OVN Performance

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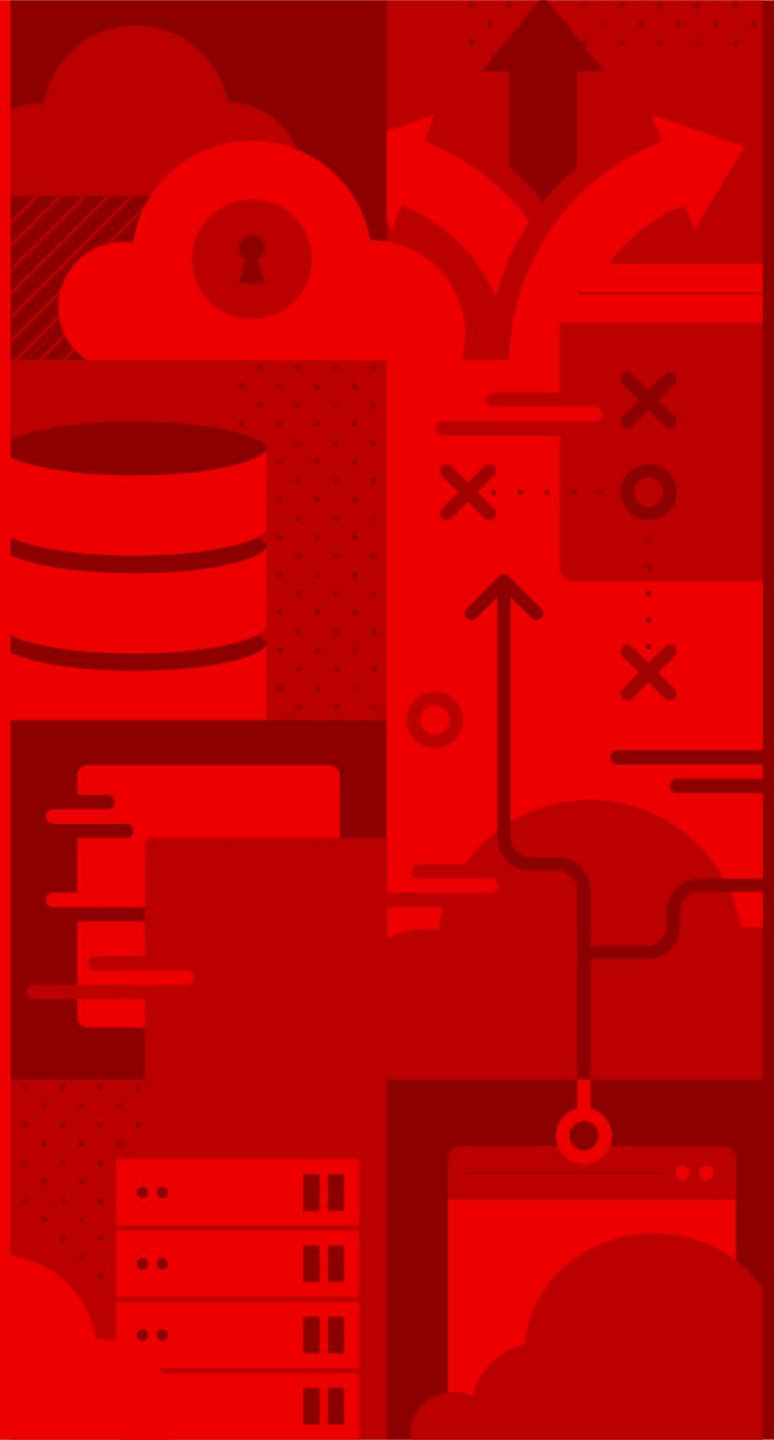
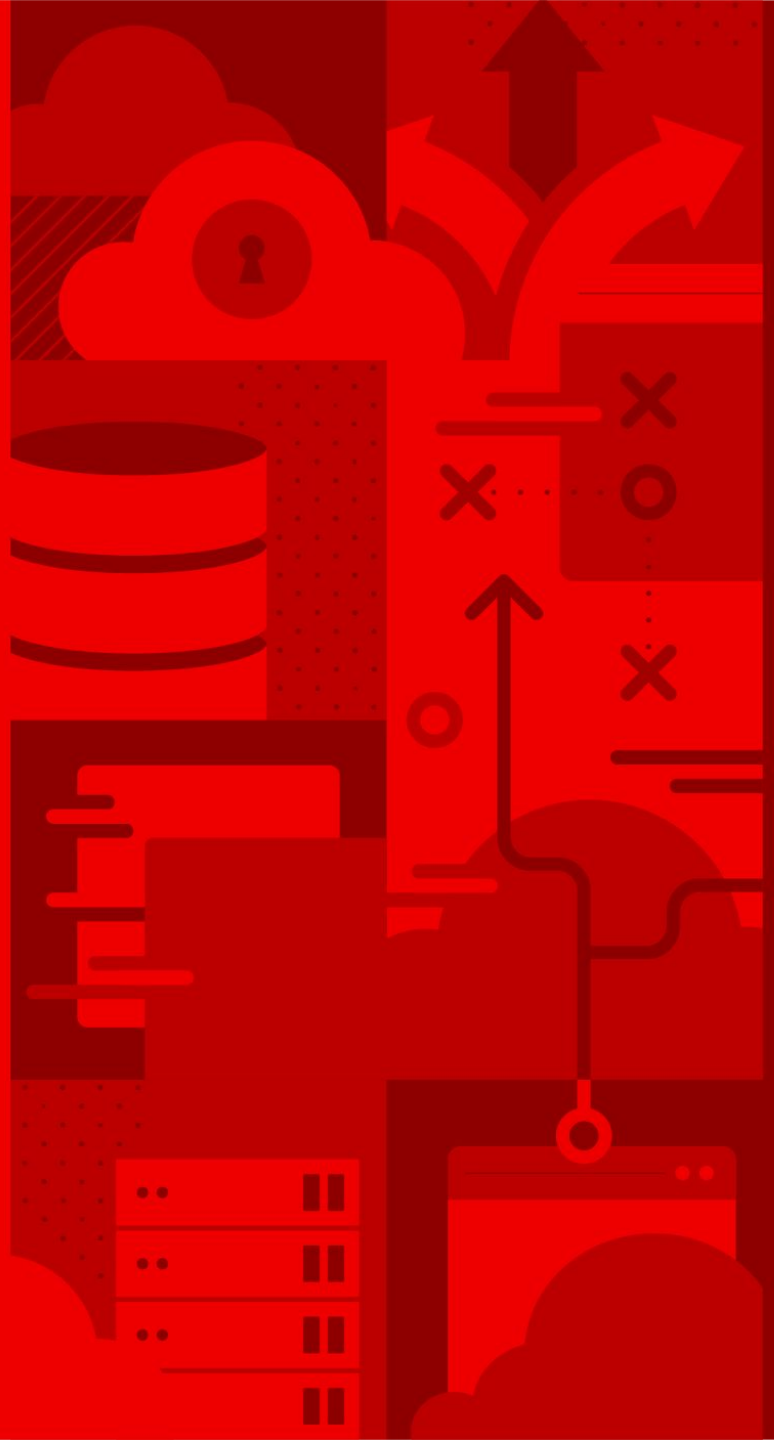
- ovn-controller's performance is much more important than ovn-northd.
- The lowest-hanging fruit has been picked.
- Performance results are highly situational.
- Honing the code that runs is not as important as insuring code does not run needlessly



