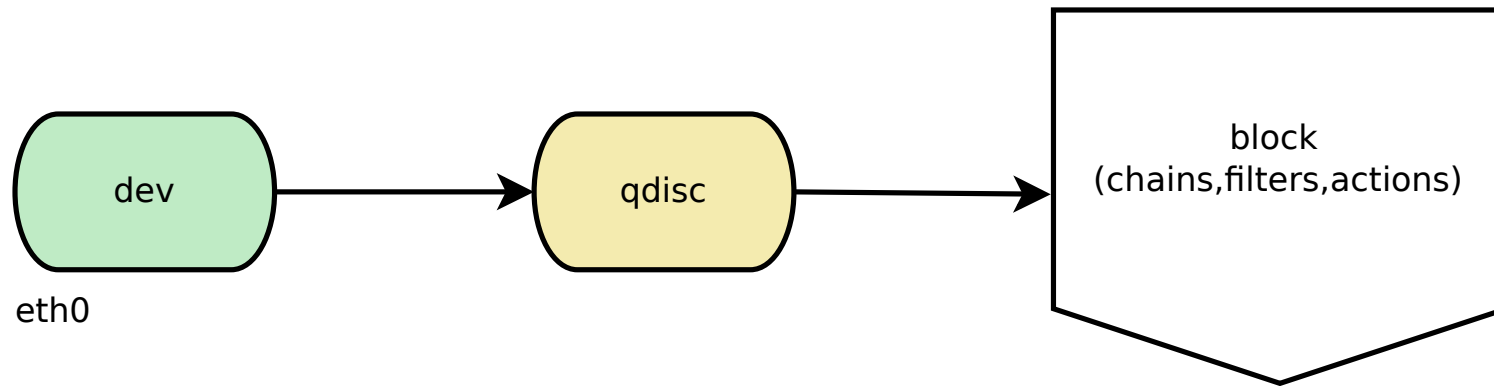
- * cls_flower: add support for matching MPLS fields
 - * net/sched: flower: add support for matching on tcp flags
 - * net/sched: cls_flower: add support for matching on ip tos and ttl
-
- * net: sched: introduce a TRAP control action
\$ tc filter del dev eth0 ingress protocol ip pref 10 \
flower skip_sw dst_ip 192.168.101.1 action trap

