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Open vSwitch

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First projects as a new OVN developer

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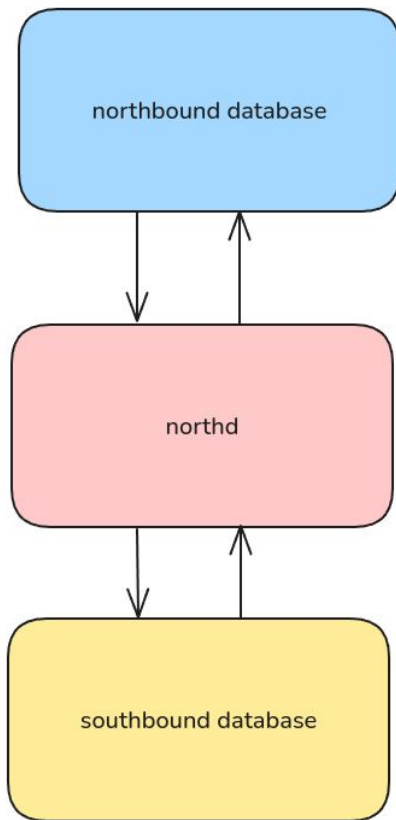
Agenda

- What is OVN?
- One of my first projects
- What I learned from it

What is OVN?

- OVN is an SDN (software-defined networking) tool.
- Virtual changes on top of physical infrastructure.

OVN's components



One of my first projects – Intro

- I was tasked with the issue “OVN ends up with an inconsistent SB database when static_mac_binding reference stale ports”
 - **Steps to reproduce:**
 - Create a logical router (lr)
 - Create a logical router port (lrp) on the lr
 - Add a static mac binding for the lrp
 - Delete the router
 - Wait for nb-db changes to be propagated to sb-db

One of my first projects – Topology

Logical Router Ir

Logical Router Port Irp
00:00:00:00:00:01 1.1.1.1/24

Static mac binding

lrp 1.1.1.2 00:00:00:00:00:02

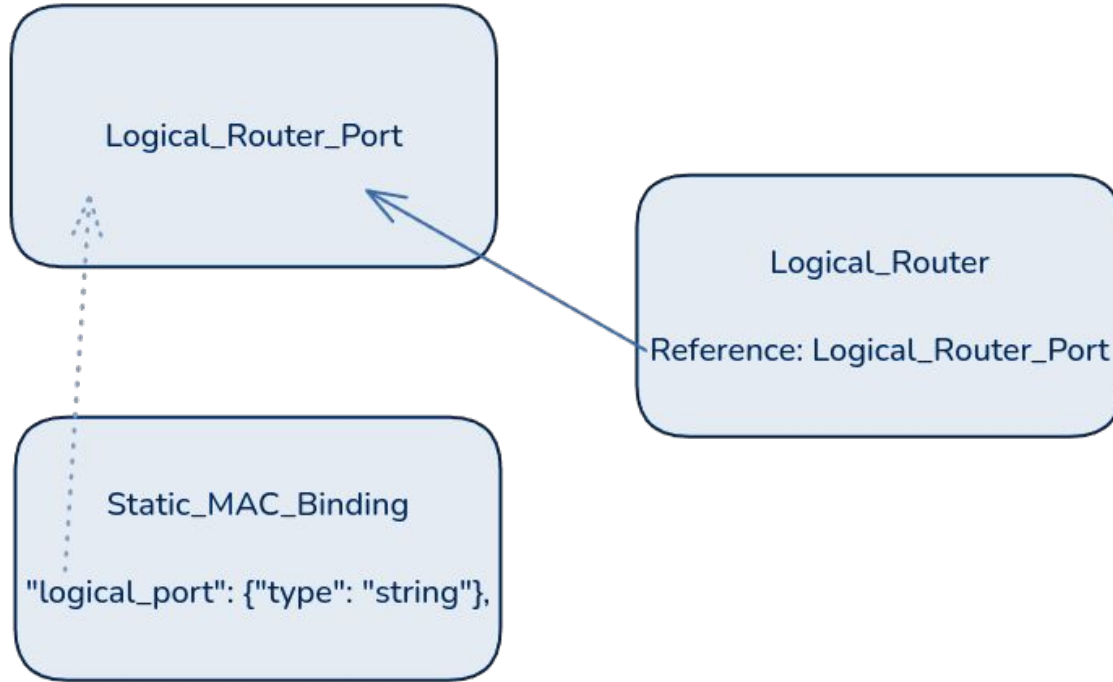
One of my first projects – Steps to reproduce

```
$ ovn-nbctl lr-add lr -- lrp-add lr lrp 00:00:00:00:00:01 1.1.1.1/24
$ ovn-nbctl static-mac-binding-add lrp 1.1.1.2 00:00:00:00:00:02
$ ovn-nbctl lr-del lr
$ ovn-nbctl -t 5 --wait=sb sync
2024-07-29T14:09:00Z|00001|fatal_signal|WARN|terminating with signal 14 (Alarm clock)
```

