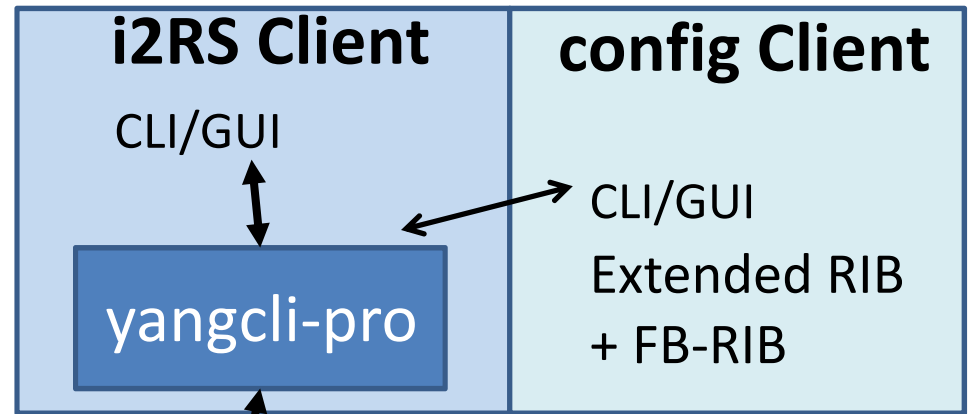


I2RS RIB Route Example

Sue Hares

Hackathon IETF 96 Goals

NETCONF
with i2RS
RIB + FB-RIB



NETCONF

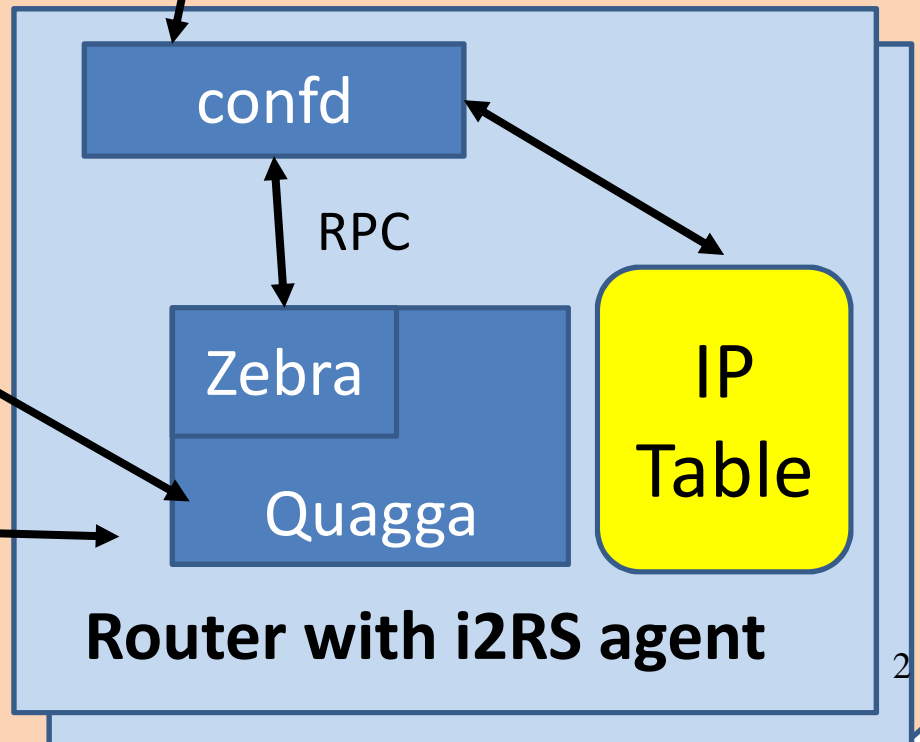
`<route-add>`

