

# BGP Route Server Proof of Concept

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NORDUnet

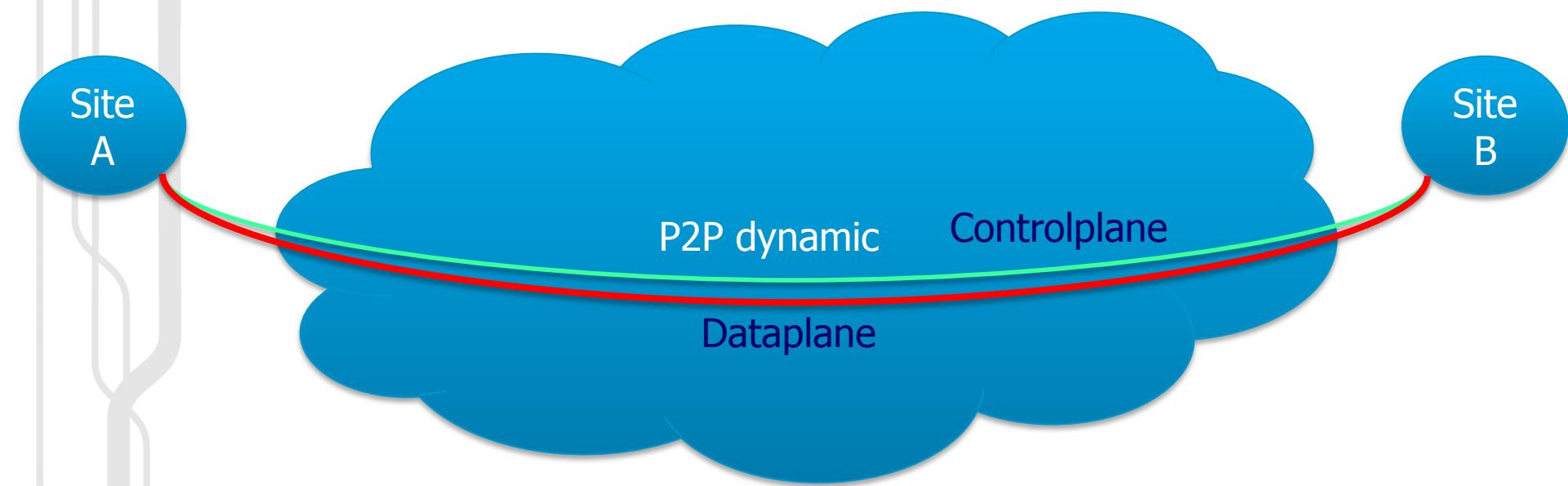


- Dynamic P2P links has two end points that normally terminates in a aggregation router at each site.
- On logical interface per destination site.
- eBGP are configured over the logical interface to each site.
- Reachability is advertised after the P2P link is up and BGP is established.



- Full mesh of BGP sessions.
- Extensive amount of configuration.
- BGP sessions over short lived P2P links are most of the time down and causes alarms.

