#R1

```
protocols {
    bgp {
        group ebgp-as-65510 {
            export export-ebgp;
            peer-as 65510;
            neighbor 55.0.0.1;
        }
        group ibgp {
            type internal;
            export export-ibgp;
            local-address 192.168.1.1;
            cluster 192.168.1.1
            neighbor 192.168.1.2;
            neighbor 192.168.1.3;
            neighbor 192.168.1.4;
        }
    }
}
policy-options{
    policy-statement export-ibgp {
        from route-type external;
        then {
            local-preference 200;
            next-hop self;
        }
    }
    policy-statement export-ebgp {
        term 1 {
            from {
                protocol aggregate;
                route-filter 171.21.0.0/16 exact;
            }
            then {
                as-path-prepend "65500 65500 65000";
                accept;
            }
        }
        term 2 {
            then reject;
        }
    }
}
routing-options{
    aggregate {
        route 172.21.0.0/16;
    }
    autonomous-system 65500;
}
```
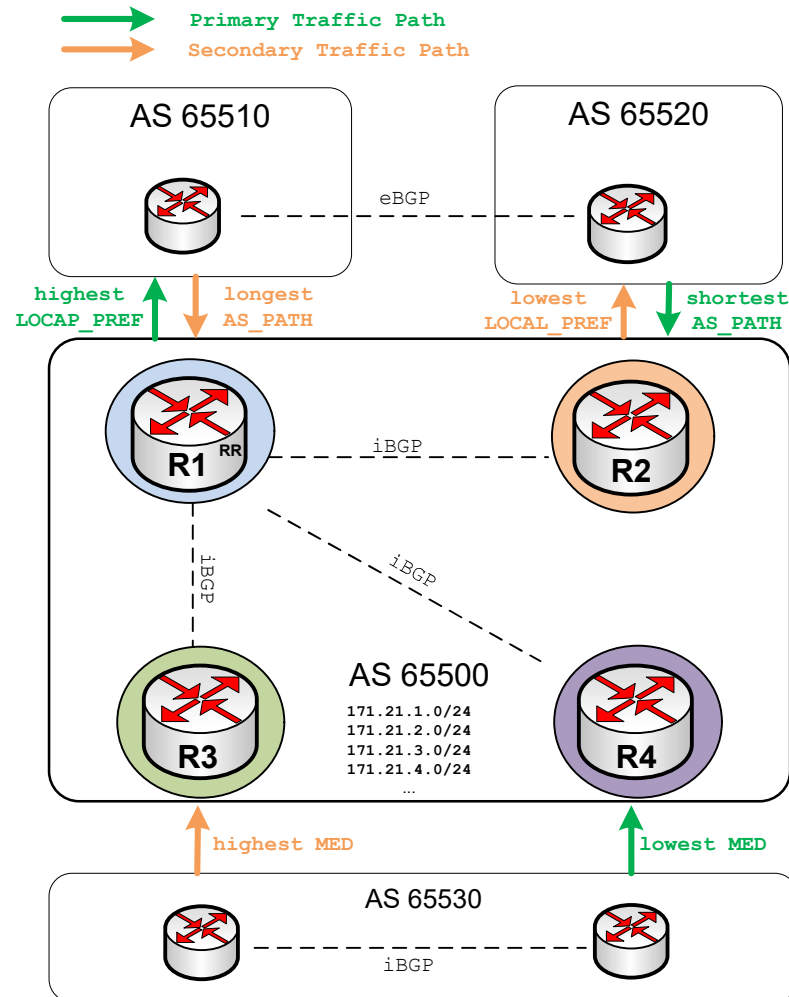
BGP Path Selection – In a Nutshell
1) Highest local preference (Default = 100)
2) Shortest AS-Path
3) Lowest origin code I < E < ?
4) Lowest MED (Default = 0)
5) Prefer iBGP > eBGP > eBGP via iBGP
6) Lowest IGP cost (iBGP)

→ **Primary Traffic Path**
→ **Secondary Traffic Path**

AS 65510 — eBGP — AS 65520

highest LOCAP_PREF | longest AS_PATH | lowest LOCAL_PREF | shortest AS_PATH

R1 RR — iBGP — R2
iBGP | iBGP
R3 — AS 65500 — R4

AS 65500
171.21.1.0/24
171.21.2.0/24
171.21.3.0/24
171.21.4.0/24
...

highest MED | lowest MED

AS 65530 — iBGP

#R2

```
protocols {
    bgp {
        group ebgp-as-65520{
            export export-ebgp;
            peer-as 65520;
            neighbor 66.0.0.1;
        }
        group ibgp {
            type internal;
            export-ibgp
            neighbor 192.168.1.1
            local-address 192.168.1.4
        }
    }
}
policy-options{
    policy-statement export-ibgp {
        from route-type external;
        then {
            next-hop self;
        }
    }
    policy-statement export-ebgp {
        term 1 {
            from {
                protocol aggregate;
                route-filter 171.21.0.0/16 exact;
            }
            then accept;
        }
        term 2 {
            then reject;
        }
    }
}
routing-options {
    aggregate {
        route 172.21.0.0/16;
    }
    autonomous-system 65500;
}
```

#R3

```
protocols {
    bgp {
        group ebgp-r7 {
            export export-ebgp
            peer-as 65530;
            neighbor 77.0.0.1
        }
        group ibgp {
            type internal;
            neighbor 192.168.1.1
            local-address 192.168.1.3
        }
    }
}
policy-statement export-ebgp {
    ...
    then {
        metric 150;
    }
}
routing-options{
    autonomous-system 65500;
}
```

BGP Troubleshooting

RIB OUT and RIB IN
```
>show route advertising-protocol bgp <neighbor IP>
>show route receive-protocol bgp <neighbor IP>
```

View BGP summary (BGP overview status)
```
>show bgp summary
```

View hidden routes (policies , nh unreachable ...)
```
>run show route protocol bgp hidden
```

#R4

```
protocols {
    bgp {
        group ebgp-as-65530 {
            export export-ebgp
            peer-as 65530;
            neighbor 88.0.0.1
        }
        group ibgp {
            type internal;
            neighbor 192.168.1.1
            local-address 192.168.1.4
        }
    }
}
policy-statement export-ebgp {
    ...
    then {
        metric 100;
    }
}
routing-options{
    autonomous-system 65500;
}
```