Title : IPv4 to IPv6 Address Transition System with Automated Configuration

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ABSTRACT

The transition from IPv4 to IPv6 is a significant challenge today due to the depletion of IPv4 addresses, which can no longer accommodate the increasing number of devices. IPv6, on the other hand, was designed to expand the address space and support the future growth of networks. Therefore, developing a program to automatically convert IPv4 addresses to IPv6 has become essential, particularly in large network systems like routers or switches. In this work, a program was developed using Python and the Netmiko library to automate the conversion of IPv4 addresses to IPv6 on the routers. The program retrieves the IPv4 address from the device, converts it to an IPv6 address, then configures the IPv6 address on the router. It also enables IPv6 routing using a OSPFv3 routing protocol and sets up a DHCPv6 to distribute IPv6 addresses to devices within the network.

The results show that the program works as expected, reducing errors from manual configuration and making the transition from IPv4 to IPv6 faster and more convenient. This development represents an enhancement in network management, preparing the network systems for the future and providing an efficient tool for network configuration.

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