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
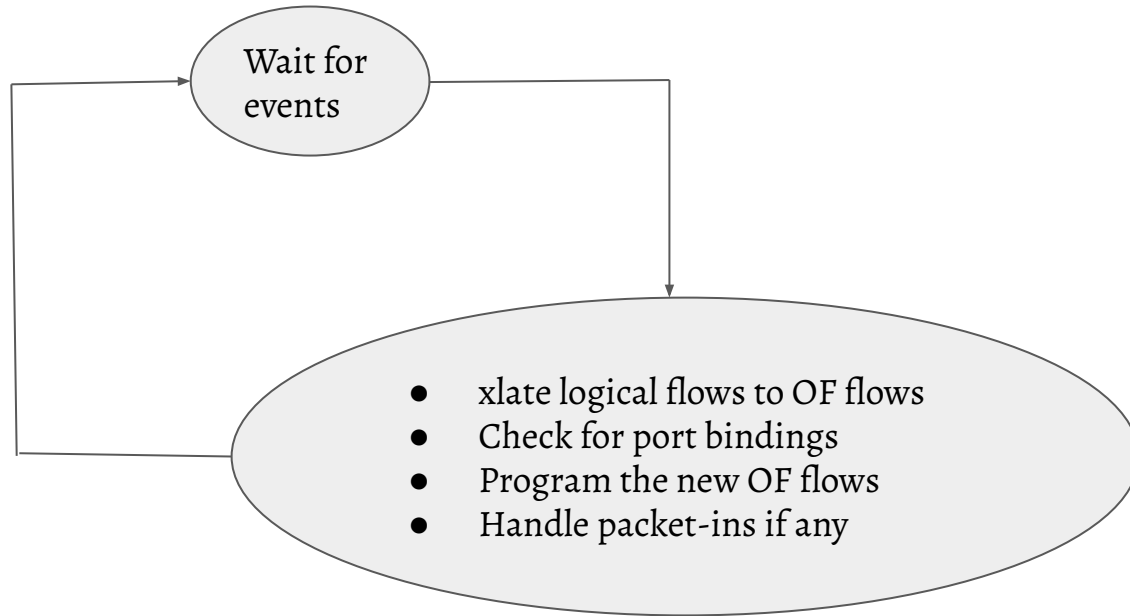
ovn-controller design

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.

- Resulted in full recompute for

    - Port binding changes

    - OVS interface and Port changes

    - Datapath binding changes

    - Chassis addition/deletion.

- 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

Rally task results

OvnNorthbound.create_routed_lport (1,108.146s)

Overview   Details   Input task

Load duration: **1,106.410 s**   Full duration: **1,108.146 s**   Iterations: **100**   Failures: **0**

Task overview
Input file

▶ OvnFakeMultinode
▼ OvnNorthbound
create_routed_lport
▶ OvnNorthboundFakeMultin...
▶ OvnSandbox

Service-level agreement

Criterion	Detail	Success
max_seconds_per_iteration	Maximum seconds per iteration 12.22s <= 30.00s - Passed	True

Total durations

Action	Min (sec)	Median (sec)	90%ile (sec)	95%ile (sec)	Max (sec)	Avg (sec)	Success	Count
ovn.create_or_update_network_policy	1.02	1.266	1.522	1.552	2.053	1.284	100.0%	100
ovn.create_or_update_network_policy_address_sets	0.222	0.276	0.289	0.294	0.318	0.272	100.0%	100
ovn.create_port_group_acls	0.462	0.54	0.57	0.576	0.588	0.531	100.0%	50
ovn.create_or_update_name_space	0.346	0.476	0.554	0.569	0.595	0.47	100.0%	100
ovn_network.bind_port	1.235	1.349	1.404	1.425	1.45	1.351	100.0%	100
ovn.bind_ovs_vm	0.394	0.458	0.494	0.501	0.536	0.458	100.0%	100
ovn.bind_internal_vm	0.795	0.894	0.938	0.95	0.978	0.893	100.0%	100
ovn_network.wait_port_ping	7.388	7.669	7.774	7.83	8.6	7.682	100.0%	100
total	10.546	11.007	11.401	11.526	12.222	11.044	100.0%	100

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

Comparison – with I-P improvements

Rally task results

OvnNorthbound.create_routed_lport (344.808s)

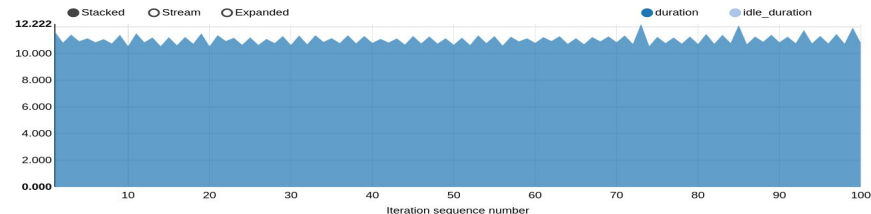Overview   Details   Input task

Load duration: **343.190 s**   Full duration: **344.808 s**   Iterations: **100**   Failures: **0**

Service-level agreement

Criterion	Detail	Success
max_seconds_per_iteration	**Maximum seconds per iteration 4.18s <= 30.00s - Passed**	**True**

Total durations

Action	Min (sec)	Median (sec)	90%ile (sec)	95%ile (sec)	Max (sec)	Avg (sec)	Success	Count
ovn.create_or_update_network_policy	0.97	1.229	1.451	1.46	1.944	1.24	100.0%	100
ovn.create_or_update_network_policy_address_sets	0.224	0.267	0.28	0.282	0.291	0.266	100.0%	100
ovn.create_port_group_acls	0.462	0.526	0.539	0.544	0.564	0.52	100.0%	50
ovn.create_or_update_name_space	0.33	0.467	0.549	0.556	0.562	0.463	100.0%	100
ovn_network.bind_port	1.231	1.313	1.386	1.4	1.446	1.317	100.0%	100
ovn.bind_ovs_vm	0.392	0.436	0.464	0.475	0.502	0.438	100.0%	100
ovn.bind_internal_vm	0.816	0.876	0.936	0.967	0.997	0.879	100.0%	100
ovn_network.wait_port_ping	0.097	0.141	0.177	0.18	0.203	0.136	100.0%	100
total	**2.977**	**3.406**	**3.709**	**3.748**	**4.181**	**3.411**	**100.0%**	**100**
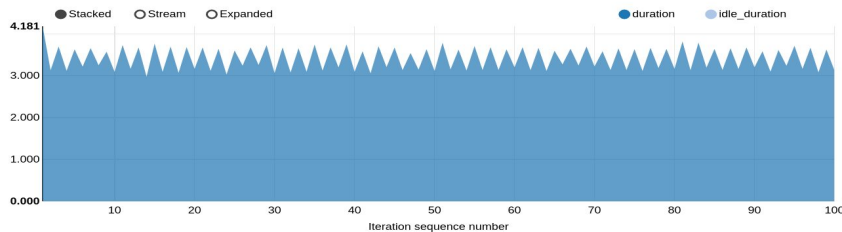
Test uses existing OVN northbound db which has
- 56 logical switches
- 1256 lports
- 45447 logical flows.

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

Thanks!

Questions.