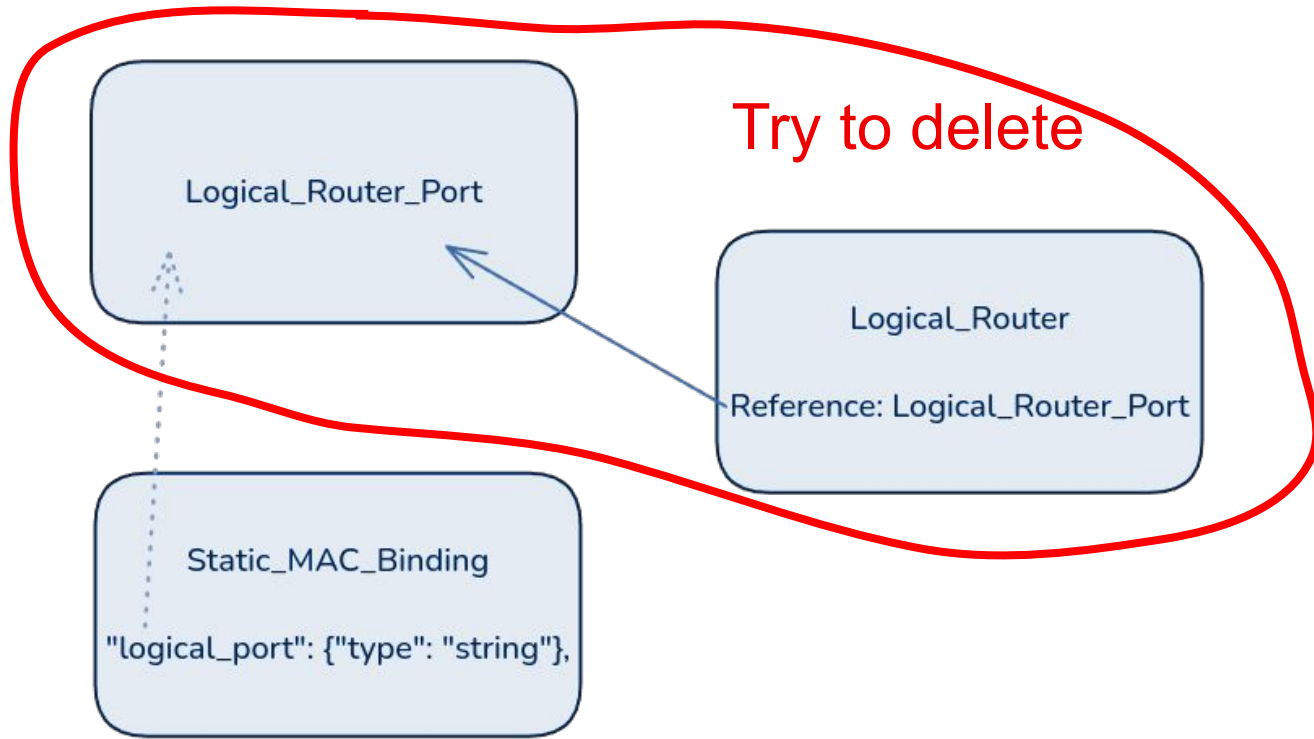
Northd logs:

```
WARN|transaction error: {"details": "cannot delete
Datapath_Binding row <uuid> because of 1 remaining
reference(s)", "error": "referential integrity violation"}
INFO|OVNSB commit failed, force recompute next time.
```

