OVN Controller improvements in incremental processing

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What we’ll be discussing today

● Incremental processing (I-P) changes in ovn-controller
  - 20.06 and 20.09

● Improvements
ovn-controller design

Wait for events

- xlate logical flows to OF flows
- Check for port bindings
- Program the new OF flows
- Handle packet-ins if any
Before incremental processing (I-P)

- Main while loop which handles events
- In each run
  - Translates logical flows to OpenFlow rules - lflow_run()
  - Generate OF flows which connects physical-to-logical and logical-to-physical (physical flows)
  - lflow_run() is called even for pinctrl (packet-ins) events.

After incremental processing (I-P)

- Main while loop which handles events
- In each run
  - Translates only required logical flows to OpenFlow rules*.
  - Pinctrl events doesn't cause flow translation.
I-P Engine

- Has engine nodes.
- Each engine node has inputs. An engine node can be an input to another node.
- Has a handler for each input
- A handler processes the input
- If any handler can’t process a change, a full recompute (engine_run()) is triggered for that node.
Limitations with initial IP support

- Initial I-P support handles some southbound db changes.

- Falls back to full recomputation of logical flows to OF flows for many changes it cannot handle.
Limitations with initial IP support

- Resulted in full recompute for
  - Port binding changes
  - OVS interface and Port changes
  - Datapath binding changes
  - Chassis addition/deletion.
Further improvements in OVN 20.06

- No more full recomputes for
  - Port binding changes
  - OVS interface and Port changes
  - Datapath binding changes
- Added input handlers to handle these changes.
- Resulted in faster processing and very less recomputations.
- Scales better.
Comparison – without I-P improvements

Test uses existing OVN northbound db which has
- 56 logical switches
- 1256 lports
- 45447 logical flows.
Comparison - with I-P improvements

Test uses existing OVN northbound db which has
- 56 logical switches
- 1256 lports
- 45447 logical flows.
Further improvements ??

- We can try to further improve the I-P
- But this would make the code more complex.
- We did see few regressions when we added the improvements.
- ovn-controller-ddlog
Questions.