

Framework for IPv4/IPv6 Translation

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Outline

- Introduction
- Scenarios of the IPv4/IPv6 Translation
- Framework
- Translation in Operation
- Unsolved problems and Comments

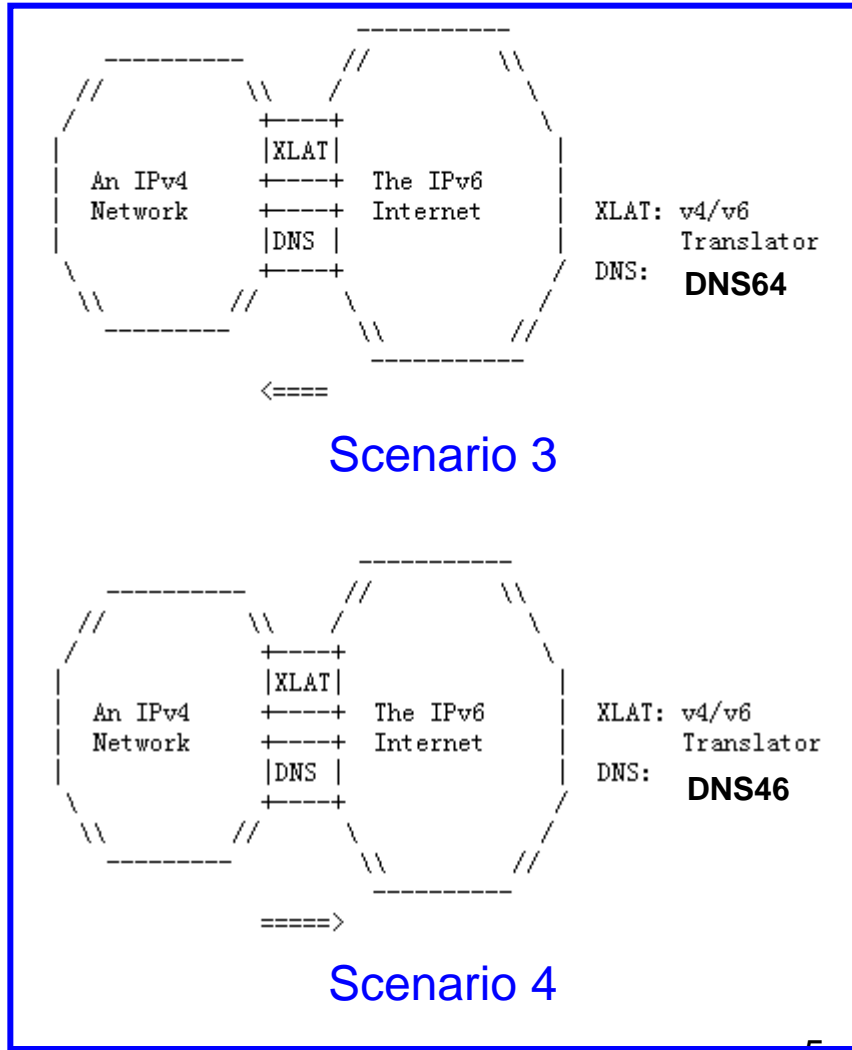
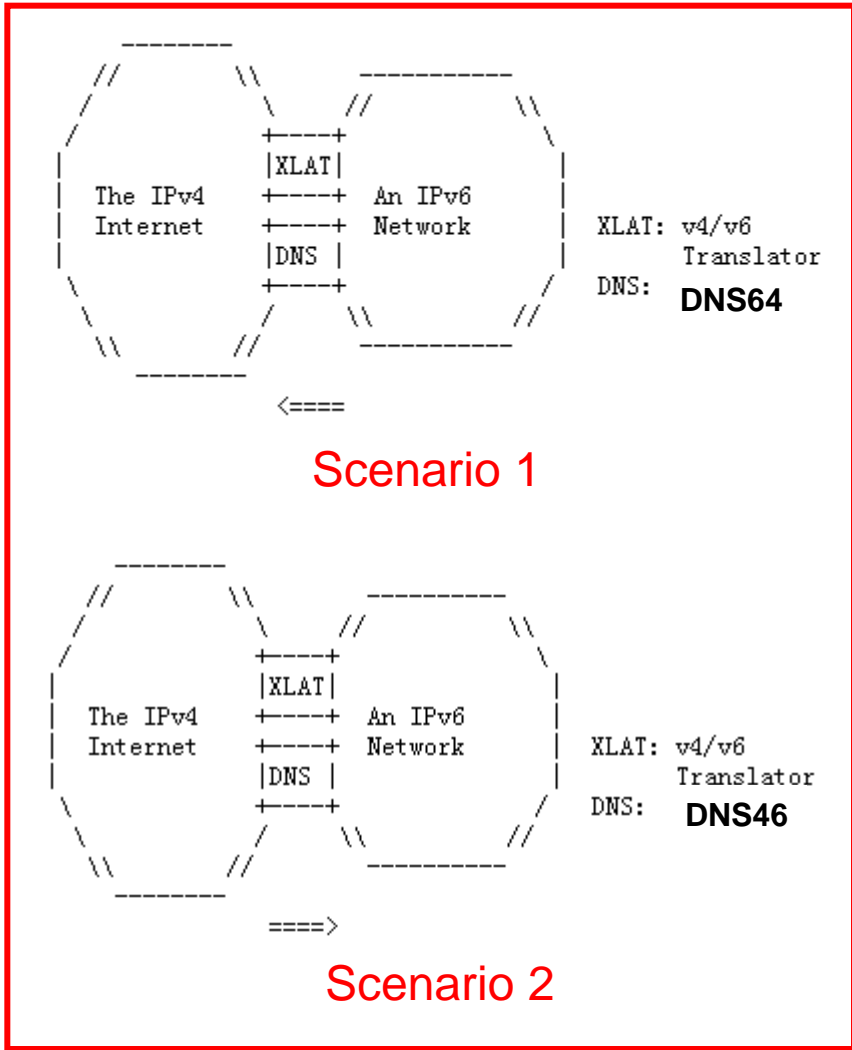
Introduction