One of my first projects – nb-db is fine



One of my first projects – nb-db is fine



One of my first projects – nb-db is fine

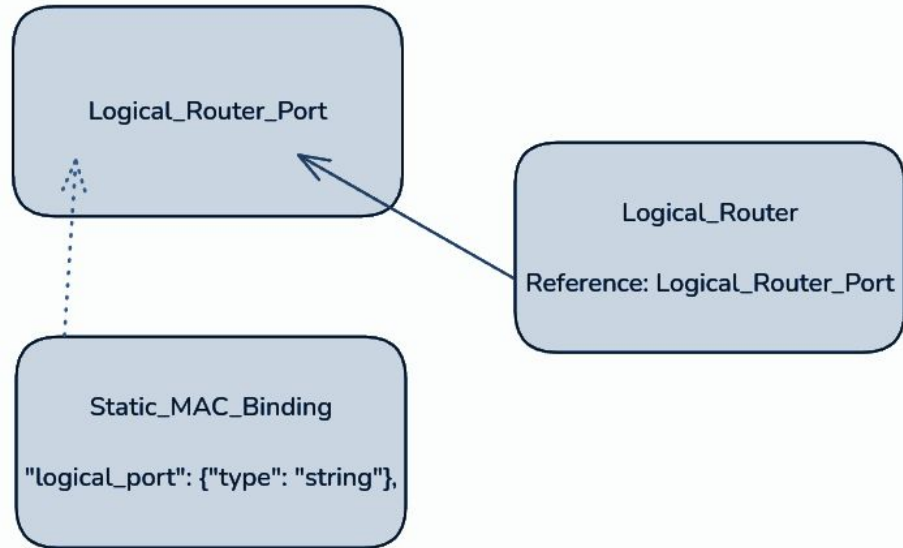


Static_MAC_Binding

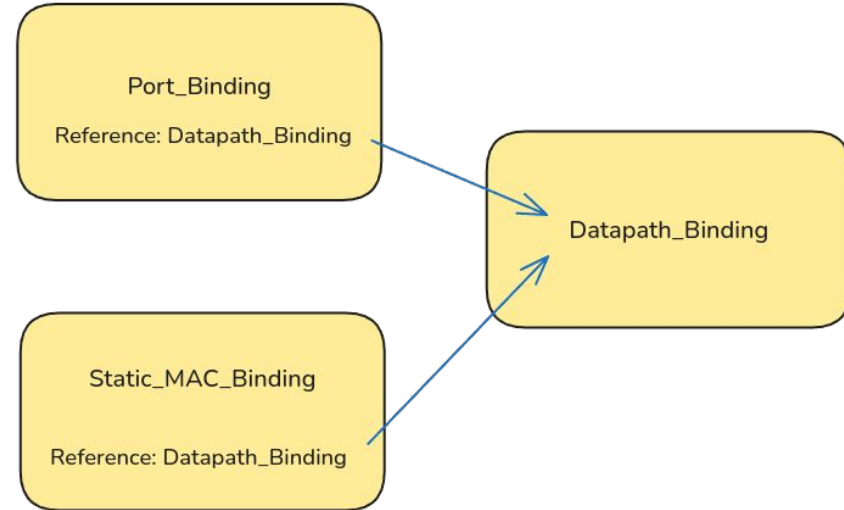
```
"logical_port": {"type": "string"},
```

