

draft-ietf-pim-drlb

Draft Status

- First presented at IETF 82, Taipei, accepted as WG draft-ietf-pim-drlb-00
- Update History:
 - -02: Included BSR hashing to select GDR
 - -03: Proposal
 - Introduce hash algorithm selector
 - Introduce router Id



Modulo Hash Algorithm

- $\text{hashvalue_group} = ((\text{Group_address} \ \& \ \text{Group_hashmask}) \gg N) \% M$
- M number of candidate GDRS
- Because of the nature of algorithm it evenly distributes the load on candidate GDRs.
- Works best when there are two DRs



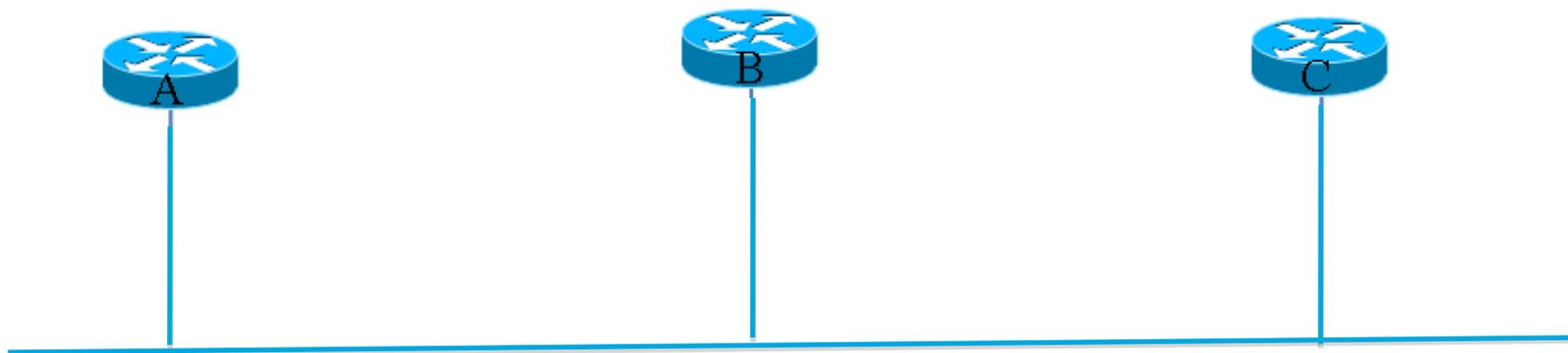
BSR Hash Algorithm

- $\text{hashvalue_group} = (1103515245 * ((1103515245 * (\text{Group_address} \& \text{Group_hashmask}) + 12345) \text{ XOR } \text{GDR}(i)) + 12345) \text{ mod } 2^{31}$
- Originally used in RP election process
- It does not evenly distribute the load