- Why Translation
 - We look at Internet Protocol translation as a transition strategy.
- Terminology
 - It will be unified v6v4 translation document definitions.
- Translation Objectives
 - What different kinds of connectivity can be easily supported and what kinds are harder, and what technologies are needed to at least pick the low-hanging fruit.
- Transition Plan
 - Preparation Phase (current)
 - Transition Phase (2010 through 2011)
 - Post-Transition Phase (2012 and beyond)

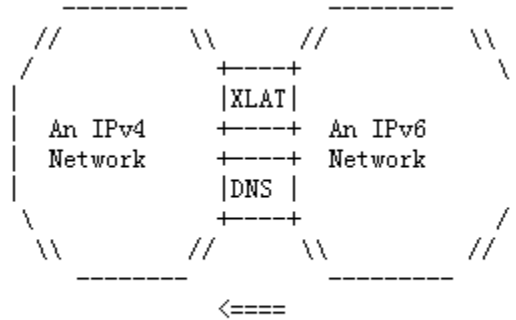
Scenarios of the IPv4/IPv6 Translation

- Scenario 1: an IPv6 network to the IPv4 Internet
- Scenario 2: the IPv4 Internet to an IPv6 network
- Scenario 3: the IPv6 Internet to an IPv4 network
- Scenario 4: an IPv4 network to the IPv6 Internet
- Scenario 5: an IPv6 network to an IPv4 network
- Scenario 6: an IPv4 network to an IPv6 network
- Scenario 7: the IPv6 Internet to the IPv4 Internet
- Scenario 8: the IPv4 Internet to the IPv6 Internet