Major Improvements made this past year

- Big thanks to Han Zhou for this improvement
- Rather than processing everything always, only process what has changed.
- Depending on workload, can result in 95% reduction in CPU usage.

- Conjunctive matches were disabled in ovn-controller due to a bug.
- Without conjunctive matches, heavy use of ACLs could cripple ovn-controller's run time
- Reintroduction actually introduced improvement over original use of conjunctive matches (but not by much).

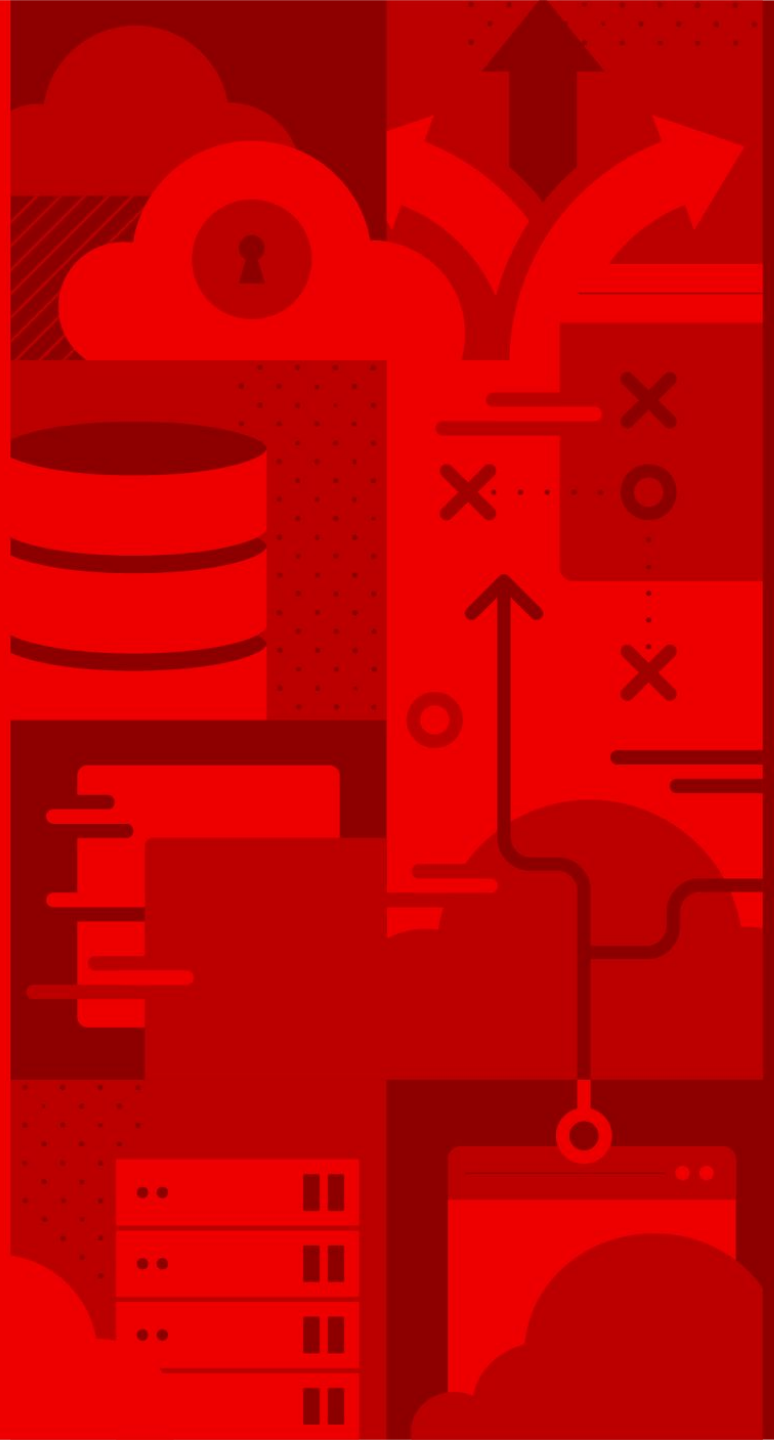


Current performance issues

- Full recomputes are required sometimes
  - Database disconnection/reconnection
  - OpenFlow messages still in flight
  - Certain data is not built into the incremental engine
- The code is complicated.
- ovn-controller can get stuck in an infinite recompute loop
- Some workloads aren't conducive to incremental processing in its current form.

- Coarse-grained locking used.
- ovn-controller main loop can potentially block packet processing
- Potentially the same in reverse: packet processing can block main loop operations

- ovn-controller can be very slow during full recomputes
  - Expression parsing of logical flows
  - Generation of large number of OpenFlow flows
- Algorithms do not have super obvious methods for improvement



Planned improvements

- Make incremental processing work for more data types
- Reduce situations where full recompute is necessary
- Reduce contention between ovn-controller main thread and pinctrl thread.
- Make algorithmic improvements to ovn-controller.
- Conversion to differential datalog

Thank you

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