Overview of the Internet Multicast Routing Architecture

draft-ietf-mboned-routingarch-04.txt

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Changes

- Between -03 (Mar 2006) and -04
  - Three reviews, one of them cross-area
  - Various wordsmithing and less substantial issues
  - Add reference to address architecture
  - Add text on source mobility impacts

- After -04 (Jun 2006) to current working version
  - Two more reviews, one of them cross-area
  - Added summary tables after each section
  - Added introduction how everything fits together
  - Add mention of IGMPv2 SSM-mapping, PIM snooping issues
  - Various other improvements

Forwarding protocols

```
              +-------------+-------------+----------------+
              | Interdomain | Intradomain | Status         |
  +-----------+-------------+-------------+----------------+
  | PIM-SM    |     Yes     |     Yes     | Active         |
  | PIM-DM    | Not feasible|     Yes     | Little use     |
  | Bi-dir PIM|      No     |     Yes     | Some uptake    |
  | DVMRP     | Not anymore |  Stub only  | Going out      |
  | MOSF      |      No     | Not anymore | Inactive       |
  | CBT       |      No     |      No     | Never deployed |
  | BGMP      |      No     |      No     | Never deployed |
  +-----------+-------------+-------------+----------------+
```

- Changed Bi-dir status to be more positive
- Should PIM-DM Intradoman be "Not anymore" ?

Topology

	Interdomain	Intradomain
Congruent topology	Yes	Yes
MP-BGP SAFI=1+2	Recommended	Yes
MP-BGP SAFI=3	Doesn't work	Doesn't work
IS-IS multi-topology	No	Yes
OSPF multi-topology	No	Few implem.

Learning sources

	IPv4	IPv6	Status
Bi-dir single domain	Yes	Yes	OK but for intra-domain only
PIM-SM single domain	Yes	Yes	OK
PIM-SM with MSDP	Yes	No	Used but bad fit
PIM-SM w/ Embedded-RP	No	Yes	Best inter-domain ASM option
SSM	Yes	Yes	No major uptake yet

RP configuration

```
                       +------+------+------------------------+
                       | IPv4 | IPv6 | Deployment             |
+----------------------+------+------+------------------------+
| Anycast RP w/ MSDP   | Yes  | No   | Especially in ISPs     |
| Anycast RP w/ PIM    | Yes  | Yes  | New, some uptake       |
| Auto-RP              | Yes  | No   | Legacy deployment      |
| BSR                  | Yes  | Yes  | Some, anycast simpler  |
| Embedded-RP          | No   | Yes  | Growing                |
+----------------------+------+------+------------------------+
```

- Are the deployment statements accurate enough?
  - Enterprises seem to have more auto-rp/BSR
  - Reasons?
    - ▸ Legacy?
    - ▸ Want to configure some groups for bidir?
    - ▸ Easier than anycast-RP?
  - ISPs use mostly anycast-RP

RP redundancy

```
                        +------+------+--------------------------+
                        | IPv4 | IPv6 | Deployment               |
    +--------------------+------+------+--------------------------+
    | Anycast RP w/ MSDP | Yes  | No   | De-facto approach        |
    | Anycast RP w/ PIM  | Yes  | Yes  | New, simpler than MSDP|
    | Stateless RP fail. | Yes  | Yes  | Causes disturbance       |
    | Bi-dir PIM         | Yes  | Yes  | Deployed at some sites|
    +------------+------+------+--------------------------+
```

Host interactions

```
                          +-------+------+------------------------+
                          | IPv4  | IPv6 | Notes                  |
  +---------------------+-------+------+------------------------+
  | Host sending        | Yes   | Yes  | No support needed      |
  | Host receiving ASM  | IGMP  | MLD  | Any IGMP/MLD version   |
  | Host receiving SSM  | IGMPv3| MLDv2| Also SSM-mapping       |
  +---------------------+--- ---+------+------------------------+
```

Flooding reduction

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                          +--------+-----+---------------------------+
                          | R-to-R | LAN | Notes                     |
+-------------------------+--------+-----+---------------------------+
| Cisco's RGMP            |  Yes   | No  | Replaced by PIM snooping  |
| PIM snooping            |  Yes   | Yes | Security issues in LANs   |
| IGMP/MLD snooping       |  No    | Yes | Common, IGMPv3 or MLD bad |
| Multicast Router Disc   |  No    | Yes | Few if any implem. yet    |
| IEEE 802.1D-2004 GMRP   |  No    | Yes | Impl. status unknown      |
| Cisco's CGMP            |  No    | Yes | Replaced by other snooping|
+-------------------------+--------+-----+---------------------------+
```

- GMRP requires support also at the host side
  - I'm not aware of any host stacks support it..
  - Some switches support it (e.g., some Ciscos)
- Anyone have idea about GMRP usage?
  - Is asking IEEE Liaison appropriate?

Other topics?

- **Group Discovery problem space**
  - How does the user learn which group address to join..?
  - Unspecified. Is there anything to say in this context?

- **Way forward - suggestion:**
  - publish the working version (+comments) as -05 in a week
  - Initiate WGLC some weeks afterward if no comment

- **Comments, questions, ...?**