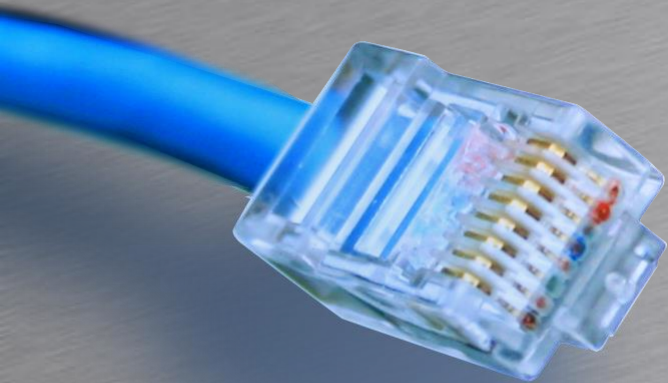


Routing



- en del af **mercantec**⁺

JIR: Junos Intermediate Routing

Rasmus Elmholt V1.0



Route tabellen

- Route tabellen består af routes fra forskellige kilder
 - Lokale interfaces
 - Statiske routes
 - Lært via dynamiske routing protokoller
- Routing tabellen bliver replikeret over i Forwarding tabellen på RE og synkroniseret med Forward tabellen på PFE
- IPv4 routing table hedder inet.0
- IPv6 routing table hedder inet.6

```
Show route table inet.0
```

Prøv det



Route tabellen



- Route preference

Navn	Værdi
Direct	0
Local	0
Static	5
OSPF Internal	10
RIP	100
OSPF AS external	150
Internal BGP (iBGP)	170



Forwarding tabellen

- Gemmer det information der bruges til pakke forwarding. Desitination prefixer, exit interface og next-hop

`Show route forwarding-table`

Prøv det



Statiske Routes

- Statiske routes sættes under `edit routing-options`
 - Indeholder netværk/prefix og next-hop
 - `Qualified-next-hop` bruges ved backup static routes
 - Hvis pakkerne skal routes i bit bucket
 - `Reject` sender en ICMP besked tilbage
 - `Discard` laver en silent discard



Statiske Routes

- Eksempel

```
[edit routing-options]
root@CPE2# show
static {
    route 0.0.0.0/0 {
        next-hop 172.18.2.1;
        resolve;
        qualified-next-hop 172.18.2.2 {
            preference 20;
        }
    }

    route 192.168.139.0/24 {
        next-hop 192.168.146.1;
        no-readvertise;
    }
}
```



Statiske Routes

- Eksempel 2

```
[edit routing-options]
```

```
rael@SRX240# show
```

```
static {
```

```
    route 192.168.139.0/24 {
```

```
        next-hop 192.168.146.1;
```

```
        qualified-next-hop 192.168.146.2 {
```

```
            preference 20;
```

```
        }
```

```
    }
```

```
}
```



Statiske Routes

- Verificer

```
rael@SRX240> ping 8.8.8.8 count 4
PING 8.8.8.8 (8.8.8.8): 56 data bytes
64 bytes from 8.8.8.8: icmp_seq=0 ttl=46 time=34.778 ms
64 bytes from 8.8.8.8: icmp_seq=1 ttl=46 time=34.390 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=46 time=34.354 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=46 time=34.385 ms

--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max/stddev = 34.354/34.477/34.778/0.174 ms

rael@SRX240> ping 8.8.8.8 rapid count 10
PING 8.8.8.8 (8.8.8.8): 56 data bytes
!!!!!!!!!!

--- 8.8.8.8 ping statistics ---
10 packets transmitted, 10 packets received, 0% packet loss
round-trip min/avg/max/stddev = 34.239/34.459/35.121/0.233 ms
```




Statiske Routes

- Eksempel 2

```
rael@SRX240> show route protocol static
```

```
inet.0: 14 destinations, 15 routes (14 active, 0 holddown, 0 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

```
192.168.139.0/24  *[Static/5] 00:01:11  
                  > to 192.168.146.1 via vlan.99  
                  [Static/20] 00:01:11  
                  > to 192.168.146.2 via vlan.99
```

* Er den valgte vej



Statiske Routes



- Eksempel 2

