

Consider only routes with no AS loops and a valid next hop.

Use Longest Prefix Match.

Where multiple routes are available to identical network and prefix:

- Prefer highest weight (local to router).
- Prefer highest local preference (global within AS).
- Prefer route originated by the local router ('network' command or redistribution).
- Prefer shortest AS path.
- Prefer lowest origin code: IGP ('network') < EGP (legacy) < incomplete (redistributed).
- Prefer lowest MED (exchanged between autonomous systems).
- Prefer EBGP path over IBGP path.
- Prefer the path through the closest IGP neighbor.
- Prefer oldest route for EBGP paths.
- Prefer the path with the lowest neighbor BGP router ID.
- Prefer the path with the lowest neighbor IP address.

Weight



- Weight is a Cisco proprietary path attribute
- It is local to that router only – it is not sent to any BGP neighbors
- Value is 0 to 65,535
- Paths with **higher** Weight are more preferred
- Default value is 0 for routes learned from other BGP routers
- Default value is 32,768 for locally injected routes ('network' command or redistribution)

Verification – show ip bgp (Before Policy)

```
R1#show ip bgp
```

```
BGP table version is 5, local router ID is 192.168.0.1
```

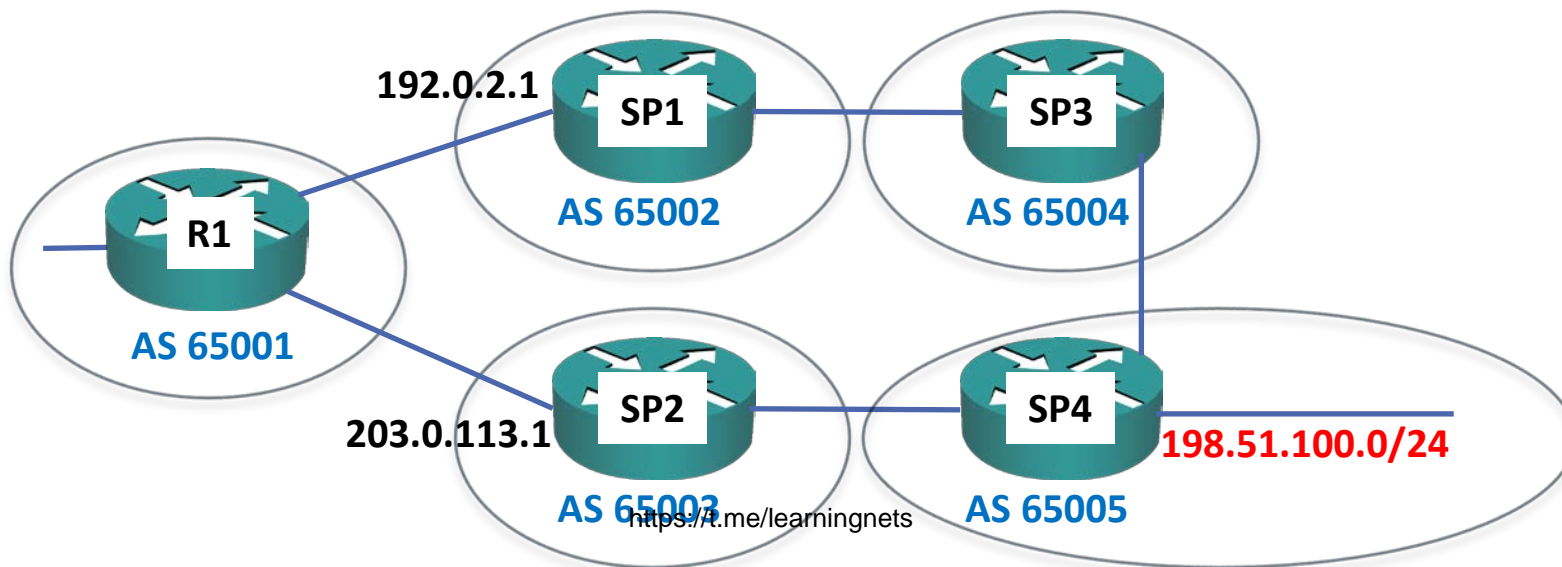
```
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,  
t secondary path,
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
RPKI validation codes: V valid, I invalid, N Not found
```



	Network	Next Hop	Metric	LocPrf	Weight	Path
*>	198.51.100.0	203.0.113.1 (SP2)	0	65003	65005	i
*		192.0.2.1 (SP1)	0	65002	65004	65005 i