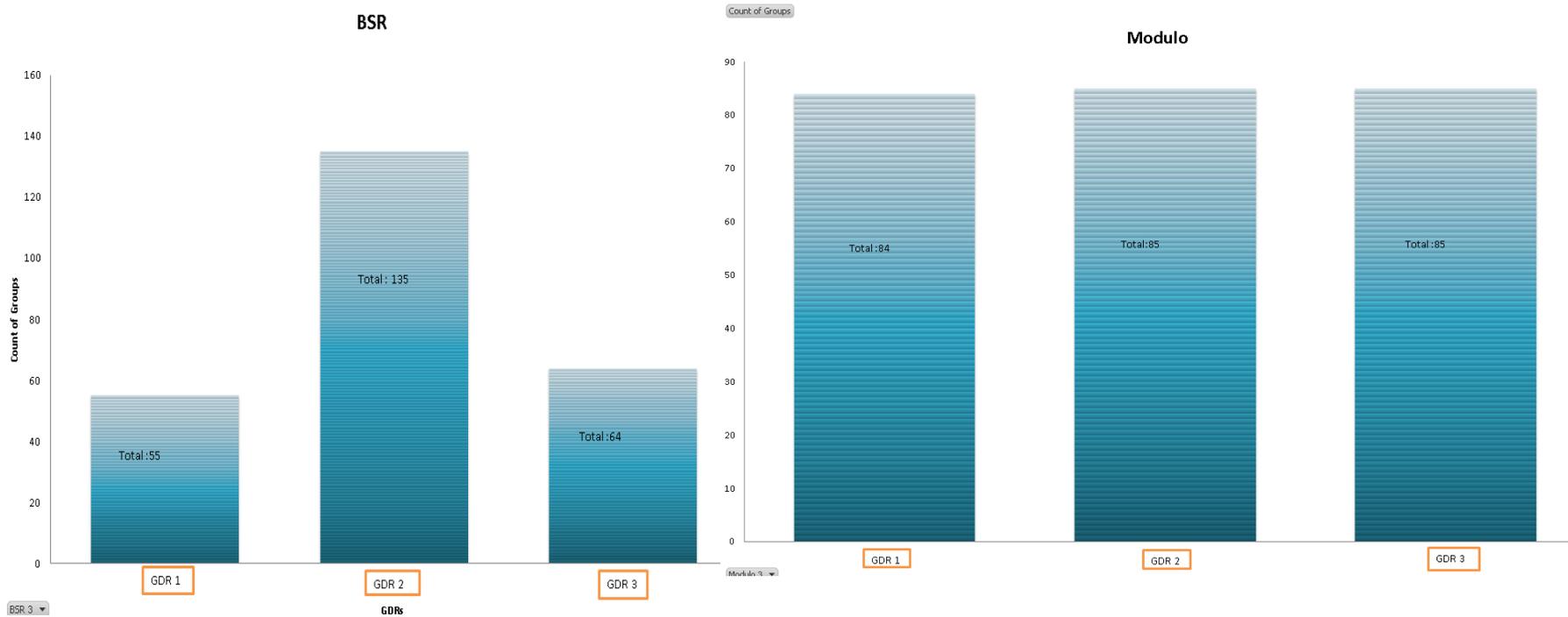


Testing setup

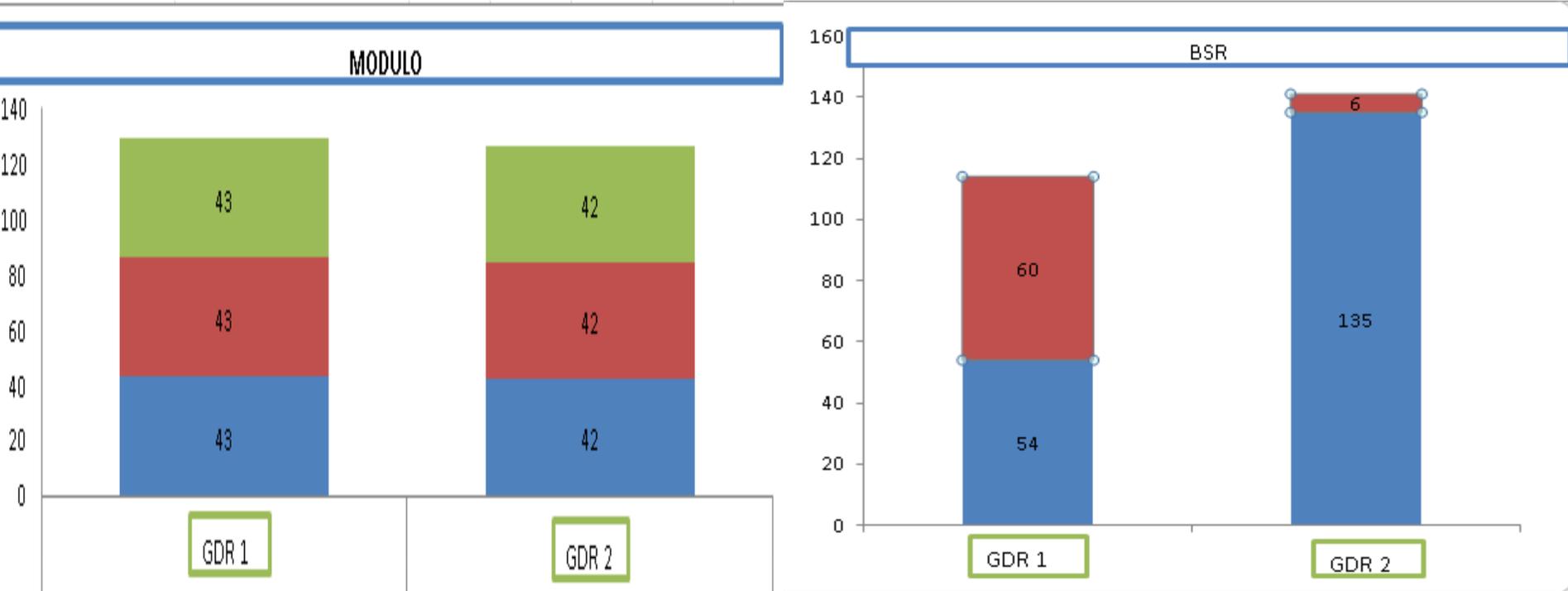
- Tested on sequential group joins
 - 224.1.1.1-224.1.1.255
- Original 3 candidate GDRs
- Failure of a candidate GDR
- Addition of a candidate GDR
- Ran test multiple times to get average numbers