```
rael@SRX240> show route protocol static detail
```

```
inet.0: 14 destinations, 15 routes (14 active, 0 holddown, 0 hidden)
```

```
192.168.139.0/24 (2 entries, 1 announced)
```

```
  *Static Preference: 5
```

```
    Next hop type: Router, Next hop index: 576
```

```
    Address: 0x15c03ec
```

```
    Next-hop reference count: 7
```

```
    Next hop: 192.168.146.1 via vlan.99, selected
```

```
    State: <Active Int Ext>
```

```
    Age: 1:59
```

```
    Task: RT
```

```
    Announcement bits (2): 0-KRT 1-Resolve tree 1
```

```
    AS path: I
```

```
  Static Preference: 20
```

```
    Next hop type: Router
```

```
    Address: 0x15c03a0
```

```
    Next-hop reference count: 2
```

```
    Next hop: 192.168.146.2 via vlan.99, selected
```

```
    State: <Int Ext>
```

```
    Inactive reason: Route Preference
```

```
    Age: 1:59
```

```
    Task: RT
```

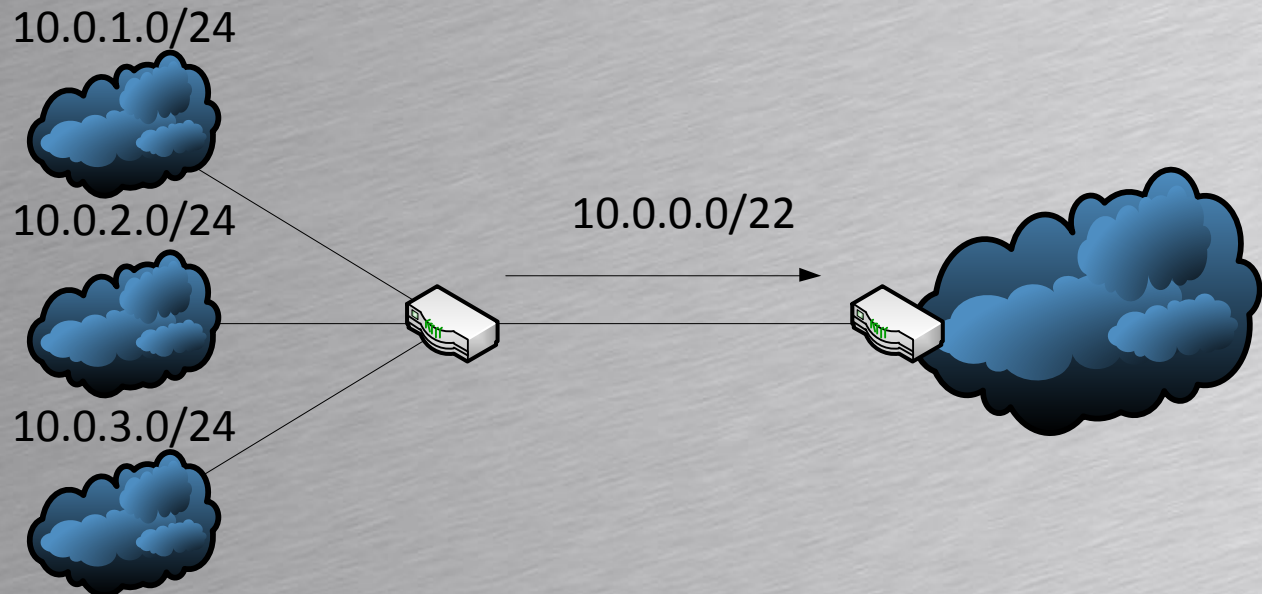
```
    AS path: I
```

* Er den valgte vej



Aggregate Routes

- Bruges til summering
 - Flere contributing routes udgøre en aggregate route
 - Default preference på 130 og next-hop reject
 - Der skal mindst være en aktiv contributing route

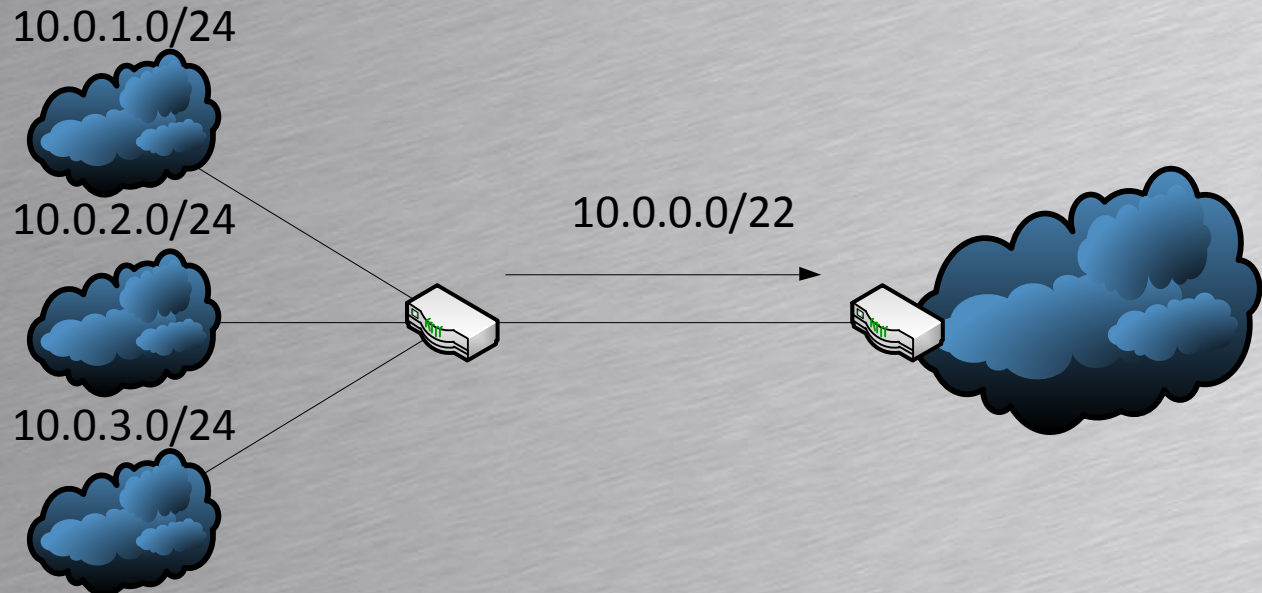




Aggregate Routes

- Eksempel

```
[edit routing-options]
rael@SRX240# show
aggregate {
    route 10.0.0.0/22;
    route 10.4.0.0/22 discard;
}
```





Aggregate Routes



- Brug `show route 10.0.0.0/22 exact detail` for at se contributing routes

```
rael@SRX240> show route 10.0.0.0/22 exact detail
inet.0: 9 destinations, 9 routes (8 active, 0 holddown, 1 hidden)
10.0.0.0/22 (1 entry, 1 announced)
    *Aggregate Preference: 130
        Next hop type: Reject
        Next-hop reference count: 4
        State: <Active Int Ext>
        Age: 35
        Task: Aggregate
        AS path: I Refcount: 1
        Contributing Routes (1):
            10.0.1.0/24 proto Direct
```