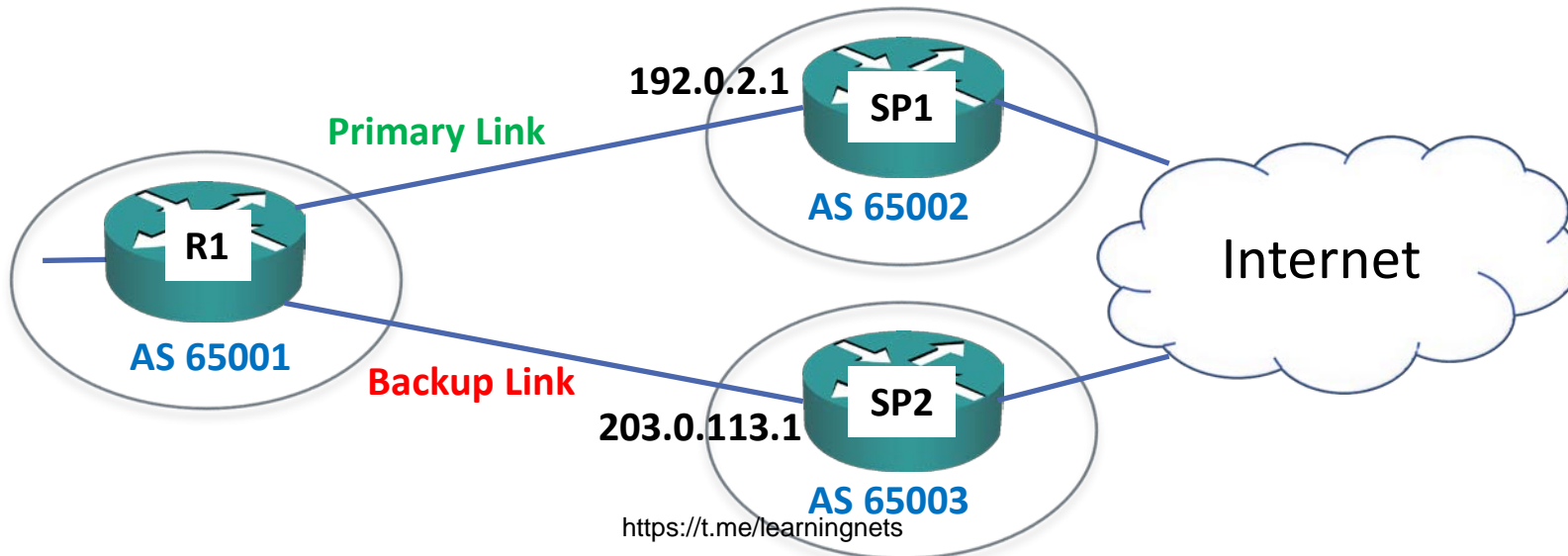
Weight Configuration – Primary/Backup

```
R1(config)#router bgp 65001
```

```
R1(config-router)#neighbor 192.0.2.1 weight 200
```