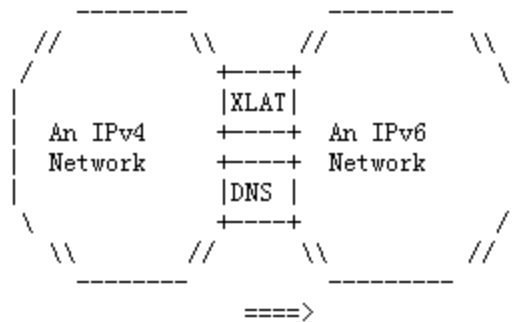
Scenarios 1-4



Scenarios 5-8



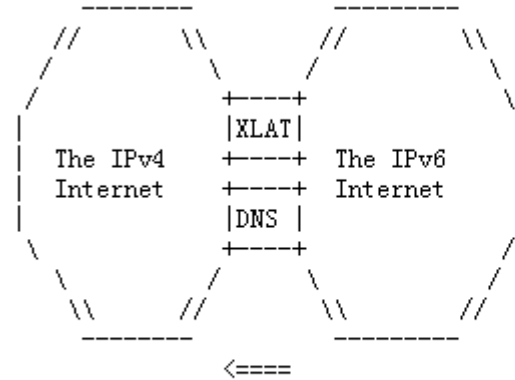
Scenario 5



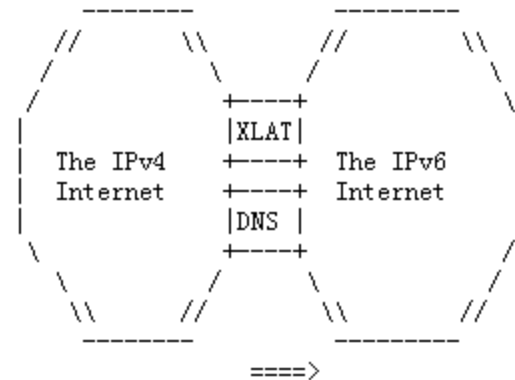
Scenario 6

XLAT: v4/v6
Translator
DNS: **DNS64**

XLAT: v4/v6
Translator
DNS: **DNS46**



Scenario 7



Scenario 8

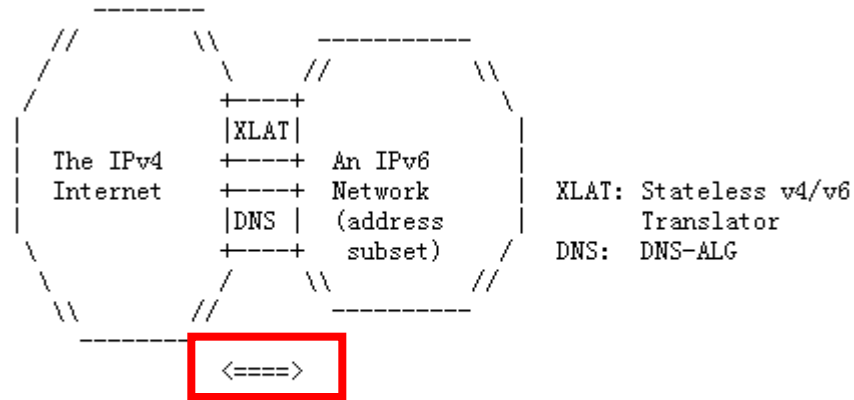
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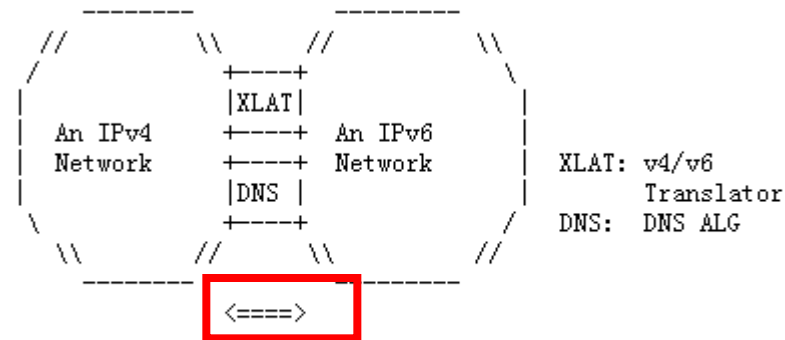
Framework

- Translation Components
 - Address Translation →
 - IP and ICMP Translation →
 - Maintaining Translation States →
 - DNS ALG →
 - ALGs for Other Applications Layer Protocols
- Operation Mode for Specific Scenarios
 - Stateless Translation
 - Stateful Translation
- Layout of the Related Documents

Stateless translator (e.g. IVI)