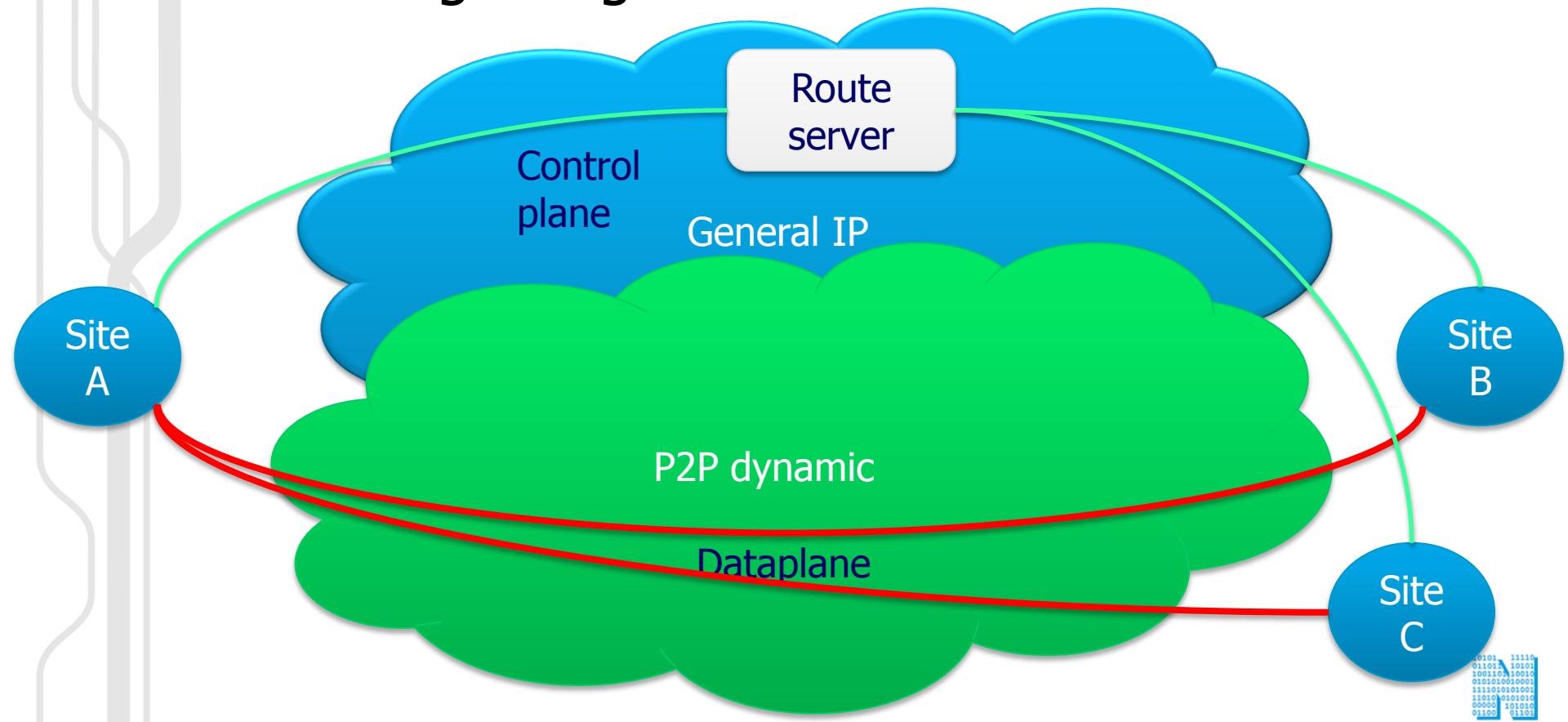




- Controlplane shared with dataplane
- Dataplane reachability detected when controlplane goes down



- Simplify the BGP setup
- Only one BGP session per site
- Route server with one outgoing RIB per site, steering using communities