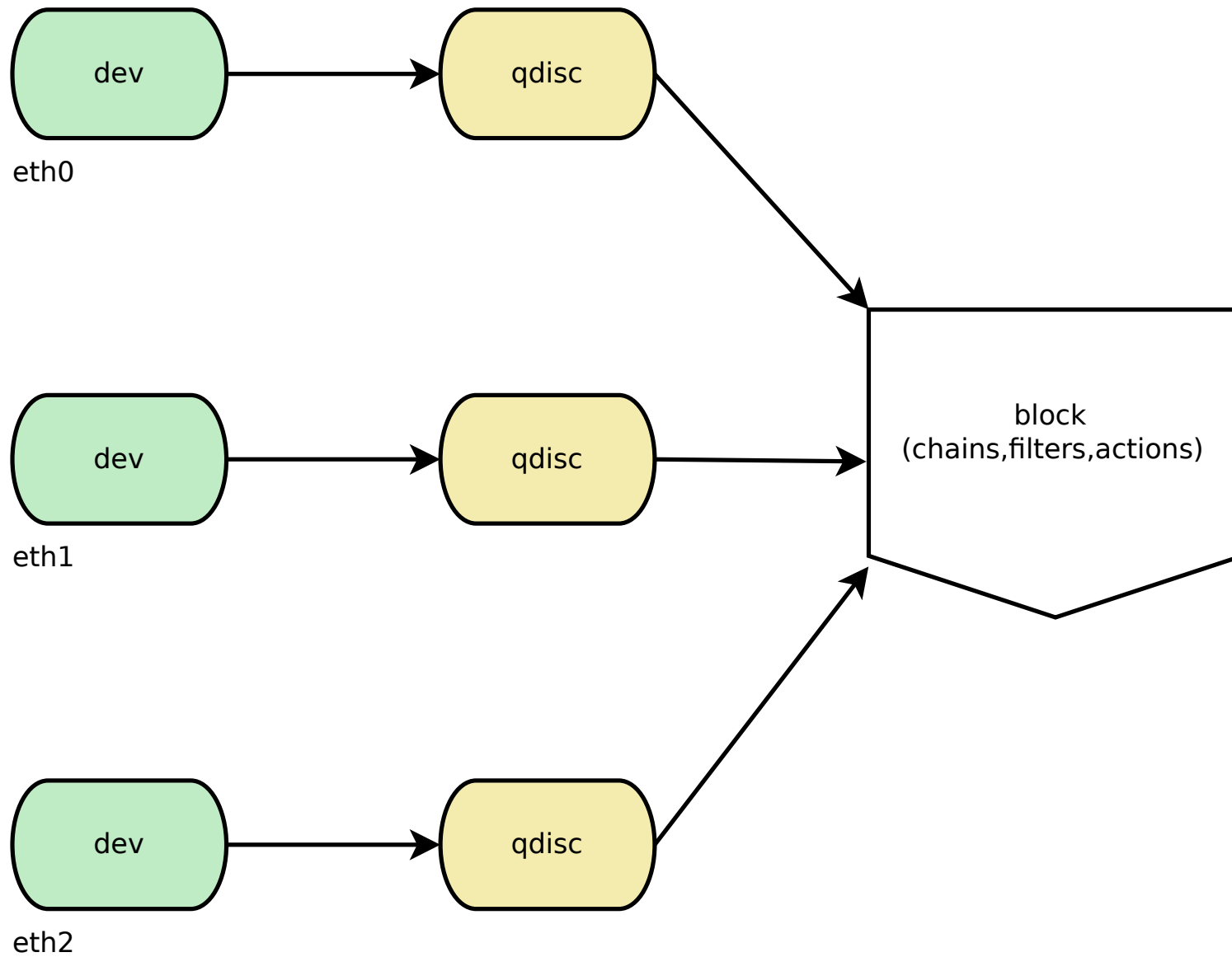
MLXSW driver changes:

- * mlxsw: spectrum_flower: Add support for tcp flags
- * spectrum_flower: Implement gact trap TC action offload
- * mlxsw: spectrum_flower: Add support for ip tos
- * mlxsw: spectrum_flower: Add support for ip ttl
- * mlxsw: spectrum: Offload multichain TC rules
- * mlxsw: spectrum_flower: Offload goto_chain termination action
- * mlxsw: spectrum_flower: Offload "ok" termination action

WIP - Shared blocks

- Purpose is to allow to share filter instances among multiple netdevices
- Why?
 - To reduce memory footprint
 - To ease-up user's job when he wants to have same ruleset (filters) on many netdevices
 - For offload use-case, to allow to optimize HW resources usage (e.g. TCAM is quite limited)
- Took a lot of effort to do all preparations, mainly tp → q removal (qdisc pointer in struct tcf_proto)
- All preparations are merged in net-next git, one more tp → q removal needs to be done before the patchset could be merged
- mlxsw offload prepared in queue





Shared blocks examples

```
$ tc qdisc add dev eth0 ingress block 22
$ tc qdisc add dev eth1 ingress block 22
$ tc qdisc add dev eth2 ingress block 22
```

```
$ tc qdisc
qdisc ingress ffff: dev eth0 parent ffff:fff1 block 22
qdisc ingress ffff: dev eth1 parent ffff:fff1 block 22
qdisc ingress ffff: dev eth2 parent ffff:fff1 block 22
```

```
$ tc filter add dev ens0 ingress protocol ip pref 25 \
    flower dst_ip 192.168.0.0/16 action drop
```

```
$ tc qdisc add dev eth3 clsact ingress_block 10 egress_block 11
$ tc qdisc add dev eth4 clsact ingress_block 10 egress_block 11
```

Future?

- Hinting for offloads
 - Match keys hinting
 - During TCAM allocation, we have to know all used match keys for all possibly inserted rules (to avoid costly re-allocations)
 - User may provide a hint which keys he is going to need so the driver can prepare and optimize resource utilization
 - Filter max count hinting
 - User may know total amount of filters he is going to insert per-chain. That would again help driver to optimize resource utilization