BSR vs. Modulo distribution



Modulo Vs. BSR (Failover)



Count of unaffected Groups

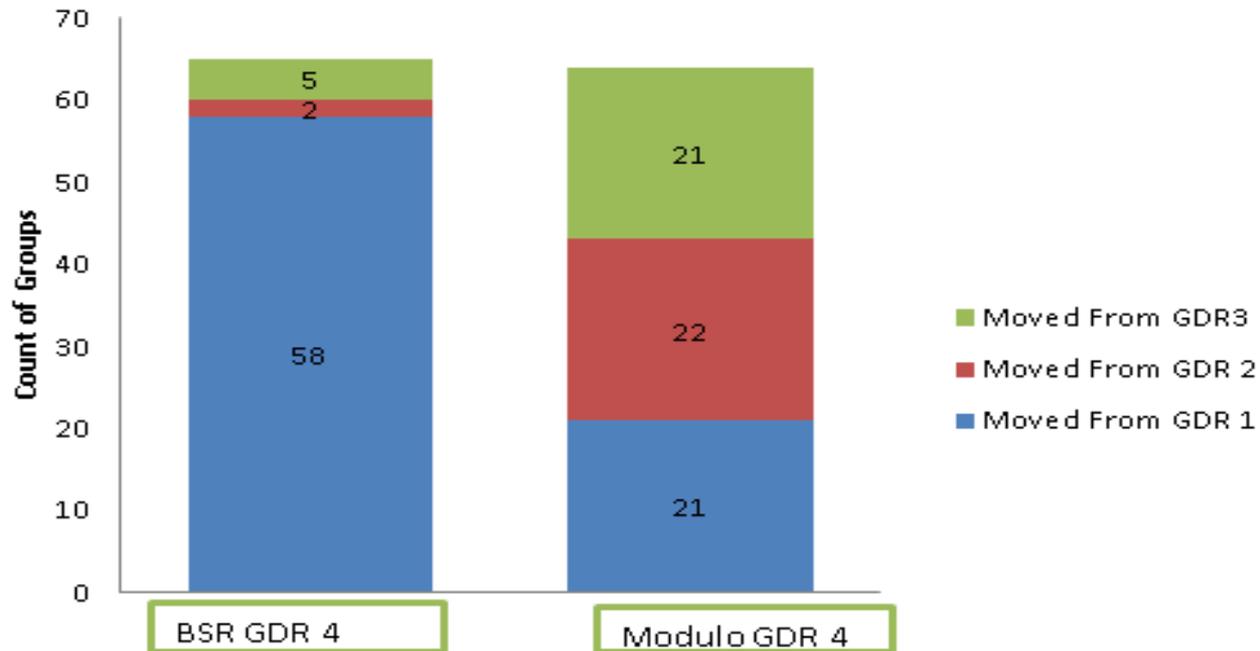
Count of Reassigned Groups from GDR3

Count of Reassigned Groups from unaffected GDRs



Modulo Vs. BSR(New CGDR)

Distribution of new Candidate GDR



Conclusion

- Between the two, BSR provides the minimum interruption of streams in case of a failover when there are three or more routers.
- On the other hand, Modulo has a even distribution when in comes to load balancing.



Propose Update

- Initial draft: Modulo
- 2nd Version: BSR
- Next Version:
 - Introduce a new “algorithm” type:
 - 0 for Modulo
 - 1 for BSR
 - Others for future developed algorithm if any
 - Only run DRLB if all LHR agree on the same algorithm, otherwise log error message, detail to be followed



More

- Suggestion to include “Interface ID” option in Hello
- If “interface ID” option presents in Hello, use “Router ID”, instead of “interface IP address”, to calculate hash, so that same router is elected on different LANs to save uplink bandwidth
- “Router ID” is more desired in BSR hash algorithm than in Modulo, because the BSR hash result is tricky to predict



Comments ?

- Thank you

