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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 to be 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 to be 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 works well, but has not been widely deployed yet. In Section 4, we describe application areas where deployment of Babel is not encouraged because better alternatives are available.

2. Existing successful deployments of Babel

2.1. Hybrid networks

Babel is able to deal with both classical, prefix-based ("Internet-style") routing and flat ("mesh-style") over non-transitive link technologies. Because of that, it has seen a number of successful deployments in medium-sized hybrid networks, networks that combine a wired, aggregated backbone with meshy wireless bits at the edges. 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 (loop avoidance, hysteresis, delayed updates) allow it to remain stable and efficient 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], albeit with good support for wireless links.

3. Potential deployments of Babel

There are application areas for which Babel is a good fit, but where it has not seen major deployments yet.

3.1. Pure mesh networks

Babel has been repeatedly shown to be competitive with dedicated routing protocols for wireless mesh networks [REAL-WORLD] [BRIDGING-LAYERS]. However, this particular niche is already served by a number of mature protocols, notably OLSR-ETX as well as OLSRv2 [RFC7181] equipped with the DAT metric [DAT], so Babel has not seen major deployments in pure meshes yet.

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 extremely 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].

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