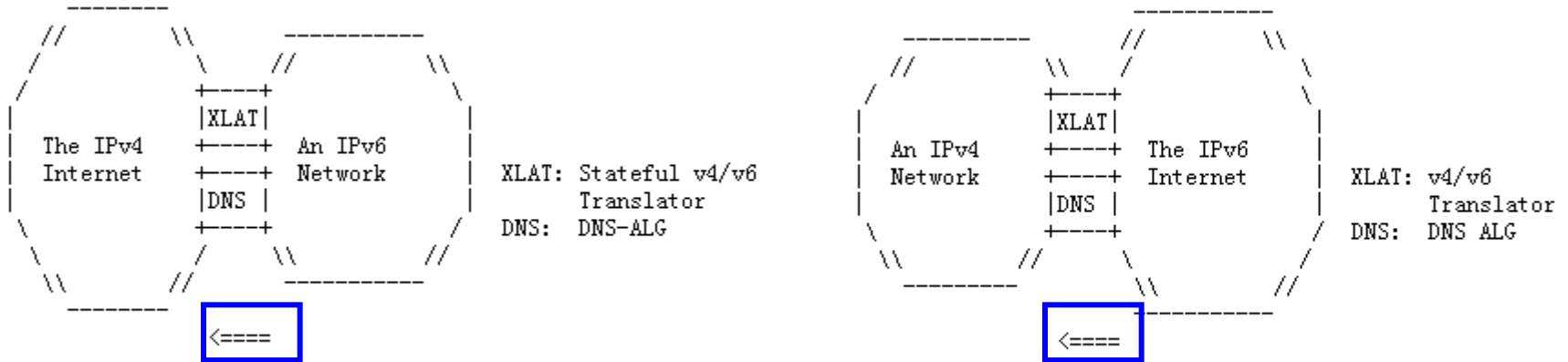


Scenario 1 “an IPv6 network to the IPv4 Internet”
Scenario 2 “the IPv4 Internet to an IPv6 network”

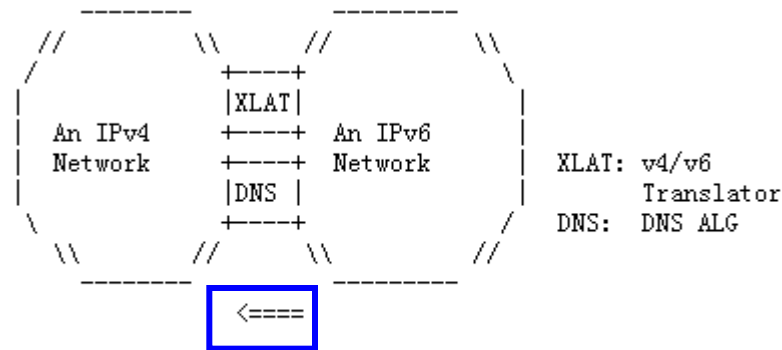


Scenario 5 “an IPv6 network to an IPv4 network”
Scenario 6 “an IPv4 network to an IPv6 network”

Stateful translator (e.g. NAT64)



Scenario 1 “an IPv6 network to the IPv4 Internet” **Scenario 3** “the IPv6 Internet to an IPv4 network”



Scenario 5 “an IPv6 network to an IPv4 network”

Layout of the Related Documents

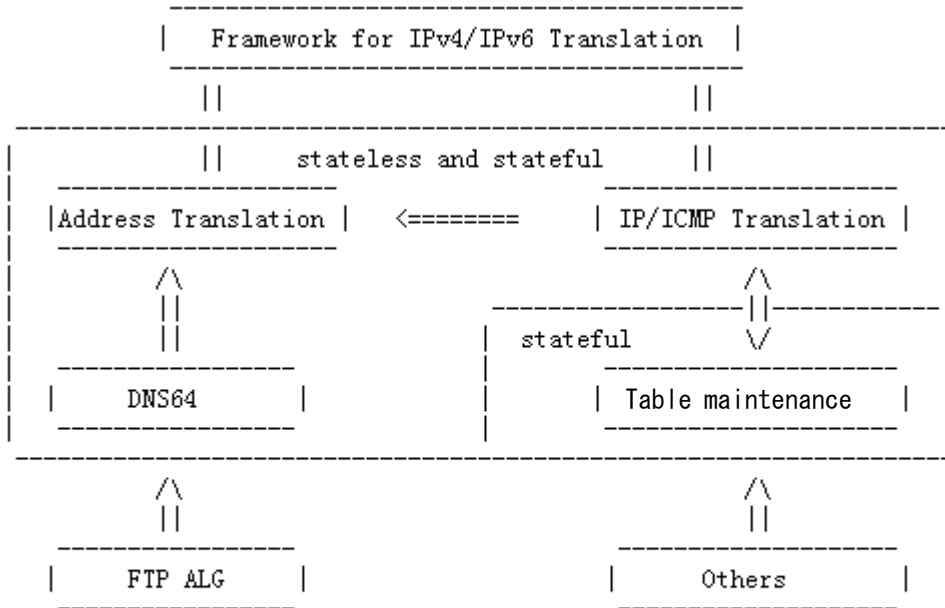


Figure 14: Document Layout

Unsolved problems

- Unsolved problems
 - Multicast
 - Stateless translation with IPv4 address and transport port number multiplexing technique