One of my first projects – nb and sb corresponding

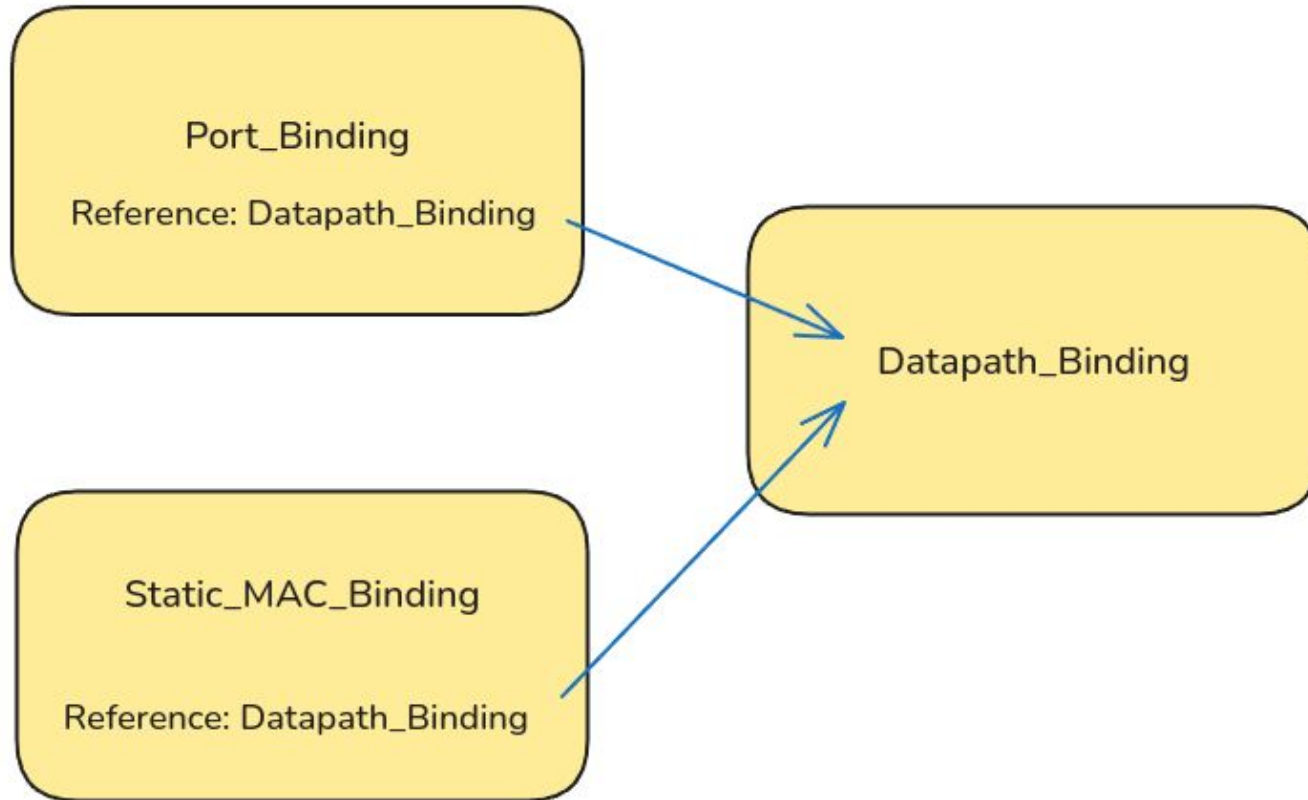