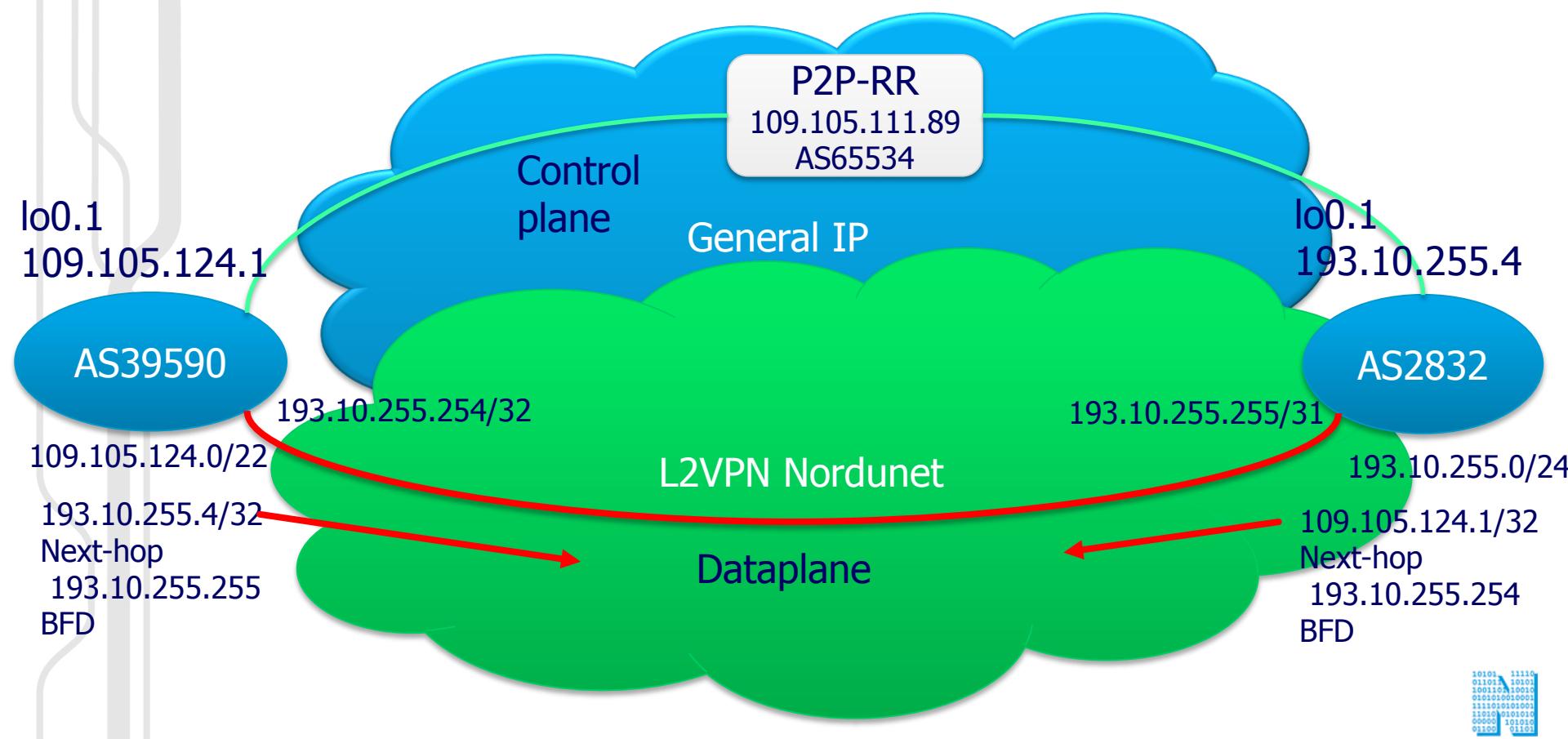


Edoardo found

- Unfortunately been quiet, and what I know no implementation ready for use.

## L2VPN over NORDUnet

- NDGF(39590), juniper MX480 in Copenhagen
- AS2832, juniper T320 in Stockholm



```
define myas = 65534;

function bgp_out(int peeras){
    if (myas,peeras) ~ bgp_community then return true;
    return false;
}

protocol bgp R39590x1 {
    description "NDGF - peer 1";
    neighbor 109.105.124.1 as 39590;
    export where bgp_out(39590);
    multihop 127;
    next hop keep;
    table T39590;
    local as myas;
    rs client;
}
```



## BGP Conf to Route Server (Done once)

```
protocols {  
    bgp {  
        group p2p-RS {  
            multihop {  
                ttl 127;  
            }  
            neighbor 109.105.111.89 {  
                import [ accept-P2P reject-rest ];  
                export export_on_p2p_bfd;  
                peer-as 65534;  
            }  
        }  
    }  
}
```



## VLAN per peer

```
interfaces {  
    ae1 {  
        unit 3001 {  
            description "p2p test";  
            vlan-id 3001;  
            family inet {  
                address 193.10.255.254/31;  
            }  
        }  
    }  
}
```



## Static route

```
routing-options {  
    static {  
        route 193.10.255.4/32 { ← loopback of other side  
            next-hop 193.10.255.255;  
            bfd-liveness-detection {  
                minimum-interval 100;  
                multiplier 3;  
            }  
        }  
    }  
}  
Condition  
policy-options {  
    condition {  
        p2p_bfd_lo_AS2832 {  
            if-route-exists {  
                193.10.255.4/32;  
                table inet.0;  
            }  
        }  
    }  
}
```



## Export policy

```
policy-options {  
    policy-statement {  
        export_on_p2p_bfd {  
            term to_AS2832 {  
                from {  
                    protocol aggregate;  
                    route-filter 109.105.124.0/22 exact;  
                    condition p2p_bfd_lo_AS2832;  
                }  
                then {  
                    community add p2p_RS_AS2832;  
                    accept;  
                }  
            }  
            term reject-rest {  
                then reject;  
            }  
        }  
    }  
}
```



## Peer peer conf

```
set interfaces ae1 unit 3001 description "p2p test"
```

```
set interfaces ae1 unit 3001 vlan-id 3001
```

```
set interfaces ae1 unit 3001 family inet address 193.10.255.254/31
```

```
set routing-options static route 193.10.255.4/32 next-hop 193.10.255.255
```

```
set routing-options static route 193.10.255.4/32 bfd-liveness-detection minimum-interval 100
```

```
set routing-options static route 193.10.255.4/32 bfd-liveness-detection multiplier 3
```

```
set policy-options condition p2p_bfd_lo_AS2832 if-route-exists 193.10.255.4/32
```

```
set policy-options condition p2p_bfd_lo_AS2832 if-route-exists table inet.0
```

```
set policy-options policy-statement export_on_p2p_bfd term to_AS2832 from protocol aggregate
```

```
set policy-options policy-statement export_on_p2p_bfd term to_AS2832 from route-filter 109.105.124.0/22 exact
```

```
set policy-options policy-statement export_on_p2p_bfd term to_AS2832 from condition p2p_bfd_lo_AS2832
```

```
set policy-options policy-statement export_on_p2p_bfd term to_AS2832 then community add p2p_RS_AS2832
```

```
set policy-options policy-statement export_on_p2p_bfd term to_AS2832 then accept
```

```
set policy-options policy-statement export_on_p2p_bfd term reject-rest then reject
```

```
set policy-options community p2p_RS_AS2832 members 65534:2832
```

