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Applicability of the Babel routing protocol
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Abstract

This document describes some application areas where the Babel routing protocol [RFC6126] has been found useful.

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1. Introduction

Babel [RFC6126] is a loop-avoiding distance-vector routing protocol that aims to be robust in a variety of environments.

This document describes a few areas where Babel has been found useful. It is structured as follows. In Section 2, we describe application areas where Babel has been successfully deployed. In Section 3, we describe application areas where Babel has not been deployed, but is likely to work well. In Section 4, we describe application areas where deployment of Babel is not recommended because better alternatives are available.

2. Existing deployments of Babel

2.1. Hybrid networks

Babel is able to deal with both classical, prefix-based ("Internet-style") routing and flat ("mesh-style") routing. Because of that, it has seen a number of succesful deployments in medium-sized hybrid networks, networks that combine a wired, aggregated backbone with meshy wireless bits. No other routing protocol known to us is similarly robust and efficient in this particular type of network.

2.2. Large scale overlay networks

The algorithms used by Babel allow it to remain relatively stable in the presence of unstable metrics, even in the presence of a feedback loop. For this reason, it has been successfully deployed in large scale overlay networks, built out of thousands of tunnels spanning continents, where it is used with a metric computed from links' latencies [DELAY-BASED].

2.3. Small unmanaged networks

Because of its small size and simple configuration, Babel has been deployed in small, unmanaged networks (three to five routers), where it serves as a more efficient replacement for RIP [RFC2453].

3. Potential deployments of Babel

There are a number of areas where Babel has not seen much deployment yet, but where we expect it to be applicable.

3.1. Pure mesh networks

Babel is able to deal with pure wireless mesh networks. However, this particular niche is well served by a number of mature protocols, notably OLSR-ETX and OLSRv2 [RFC7181] with the DAT metric [DAT].

4. Application Areas where Babel is not recommended

There are a number of application areas where Babel is a poor fit.

4.1. Large, stable networks

Babel relies on periodic updates, and even in a stable network, it generates a constant amount of background traffic. In large, stable, well-administered networks, it is preferable to use protocols layered above a reliable transport mechanism, such as OSPF [RFC5340], EIGRP [EIGRP] or IS-IS [RFC1195].

4.2. Low-power networks

Babel relies on periodic updates and maintains within each node an amount of state that is proportional to the number of reachable destinations. In networks containing resource-constrained or exteremely low-power nodes, it may be preferable to use a protocol that limits the amount of state maintained and propagated; we have heard of AODVv2 [AODVv2], RPL [RFC6550] and LOADng [LOADng].

5. References

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