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Y. Rekhter
cisco Systems

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CIDR and Classful Routing

Status of this Memo

This memo provides information for the Internet community. This memo does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Abstract

Classless Inter-Domain Routing (CIDR) is used in the Internet as the primary mechanism to improve scalability of the Internet routing system. This document represents the IAB's (Internet Architecture Board) evaluation of the current and near term implications of CIDR on organizations that use Classful routing technology.

Background

Classless Inter-Domain Routing (CIDR) ([RFC1518], [RFC1519]) is deployed in the Internet as the primary mechanism to improve scaling property of the Internet routing system. Essential to CIDR is the generalization of the concept of variable length subnet masks (VLSM) and the elimination of classes of network numbers (A, B, and C). The interior (intra-domain) routing protocols that support CIDR are OSPF, RIP II, Integrated IS-IS, and E-IGRP. The exterior (inter-domain) routing protocol that supports CIDR is BGP-4. Protocols like RIP, BGP-3, EGP, and IGRP do not support CIDR.

Implications of CIDR

Deployment of CIDR has certain implications on the segments of the Internet that are still using routing technology that can not support CIDR. Existing sites that rely solely on a default route for their external connectivity may not require support of VLSM capable routing technology for their interior routing and CIDR for their exterior routing. All sites lacking support for VLSM and CIDR capable routing must rely on a default route, which consequently may result in a various degree of suboptimal routing. Organizations that operate as Internet Service Providers (ISPs) are expected to be able to support VLSM and CIDR.

It is expected that in the near future the IANA will instruct the Internet Registries to begin allocating IP addresses out of the former Class A address space (64.0.0.0 through 126.0.0.0). The allocated blocks are going to be of variable size (based on the actual sites' requirements). Sites that will use these addresses will have to support CIDR-capable routing protocols. All the providers will be required to support CIDR-capable routing protocols as well. Sites that do not use these addresses would be required to continue relying on a default route, which in turn may result in a various degree of suboptimal routing. If a site wants to avoid the suboptimality (introduced by using default route), the site will need to transition to CIDR-capable routing protocols.

Security Considerations

Security issues are not discussed in this memo.

Author's Address

Yakov Rekhter
cisco Systems
170 West Tasman Drive
San Jose, CA 95134

Phone: (914) 528-0090
EMail: yakov@cisco.com