

72nd IETF, July 2008, Dublin

Lightweight IGMPv3/MLDv2

draft-ietf-mboned-lightweight-igmpv3-mldv2-03

Liu Hui (liuhui47967@huawei.com)

Cao Wei (caowayne@huawei.com)

Hitoshi Asaeda (asaeda@wide.ad.jp)

LW-IGMPv3 / LW-MLDv2

- Concept
 - Removal of rarely used EXCLUDE (S,G) operations and functions
 - Assurance of compatibility with the full version
- Method
 - Host side: Reducing report type relating to EXCLUDE(S,G)
 - Router side: Eliminate filter-mode and simplify message processing

Progress after the Last Meeting

- Editorial improvements
 - Provide better explanations and delete unnecessary details
- Host / router / switch implementations completed
- Interoperability test with snooping switches
 - Huawei S3928 switch supporting IGMPv3 snooping
- A router-side LW-IGMPv3 implementation is included in a new XORP-1.5 release

History of this Draft

- IETF 66, Montreal
 - draft-liu-magma-igmpv3-mldv2-lite-00.txt
 - Individual draft, first discussion
- IETF 67, San Diego
 - draft-liu-magma-igmpv3-mldv2-lite-02.txt
 - Add Host side process, change “Lite” to “Lightweight”
- IETF 68, Prague
 - draft-ietf-mboned-lightweight-igmpv3-mldv2-00
 - Accepted as WG draft, began to prepare implementations
- IETF 69, Chicago
 - draft-ietf-mboned-lightweight-igmpv3-mldv2-01
 - Router side and host side implementation available
- IETF 70, Vancouver
 - draft-ietf-mboned-lightweight-igmpv3-mldv2-02
 - Compatibility test result is given
- IETF 71, Philadelphia
 - draft-ietf-mboned-lightweight-igmpv3-mldv2-02
 - Router side performance test result is given
 - **Rough consensus to be a RFC, but type was not decided**
 - **Expect to initiate last call on IETF 72**

Implementations

- Host Side Implementations
 - LW-IGMPv3 implementation for NetBSD-current (as of 07/Jan/2008)
 - <http://www.sfc.wide.ad.jp/~asaeda/LW-IGMPv3/>
- Router Side Implementations
 - Both LW-IGMPv3 and LW-MLDv2 implementations were released
 - Included in XORP1.5 release
 - http://cvsweb.xorp.org/cgi-bin/cvsweb.cgi/xorp/contrib/mld6igmp_lite/

Interoperability Test

- More than 300 test cases are designed and tested
 - Both IPv4 and IPv6 scenarios included
 - Interoperability with all other IGMP/MLD versions considered
 - IGMPv3 snooping test is also performed
- All test environments and results are detailed in an interoperability document
 - “The Interoperability Document of Lightweight-IGMPv3/MLDv2 Protocols”
 - <http://www.sfc.wide.ad.jp/~asaeda/paper/LW-IGMPv3-MLDv2-interop.txt>

Performance Analysis of LW-IGMPv3 Router

- LW-IGMPv3 improves element operation rate:
 - Theoretical analysis: by around 40%
 - Actual simulation result: by 30% average
- LW-IGMPv3 decrease memory occupation by 12.5%
- Router has better stability with LW-IGMPv3 when user number increases
- The following paper describes the detail;
 - Liu Jiwen, Wang Wendong, Gong Xiangyang, et. al, “A Novel Group Management Protocol for IP Multicast (LW-IGMPv3)”, Proc. ISCSN-2008, 2008.

Summary

- The draft is stable
 - Supporting all the necessary functions (ASM and SSM)
 - Much simplified state machine
 - Conciseness contributes to its deployment
 - No interoperability problem
 - Wider application space for simplicity (e.g. wireless environments)
- Experimentation
 - Implementation (with open-source) / Functional test / Interoperability test / Performance evaluation

Next Steps

- Initiate LC
 - The draft is stable
 - Rough consensus for LC in IETF71
 - Toward Experimental RFC