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Routing Policy Specification Language (RPSL)

Status of this Memo

This Internet Draft is the reference document for the Routing Policy Specification Language (RPSL). RPSL allows a network operator to be able to specify routing policies at various levels in the Internet hierarchy; for example at the Autonomous System (AS) level. At the same time, policies can be specified with sufficient detail in RPSL so that low level router configurations can be generated from them. RPSL is extensible; new routing protocols and new protocol features can be introduced at any time.

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1 Introduction

This Internet Draft is the reference document for the Routing Policy Specification Language (RPSL). RPSL allows a network operator to be able to specify routing policies at various levels in the Internet hierarchy; for example at the Autonomous System (AS) level. At the same time, policies can be specified with sufficient detail in RPSL so that low level router configurations can be generated from them. RPSL is extensible; new routing protocols and new protocol features can be introduced at any time.

RPSL is a replacement for the current Internet de-facto standard routing policy specification language known as RIPE-181 [6] or RFC-1786 [7]. RIPE-81 [8] was the first language deployed in the Internet for specifying routing policies. It was later replaced by RIPE-181 [6].

Through operational use of RIPE-181 it has become apparent that certain policies cannot be specified and a need for an enhanced and more generalized language is needed. RPSL addresses RIPE-181's limitations. RPSL is object oriented; that is, objects contain pieces of policy and administrative information. These objects are registered in the Internet Routing Registry (IRR) by the authorized organizations. The registration process is beyond the scope of this document. Please refer to [2, 21, 4] for more details on the IRR.

RPSL was designed so that a view of the global routing policy can be contained in a single cooperatively maintained distributed database to improve the integrety of Internet's routing. RPSL is not designed to be a router configuration language. RPSL is designed so that router configurations can be generated from the description of the policy for one automomous system (see `aut-num` class) combined with the description of a router (see `inet-rtr` class), mainly providing router ID, autonomous system number of the router, interfaces and peers of the router, and combined with a global database mappings AS sets to ASes (see `as-set` class), origin ASes and route sets to route prefixes. (see `route` and `route-set` classes), The accurate population of the RPSL database can help contribute toward such goals as router configurations which protect against accidental (or malicious) distribution of inaccurate routing information and contribute toward the verification of Internet's routing and aggregation boundaries beyond a single AS.

In the following sections, we present the classes that are used to define various policy and administrative objects. The "*mntner*" class defines entities authorized to add, delete and modify a set of objects. The "*person*" class describes technical and administrative contact personnel. Autonomous systems (ASes) are specified using the "*aut-num*" class. Routes are specified using the "*route*" class. Sets of ASes and routes can be defined using the "*as-set*" and "*route-set*" classes. The "*dictionary*" class provides the extensibility to the language. The "*inet-rtr*" class is used to specify routers. Tunnels are specified using "*inet-tunnel*" class. Many of these classes were originally defined in earlier documents [6, 18, 20, 17, 5] and have all been enhanced.

This document is self-contained. However, the reader is encouraged to read RIPE-181 [7] and the associated documents [18, 20, 17, 5] as they provide significant background as to the motivation and underlying principles behind RIPE-181 and consequently, RPSL. They further cover the basic concept of the Internet Routing Registry (IRR) [2, 21, 4], the data repository for storing global