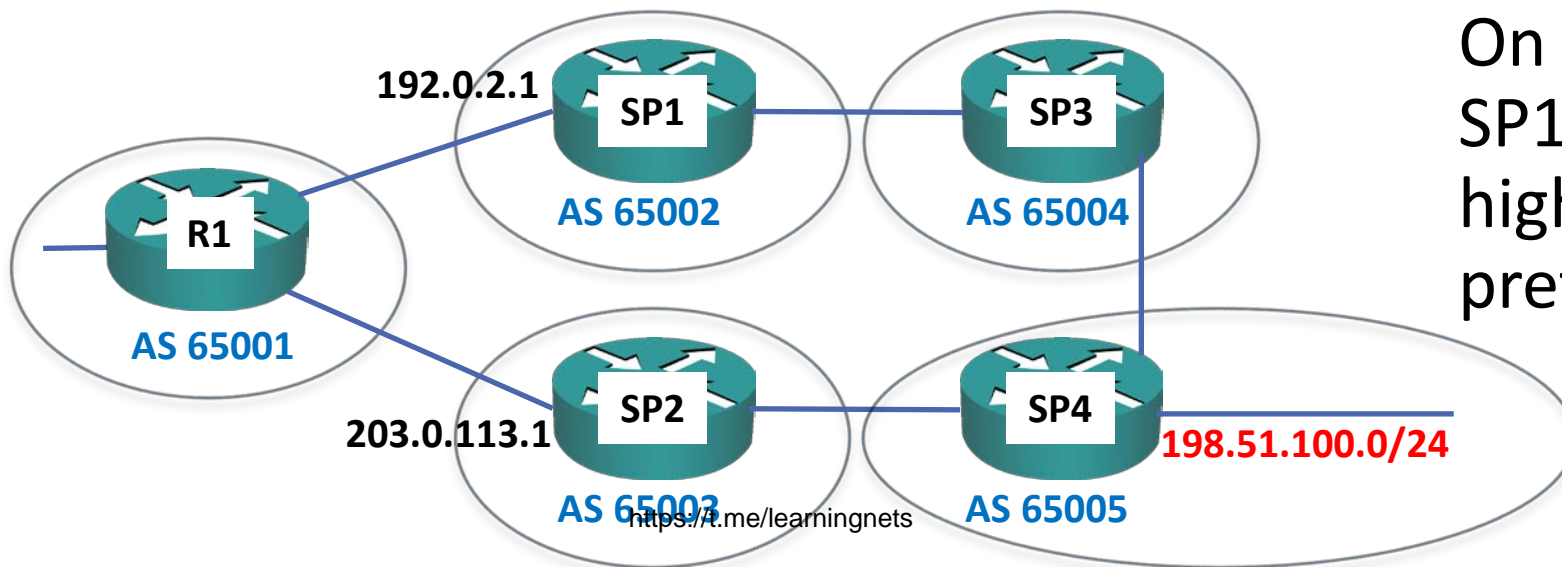
```
R1(config-router)#neighbor 203.0.113.1 weight 100
```

- On R1, all routes received from SP1 have a higher weight set and are preferred to routes from SP2



Weight Configuration Example 2A - ACL

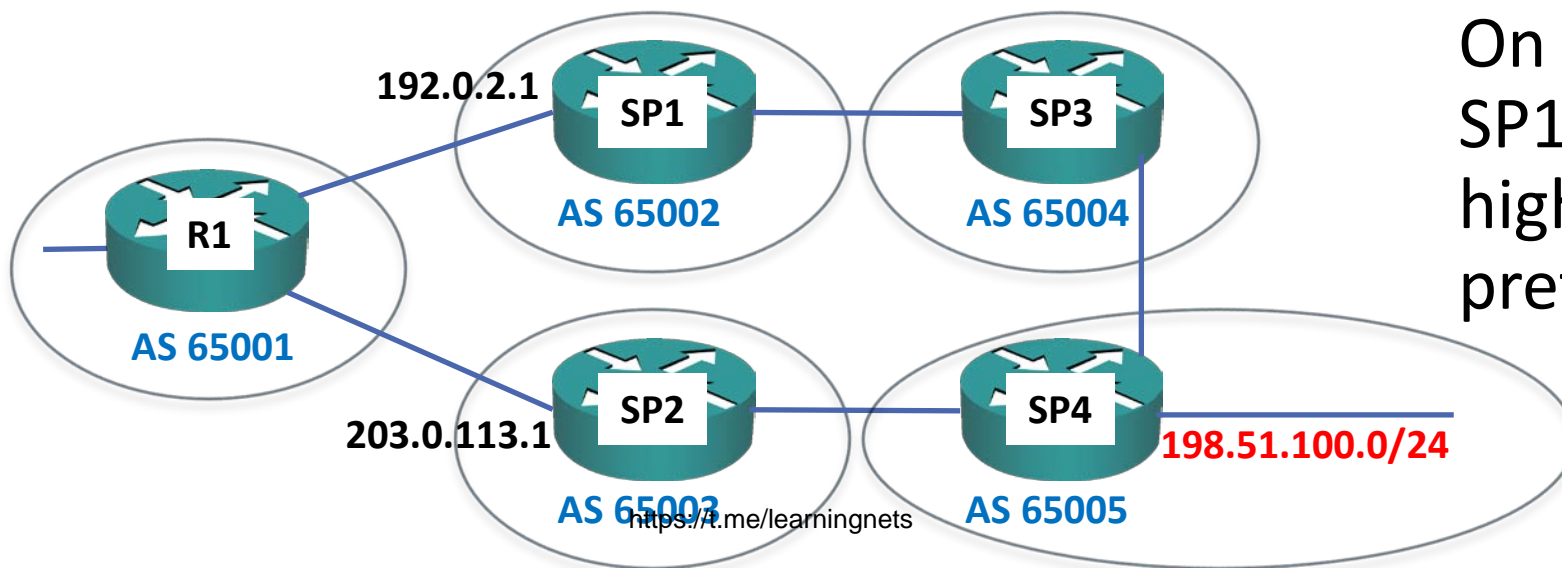
```
R1(config)#access-list 12 permit 198.51.100.0 0.0.0.255
R1(config)#route-map EXAMPLE2A permit 10
R1(config-route-map)#match ip address 12
R1(config-route-map)#set weight 200
R1(config)#route-map EXAMPLE2A permit 20
R1(config)#router bgp 65001
R1(config-router)#neighbor 192.0.2.1 route-map EXAMPLE2A in
```