Northbound database



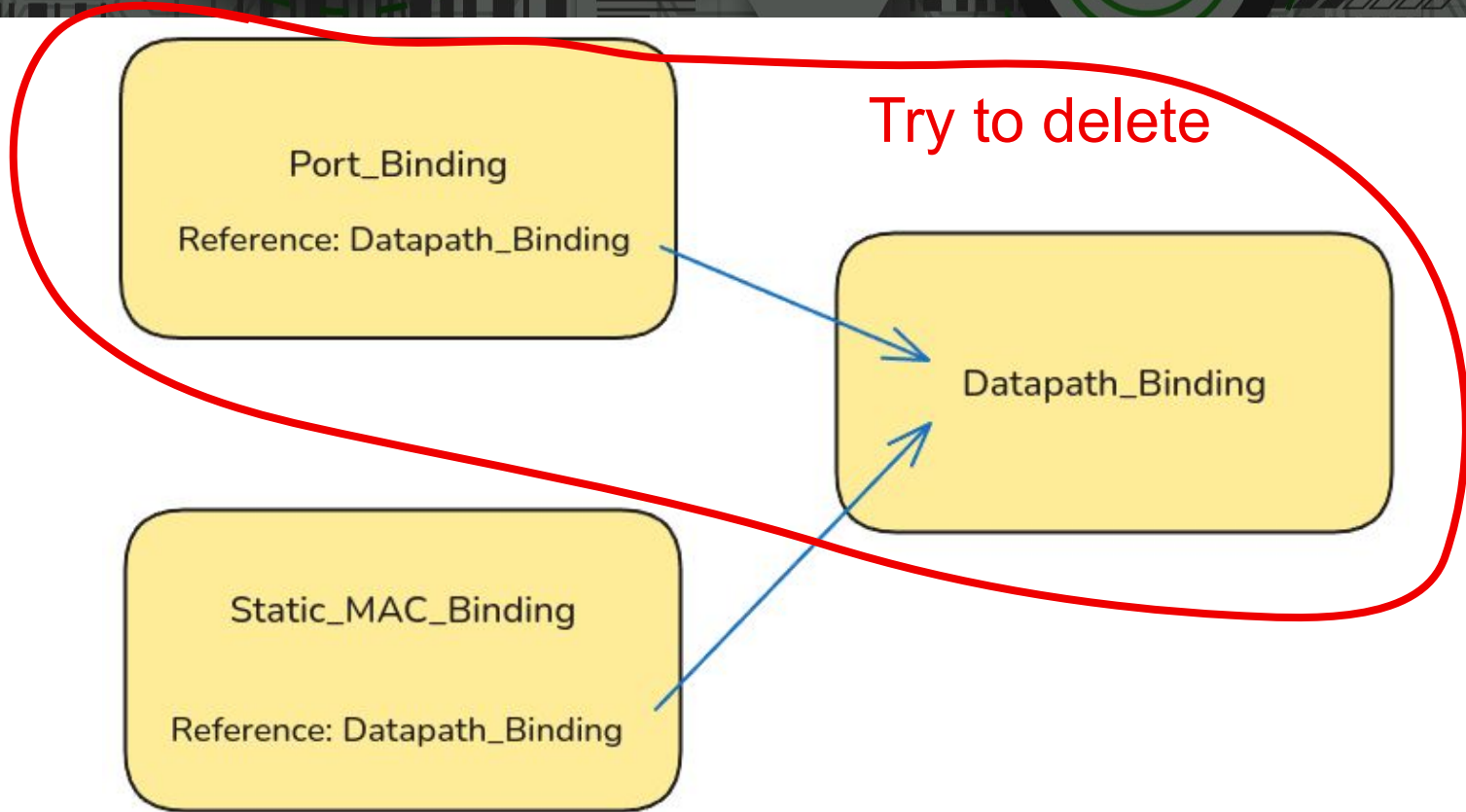
Southbound database



