

A Managed IPv6 Transitioning Architecture: The STA

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Abstract

The deployment of IPv6 potentially represents the most significant development yet in the history of the Internet. The introduction of this new protocol will enable it to expand to become a truly globally pervasive medium able to better support the upcoming new technologies and services we will expect in the future.

This new version of the Internet Protocol has been in development for over a decade and is now reaching the point where the first wide-spread deployments are starting to take place. However, due to the inherent issues of incompatibility between it and the existing protocol, IPv4, a significant ongoing effort has been devoted to developing general solutions for potential IPv6 adopters. This area has become known as Transitioning and is the focus for the work presented in this thesis. Unfortunately, a global deployment of IPv6 will take in the order of years, and this necessitates the development of a long term transitioning strategy, first from the perspective of IPv6 deployment and then from the perspective of supporting the ongoing coexistence of the two protocols. This will be particularly acute among larger operators, with a significant user base and extensive management requirements, but will never-the-less be relevant to all parts of the Internet.

This thesis presents our approach to supporting IPv6 deployment and operation in large network environments, by specifying our architecture, the STA, to control the transitioning aspects of the network. The architecture also incorporates network management functionality aimed at reducing the extra administrative overheads that transitioning deployments will introduce.