

IP Multicast

Tom Bird

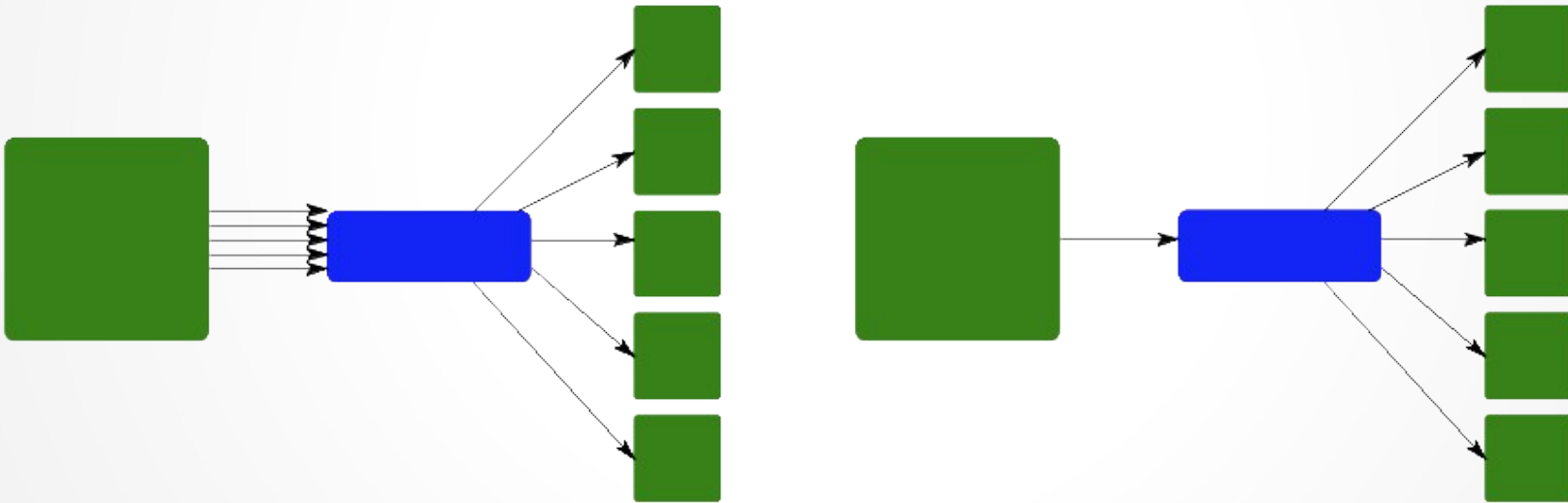
tom@portfast.co.uk
@portfast

Multicats?



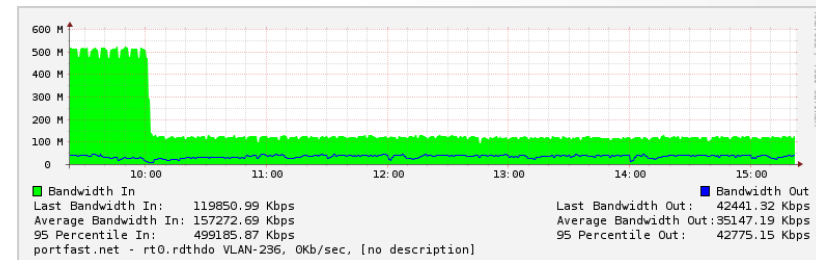
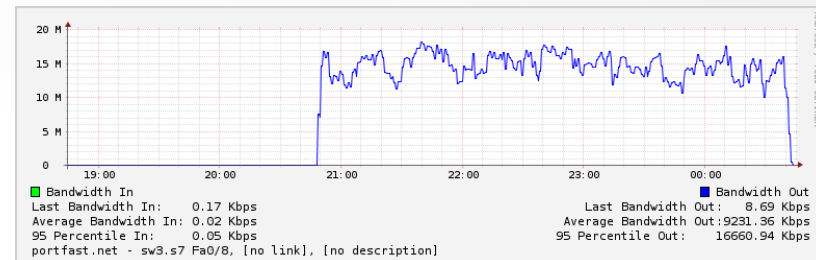
What is multicast?

