

Chapter 9

Utilization of an Improvement Manual Configuration for Multimedia in 6to4 Tunneling

Abdellah Jamali
INPT and FSTM, Morocco

Najib Naja
INPT, Morocco

Driss El Ouadghiri
Meknes, Morocco

ABSTRACT

IPv6 is a next-generation Internet layer protocol designed by the IETF (Internet Engineering Task Force) to solve the problem of IP address depletion under the current Internet layer protocol. It has been developed to replace the current Internet Protocol version 4 (IPv4). Various operating systems support IPv6 protocol stacks and network infrastructures are currently being deployed to support the functions of IPv6. During the course of the deployment of IPv6 protocol, the authors found several critical implementation and operational issues which distract user and possibly prevent wide deployment of IPv6. Among the problems identified are the stateless IP auto-configuration, which provides for each node connected to the network an IP address. The authors have previously examined the problem in Fedora Core operating system, and in this work, they make a slight modification on the same method using Red Hat operating system. The proposed method is independent of rebooting NIC. This method ensures the establishment of addresses if problems occur.

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1. INTRODUCTION

Internet Protocol version 6 (IPv6) is the new version of the Internet Protocol (IP). It is a network-layer (Layer 3) protocol that contains addressing information and some control information enabling packets to be routed in the network. IPv6 is also called the next generation IP or IPng (Cizault, 2005).

IPv6 has evolved in recent years, and the road has not been easy for evolution. The process has been driven primarily by the shortage of address space under IPv4 (Hain, 2006), but also by the desire to establish the effectiveness of the implementation of new applications that do not perform services that support only IPv4. The address space crisis has been delayed by several new approaches to IP addressing, the most important of them being CIDR, NAT, and RFC 1918 private address space. At the same time, it was clear that these solutions only delay the inevitable. Although CIDR, NAT, and private address spaces have been successful, they didn't solve the problem. Today, the Regional Internet Registries have IPv4 address allocation policies that provide methods standards for those who want to get the public address space. It also notes that the IPv4 address space has become a scarce resource, and to obtain a public address block requires too much process. The IPv4 address space can be extended for a few years by using transition mechanisms, but the result will not be satisfying in terms of security.

IPv6 provides a clean solution to the fundamental problem. The increased length of IPv6 addresses means that they can be assigned freely and used comfortably. IPv6 also makes it possible to deploy new types of applications that rely on public address space, such as multi-homing and verifiably secure local networking.

The IPv6 specifications are now reasonably stable. Several implementations have been deployed and used in recent years. IPv6 does not need software to install because most operating systems include IPv6 support. IPv6 has reached

a state where almost everyone can use it for these applications.

Therefore, the most important task allows IPv6 applications to deployment in IPv6 network, and can be supported by all network equipment (Cizault, 2009). In this sense we see really the benefit of IPv6 in new applications that go beyond client / server, and take advantage of IPv6 end-to-end addressing and connectivity.

IPv6 includes the knowledge dispersed on the Internet about the deployment and applications. We note that there are several ways to deploy IPv6 to avoid the problem caused by NAT and alleviate the problem of lack of IPv4 address space.

The most significant change in IPv6 (Gai, 2007) is increasing the IP address size from 32 bits in IPv4 to 128 bits, to support more levels of addressing hierarchy, a greater number of addressable nodes, and simpler auto-configuration of addresses. There are three types of IP addresses in IPv6: Unicast, Multicast and Anycast.

Broadcast address no longer does not exist in IPv6, which becomes a special form of multicast. IPv6 addresses are expressed in hexadecimal format, which allows not only numerals (0-9) but a few characters as well (a-f). IPv6 fixes many shortages in IPv4 in addition to the limited number of available IPv4 addresses. IPv6 has enhanced network layer routing in two main areas: Improved support for extensions and Flow labeling capability to differentiate the packets at network layer (Murhammer, Lee, Motallebi, Borghi, & Wozabal, 2009)

Among the important objectives and effective for the Internet protocol version 6 is the auto-configuration system. It is possible to connect a node in an IPv6 network with any size and make it boot from the network without requiring manual configuration.

We note that automatic configuration uses a well-implemented, which includes rapidly creating a link local address, and also checks its uniqueness and also determines the address type from global unicast prefixes received. To verify

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