On R1, the route received from SP1 for 198.51.100.0/24 has a higher weight set and is preferred to the route from SP2

Weight Configuration Example 2B – Prefix List

```
R1(config)#ip prefix-list TO_198.51.100.0/24 permit 198.51.100.0/24
R1(config)#route-map EXAMPLE2B permit 10
R1(config-route-map)#match ip address prefix-list TO_198.51.100.0/24
R1(config-route-map)#set weight 200
R1(config)#route-map EXAMPLE2B permit 20
R1(config)#router bgp 65001
R1(config-router)#neighbor 192.0.2.1 route-map EXAMPLE2B in
```



On R1, the route received from SP1 for 198.51.100.0/24 has a higher weight set and is preferred to the route from SP2

Verification – show ip bgp (Before Policy)

```
R1#show ip bgp
```

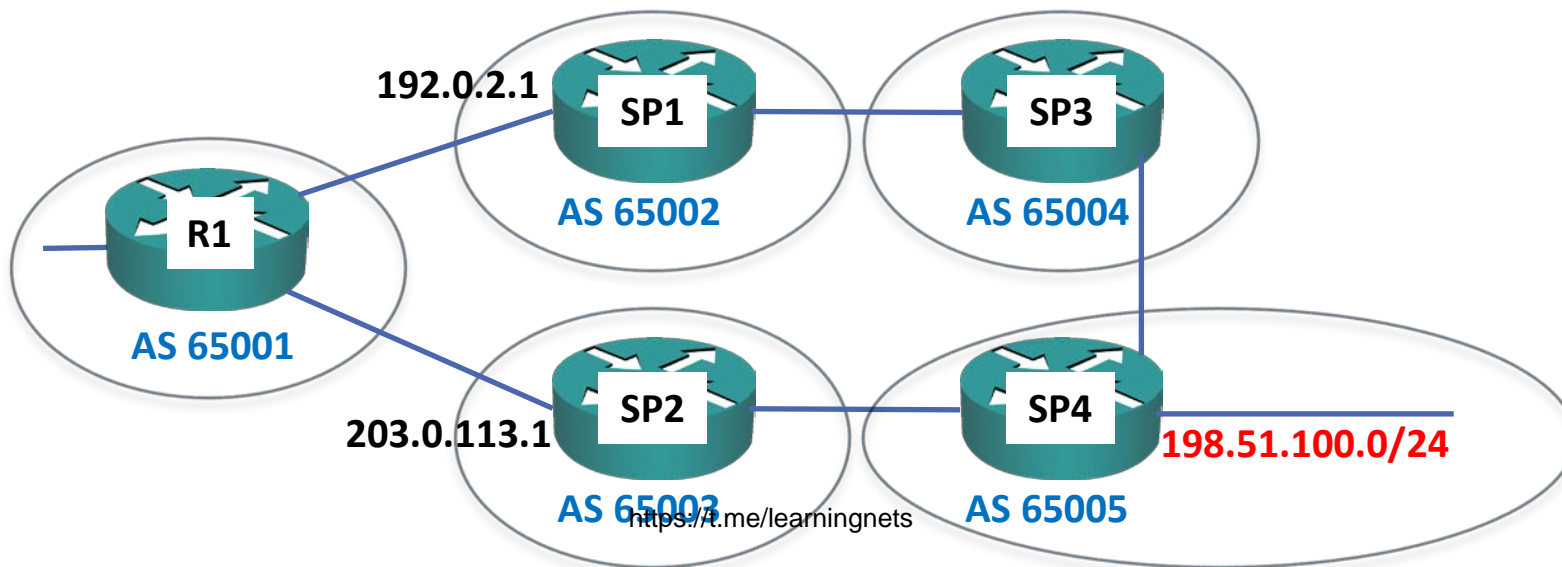
```
BGP table version is 5, local router ID is 192.168.0.1
```

```
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,  
t secondary path,
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
RPKI validation codes: V valid, I invalid, N Not found
```