Network of routers
simulated using
mininet/mininext

Local config
static route
IP table



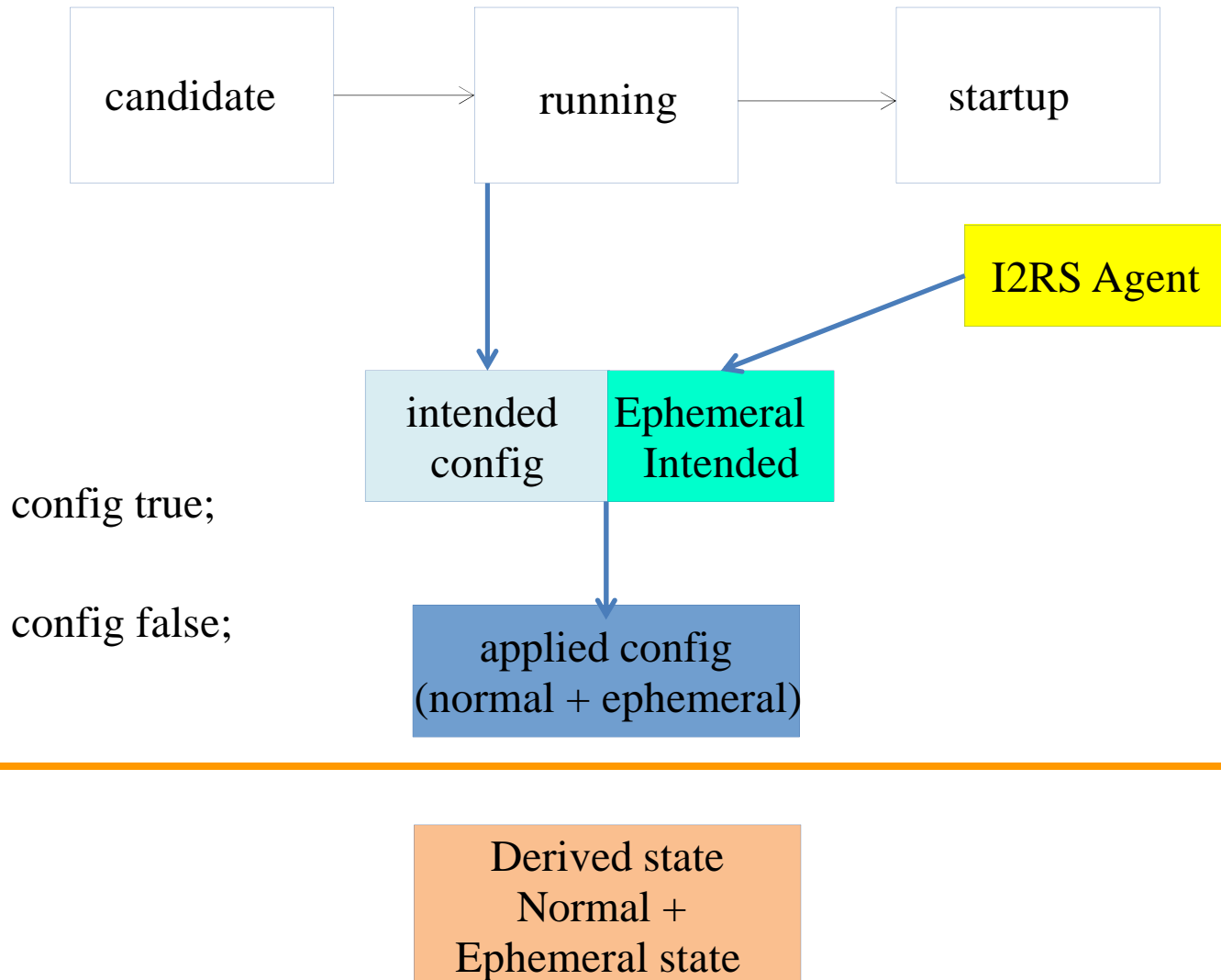
ospf/
bgp



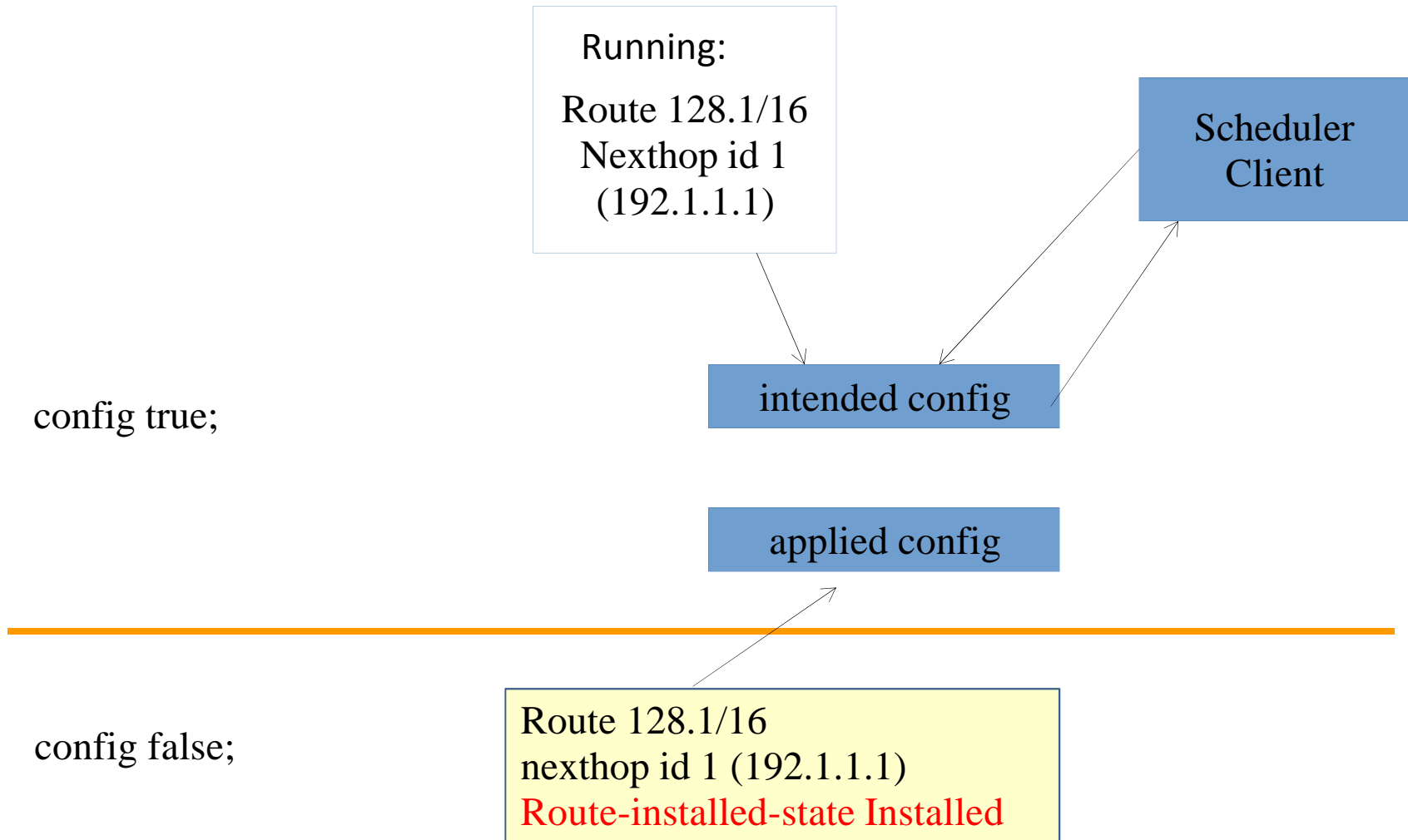
I2RS RIB Example

- First Case
 - 128.2/16 with nexthop 1 – added by netconf config
 - 128.2/16 with nexthop 2 – added by I2RS RIB client 1
 - DDOS attack causes you to overwrite NETCONF config with I2RS RIB route via client 2