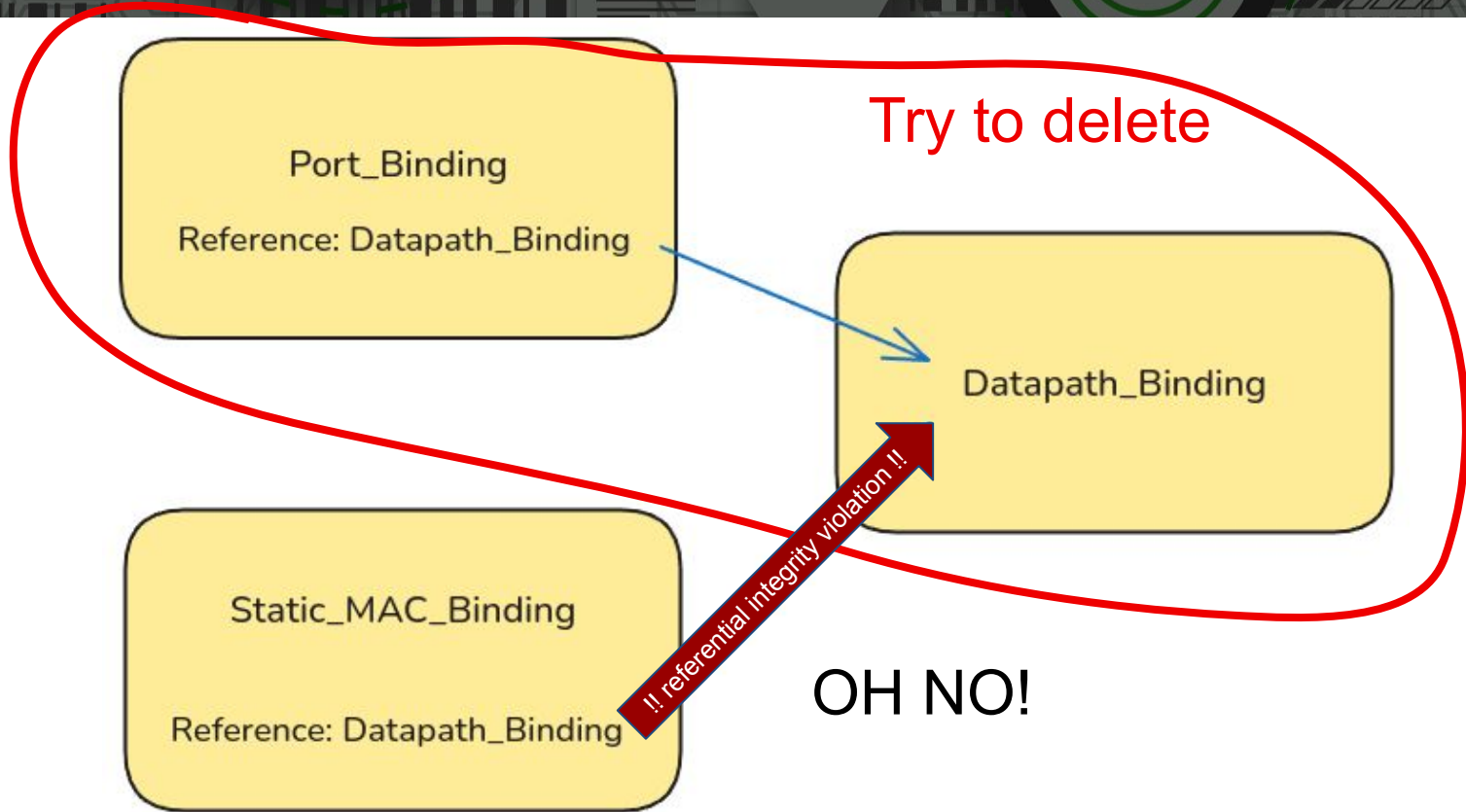
One of my first projects – sb-db structure