	Network	Next Hop	Metric	LocPrf	Weight	Path
*>	198.51.100.0	203.0.113.1 (SP2)	0	65003	65005	i
*		192.0.2.1 (SP1)	0	65002	65004	65005 i



Verification – show ip bgp (After Policy)

```
R1#show ip bgp
```

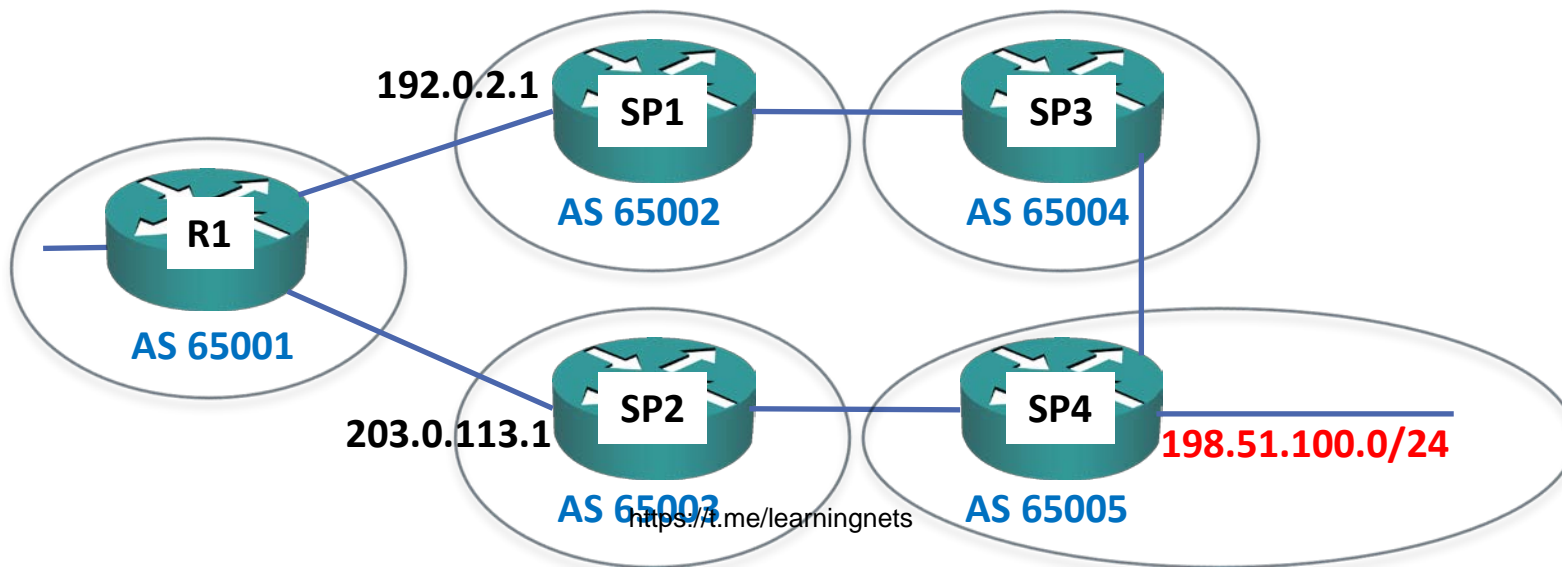
```
BGP table version is 5, local router ID is 192.168.0.1
```

```
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,  
t secondary path,
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
RPKI validation codes: V valid, I invalid, N Not found
```

	Network	Next Hop	Metric	LocPrf	Weight	Path
*	198.51.100.0	203.0.113.1 (SP2)	0	65003	65005	i
*>		192.0.2.1 (SP1)	200	65002	65004	65005 i



Verification – show ip route

```
R1#show ip route bgp
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2  
ia - IS-IS inter area, * - candidate default, U - per-user static route  
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP  
a - application route  
+ - replicated route, % - next hop override, p - overrides from PfR
```

```
Gateway of last resort is not set
```

```
B 198.51.100.0 [20/0] via 192.0.2.1, 00:25:07
```

