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DVMRPv1 Applicability Statement for Historic Status

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1.0 Abstract

DVMRP version 1 (DVMRPv1) [RFC-1075] has been declared a historic document. This applicability statement provides the supporting motivation for that declaration.

2.0 Introduction

DVMRP is an Internet multicast routing protocol that provides an efficient mechanism for datagram delivery to a group of hosts across an internetwork. It is a distributed protocol that dynamically generates IP Multicast delivery trees using a technique called Reverse Path Multicasting (RPM) [Deering].

While current versions of DVMRP are widely used throughout the Internet, DVMRPv1 as defined in <u>RFC-1075</u>, is not applicable for use. <u>RFC-</u> <u>1075</u> describes a very early version of DVMRP which was never fully implemented. A partial implementation was deployed on three Unix boxes for a few months in 1988. Experience with that early implementation led to a complete, non-backwards-compatible redesign; it is the descendants of that redesign that are widely implemented and widely used in the MBone and elsewhere.

3.0 DVMRPv1 Restrictions

DVMRPv1 has a number of restrictions and behaviors which limit its usability in the global Internet.

3.1 Protocol Reliability Mechanisms

DVMRPv1 had no "keep-alive" mechanism between neighboring DVRMP routers. It was therefore not possible to detect that a router was restarted. A restarted router would introduce inconsistency in the state of previously sent non-membership reports. Until the upstream and downstream dependencies were updated the network would not have consistent information. This would result in slow network convergence.

DVMRPv1 did not include acknowledgements for non-membership cancellations (i.e., grafts). Consequently, there was no way of knowing whether a graft was lost or the graft was successfully received but the source has stopped transmitting the data. The effects of this was also to slow down network convergence.

3.2 Network Advertisements

In DVMRPv1, non-membership reports didn't contain source networks, they only contained groups. This resulted in less optimal multicast forwarding trees and multicast data being distributed further down the forwarding tree than necessary.

In DVMRPv1, route masks were too restrictive. As a result it was not possible to include the default route (0/0) or a host network mask (/32) in route updates. Additionally, routes with subnet masks were not allowed to be advertised outside of the classful network (i.e., no CIDR support).

3.3 Tunnel Support

In DVMRPv1 tunnels were supported using the IP loose source route option; protocol messages were sent un-encapsulated directly to the tunnel endpoint. While this was the more direct approach to tunnels, it resulted in a significant performance penalty (in addition to delay and jitter) imposed by most routers on packets that carry IP options.

4.0 Conclusion

The recommendation of this Applicability Statement is that networks

that desire to use DVMRP in a network environment should use the current version of DVMRP (DVMRPv3) as defined in [<u>Pusateri</u>].

5.0 Security Considerations

DVMRPv1 includes no security functions.

Security for DVMRPv3 follows the general security architecture provided for the Internet Protocol. This framework provides for both privacy and authentication. It recommends the use of the IP Authentication Header to provide trusted neighbor relationships. Confidentiality is provided by the addition of the IP Encapsulating Security Payload.

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