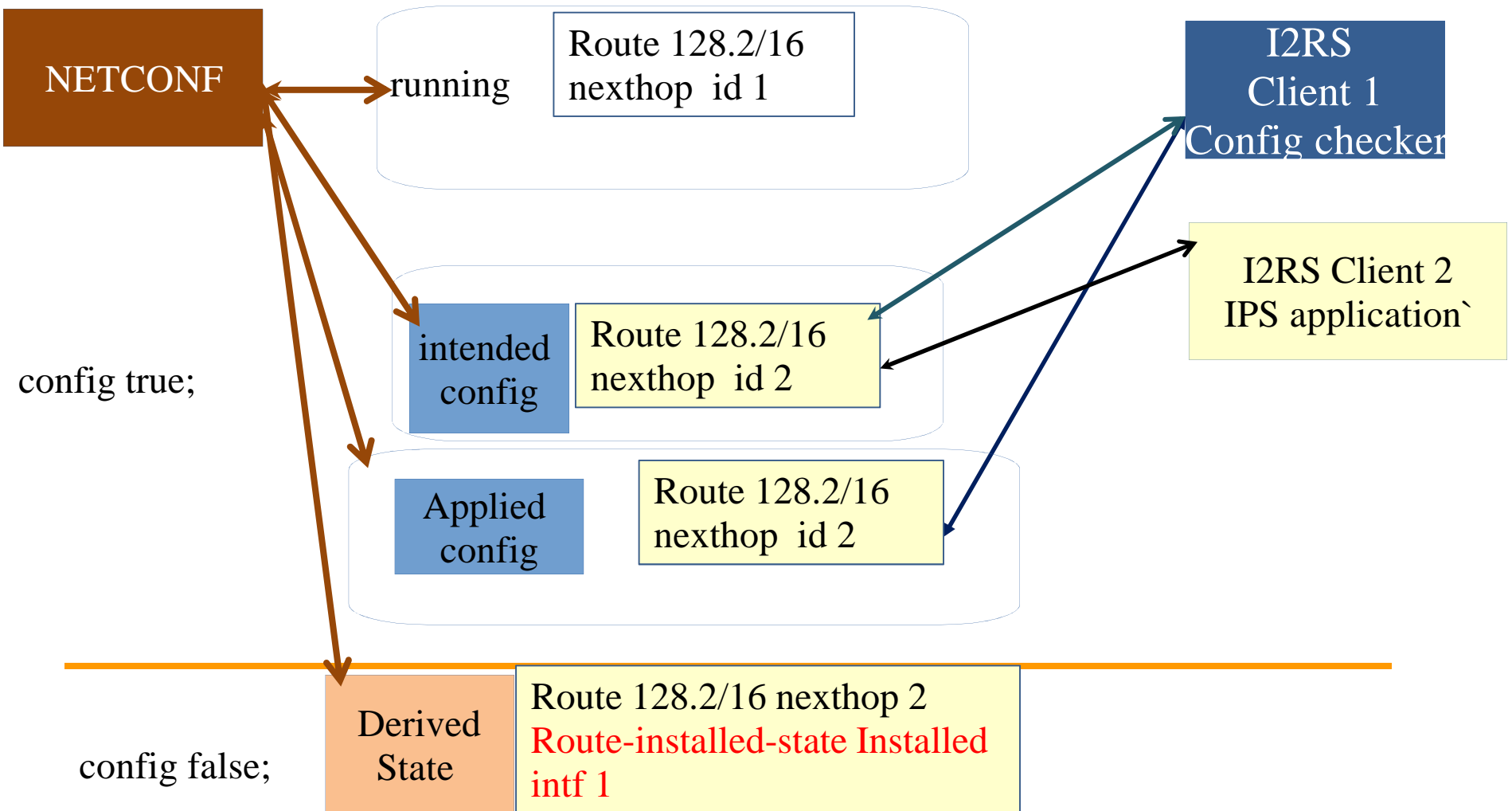
Ephemeral Additions



Thermostat Model RIB Equivalent



Route + Ephemeral Route



RESTCONF Example

RESTCONF Running Datastore Edit

```
PUT /restconf/data/i2rs-  
rib/instance=1/rib=IPv4/route=128.2  
/next-hop { "next-hop":1 }
```

RESTCONF Ephemeral Datastore Edit of config=true

```
PUT /restconf/data/i2rs-  
rib/instance=1/rib=IPv4/route=128.2  
/next-hop?context=ephemeral  
{ "next-hop":2 }
```

Route

Index for route direct reference without prefix match; Main key.

Type: ipv4, ipv6, mpls, mac, interface

Type: v4 prefix match

Index for nexthop direct index without match

IPv4 prefix

```
module i2rs-rib { ....
  container routing-instance { ...
    list rib-list { ....
      list route-list {
        key "route-index";
        leaf route-index {
          type uint64;
          mandatory true;
        }
        leaf route-type {
          type route-type-def;
          mandatory true;
        }
        Container match {
          choice rib-route-type { ....
            leaf destination-ip-v4-prefix {
              type inet:ipv4-prefix;
              mandatory true;
            }
          }
        }
        leaf nexthop-id {
          type uint32;
          mandatory true;
        }
        leaf next-hopo-ipv4-address {
          type inet:ipv4-prefix;
          mandatory true
        }
      }
    }
  }
}
```

Add Ephemeral true;

```
container route-statistics {
  leaf route-installed state {
    type route-installed-state def;
    config false;
  }
}
```

Defined as:
Installed, uninstalled

RESTCONF Running Datastore Edit

```
PUT /restconf/data/i2rs-  
rib/instance=1/rib=IPv4/route=128.2  
  /next-hop { "next-hop":1 }
```

RESTCONF Ephemeral Datastore Edit of config=true

```
PUT /restconf/data/i2rs-  
rib/instance=1/rib=IPv4/route=128.2.1  
  /next-hop?content=ephemeral { "next-hop":2 }
```

RESTCONF Ephemeral Datastore Edit of config=false

```
GET /restconf/data/i2rs-  
rib/instance=1/rib=IPv4/route=128.2.1  
  /next-hop=2/route-installed-state/datastore=ephemeral  
  { "route-installed-state": Installed }
```

RIB-DM Design issues

- Next-hop protection
- Overlapping routes