- One to many propagation of data



Uses of multicast

- Financial data
- IPTV
- Gaming



Types of multicast

- Any-source multicast (ASM)
- Single-source multicast (SSM)

ASM

- Oldest version of multicast
- Specific address ranges
 - IPv4 - 224.0.0.0/4 (IGMPv1/2)
 - IPv6 - ff00::/8 (MLDv1)
 - Ethernet - 01:00:5e:[24 bits of group]

ASM

Pros:

- Widely supported for IPv4
- RFC 3180 – 233.[16-bit ASN].0/24

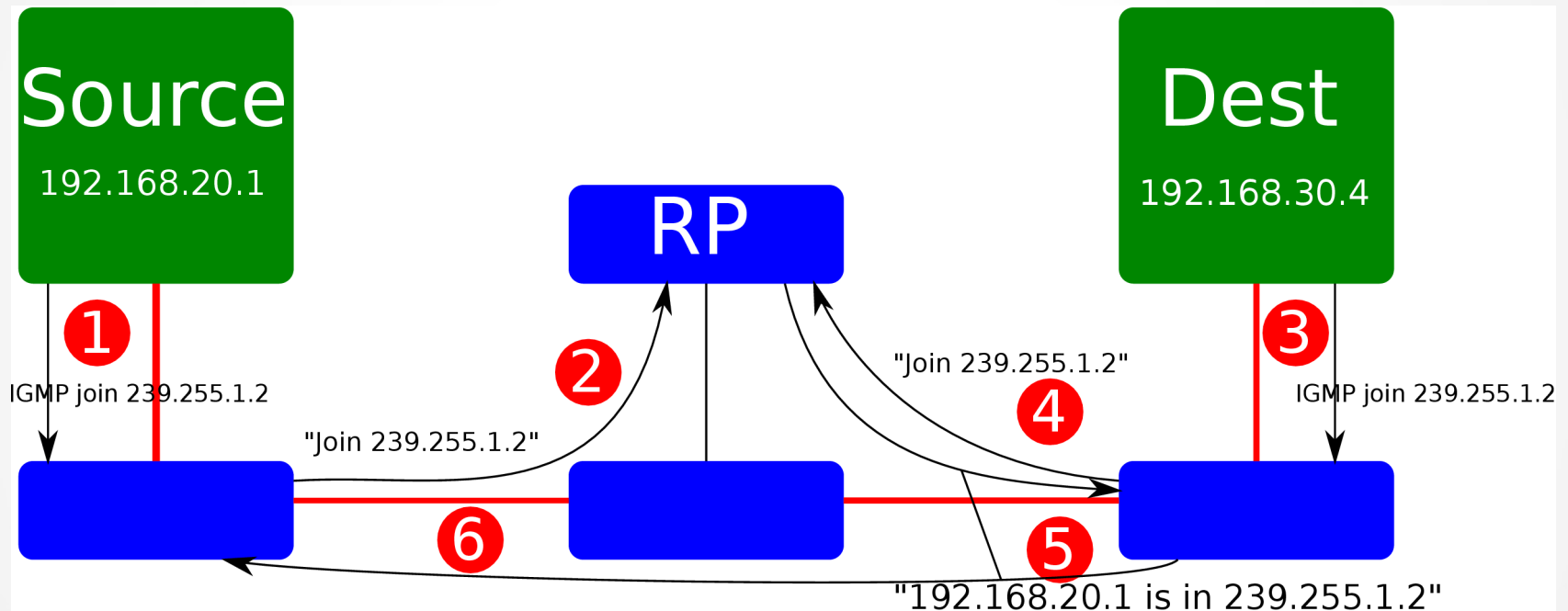
ASM

Cons

- Insecure
- Vulnerable to DoS

ASM

Common use-case - watching TV



ASM

Works between AS's

- Requires MSDP / MBGP
 - MSDP spreads source information
 - MBGP used for RPF

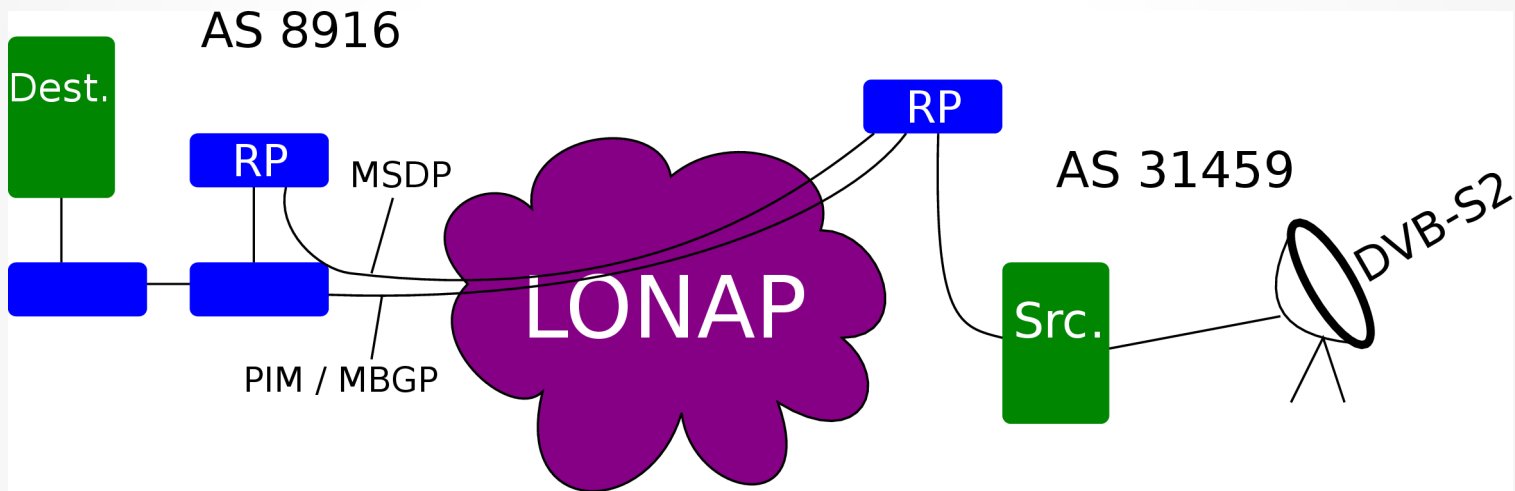
```
rt0.tfm40#sh bgp ipv4 multicast reg _31459_  
BGP table version is 36, local router ID is 193.108.199.161  
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,  
               r RIB-failure, S Stale, m multipath, b backup-path, x best-external  
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
      Network          Next Hop          Metric LocPrf Weight Path  
*> 132.185.224.0/20 195.35.120.92          0           0 31459 i
```

```
rt0.tfm40#sh ip msdp sa-cache 233.122.227.201  
MSDP Source-Active Cache - 1 entries for 233.122.227.201  