## Link down:

```
bergroth@dk-ndgf-re0# run show bfd session
```

Address	State	Interface	Detect Time	Transmit Interval	Multiplier
193.10.255.255	Down	ae1.3001	0.300	2.000	3

```
PING 193.10.255.255 (193.10.255.255):
```

```
56 data bytes
```

```
^C
```

```
--- 193.10.255.255 ping statistics ---
```

```
20 packets transmitted, 0 packets received, 100% packet loss
```

```
bergroth@dk-ndgf-re0# run show bgp summary | grep 109.105.111.89
```

```
109.105.111.89      65534      81111      77261      0      27 3w3d 21:10:24
```

```
Establ
```

```
bergroth@dk-ndgf-re0# run show bgp neighbor 109.105.111.89 | grep prefix
```

```
Active prefixes:      0
```

```
Received prefixes:   0
```

```
Accepted prefixes:   0
```

```
Advertised prefixes: 0
```



## Link Up:

```
bergroth@dk-ndgf-re0# run show bfd session
```

Address	State	Interface	Detect Time	Transmit Interval	Multiplier
193.10.255.255	Up	ae1.3001	0.300	0.100	3

```
bergroth@dk-ndgf-re0# run show route 193.10.255.4 table inet.0
```

```
193.10.255.4/32 * [Static/5] 00:01:53 > to 193.10.255.255 via ae1.3001
```

```
bergroth@dk-ndgf-re0# run show route receive-protocol bgp 109.105.111.89
```

```
Prefix Nexthop MED Lclpref AS path
```

```
• 193.10.255.0/24 193.10.255.4 2832 I
```

```
bergroth@dk-ndgf-re0# run show route 193.10.255.0/24
```

```
193.10.255.0/24 * [BGP/170] 00:01:59, localpref 100, from 109.105.111.89
```

```
AS path: 2832 I, validation-state: unverified
```

```
> to 193.10.255.255 via ae1.3001
```

```
[BGP/170] 4w1d 14:04:59, MED 15, localpref 100
```

```
AS path: 2603 2832 I, validation-state: unverified
```

```
> to 109.105.102.49 via ae1.1
```

```
193.10.255.4/32 * [Static/5] 00:01:59
```

```
> to 193.10.255.255 via ae1.3001
```



# Ping a host inside AS2832, disable P2P link.

64 bytes from 193.10.255.9: icmp\_seq=56 ttl=62 time=9.288 ms **P2P**  
64 bytes from 193.10.255.9: icmp\_seq=57 ttl=62 time=9.236 ms  
64 bytes from 193.10.255.9: icmp\_seq=58 ttl=62 time=9.205 ms  
64 bytes from 193.10.255.9: icmp\_seq=59 ttl=62 time=9.333 ms  
64 bytes from 193.10.255.9: icmp\_seq=60 ttl=62 time=9.246 ms  
64 bytes from 193.10.255.9: icmp\_seq=61 ttl=62 time=23.055 ms ← Switch  
64 bytes from 193.10.255.9: icmp\_seq=62 ttl=59 time=44.793 ms **GeneralIP**  
64 bytes from 193.10.255.9: icmp\_seq=63 ttl=59 time=12.311 ms  
64 bytes from 193.10.255.9: icmp\_seq=64 ttl=59 time=12.273 ms  
64 bytes from 193.10.255.9: icmp\_seq=65 ttl=59 time=12.221 ms  
64 bytes from 193.10.255.9: icmp\_seq=66 ttl=59 time=12.472 ms  
64 bytes from 193.10.255.9: icmp\_seq=67 ttl=59 time=12.360 ms  
64 bytes from 193.10.255.9: icmp\_seq=68 ttl=59 time=12.221 ms

--- 193.10.255.9 ping statistics ---

82 packets transmitted, 82 packets received, **0%** packet loss  
round-trip min/avg/max/stddev = 9.169/13.165/46.212/8.627 ms



- Questions?