One of my first projects – sb-db structure



One of my first projects – sb-db structure



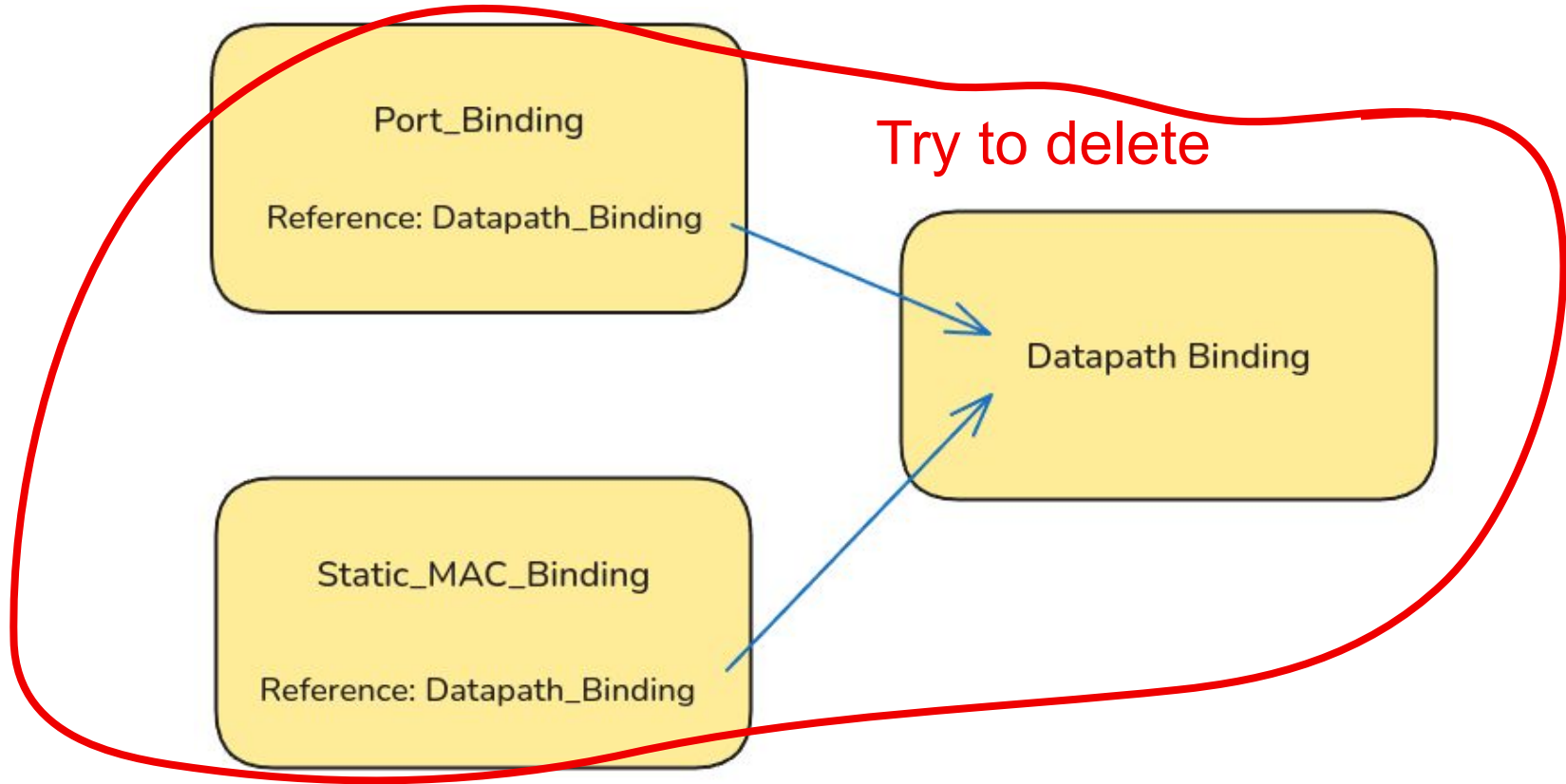
One of my first projects – The solution

- Deleting the Static_MAC_Binding table along with the other two, all during the same transaction, prevents the referential integrity violation.
- A test was written to ensure future functionality

```
▼ northd/northd.c  □  ↕
18419 18420                                     sb_smb->ip);
18420 18421             if (!nb_smb) {
18421 18422                 sbrec_static_mac_binding_delete(sb_smb);
18423 +                 continue;
18424 +             }
18425 +
18426 +             struct ovn_port *op = ovn_port_find(lr_ports, nb_smb->logical_port);
18427 +             if (!op || !op->nbrp || !op->od || !op->od->sb) {
18428 +                 sbrec_static_mac_binding_delete(sb_smb);
18422 18429             }
18423 18430         }
18424 18431
```

<https://github.com/ovn-org/ovn/commit/417f1415b2f51b08d81327afb93ae4f3a61e2087>

One of my first projects – sb-db new behavior



One of my first projects – sb-db new behavior



One of my first projects – What I got from this

- A better understanding of the differences between and functions of OVN's databases and daemons
- Insight into how OVN's database components translate to code

Beginner advice

- Sign up for the mailing list

<https://mail.openvswitch.org/mailman/listinfo>

- Take advantage of the docs

[https://docs.ovn.org/en/latest/internals/contributing/submitti
ng-patches.html](https://docs.ovn.org/en/latest/internals/contributing/submitting-patches.html)

- Write a test to accompany any change of behavior.
- Ask questions!

Sources

- Thumbs up image:

https://as1.ftcdn.net/v2/img/o3/17/30/46/1000_F_317304685_K57ng3eml86uELUK7rMgdI8Mro5KBmfM.jpg



The end!

Questions?