(132.185.236.77, 233.122.227.201), RP 132.185.239.250, MBGP/AS 31459, 17w0d/00:05:42, Peer 132.185.239.250
```

ASM

Inter-AS use-case



ASM Configuration

Sample configuration to peer with R&D

Per interface, internally:

```
ip pim sparse-mode
```

On your routers:

```
ip pim rp-address [RP's IP]
```

On the RP (configure between loopbacks):

```
ip msdp peer 132.185.239.250 connect-source Loopback0 remote-as 31459
```

On the peering router:

```
interface GigabitEthernet0/2.5
description LONAP: multicast
encapsulation dot1Q 5
ip address 195.35.120.xx 255.255.255.0
ip pim bsr-border
ip pim sparse-mode
```

Configure BGP:

```
router bgp 8916
no bgp default ipv4-unicast
neighbor lonapmcast peer-group
neighbor 195.35.120.92 remote-as 31459
neighbor 195.35.120.92 peer-group lonapmcast
address-family ipv4 multicast
network 192.0.2.0 255.255.255.0
neighbor 195.35.120.92 activate
end
```

SSM

Pros

- So much simpler! - uses unicast forwarding path to determine source
- No MSDP / RP / MBGP
- Inherent security

SSM

Cons

- Only one to many (this may be a feature)
- Not as well supported

SSM

Has its own address space and protocols

- 232.0.0.0/8 – IGMPv3
- ff3x::/32 – MLDv2, see RFC 4607

IPv6 multicast

- Currently very poor vendor support
- Same principles as IPv4

Questions?

