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Stateless and Stateful Auto-configuration using Router Advertisements

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Laboratory Exercise: *Stateless Auto-configuration*

Objectives

In this laboratory exercise you will complete the following tasks:

- *Setup Router Advertisements for stateless auto-configuration*
- *Modify Router Advertisements parameters to force hosts to use stateful auto-configuration*

Visual Objective

The following figure shows the topology of the current laboratory.

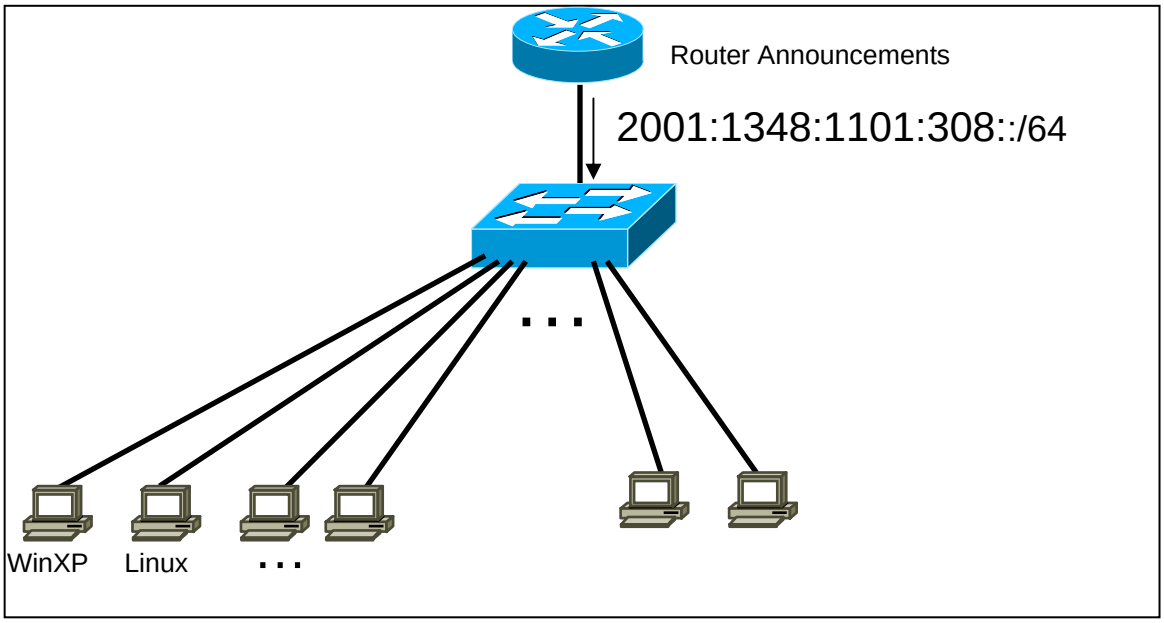

Figure 1: Scenario topology

Setup

On router's configuration scenario, for a particular vlan/link, enable and configured IPv6 addresses and Router Advertisement Messages. Enter your router and verify that everything is correctly configured, in particular:

- *Router advertisement messages interval=30 seconds*
- *Prefix value in RA messages **is not** suppressed*
- *address=2001:1348:1101:308::/64*

Scenario

We will go over stateless auto-configuration, and then we are going to make some modifications on Router Advertisement messages parameters.

Task 1: *Setup Router Advertisements for stateless auto-configuration*

Follow these steps (this will have been set up already but we will go over it now)

Step 1: Access the router

Telnet the router using:
Password: **6diss**
Enable secret: **6diss**

Step 2: Enter into interface configuration mode and enable RA messages with a specific. (Please consult Appendix A for more information regarding the arguments).
(**Tip1:** `RouterX(config-if)#` ipv6 nd ra interval 30
(**Tip2:** `RouterX(config-if)#` no ipv6 nd suppress-ra
(**Tip3:** `RouterX(config-if)#` ipv6 nd prefix 2001:1348:1101:308::/64

Task 2: *Change Router Advertisement parameters related with auto-configuration stateful*

Complete the following exercise's steps:

Step 1: Access the router

Telnet your router using:
Password: **6diss**
Enable secret: **6diss**

Step 2: Enter on your VLAN interface configuration mode and enable both *managed-config-flag* and *other-config-flag* on your RA messages. (Please consult Appendix A for more information regarding this flags).
(**Tip1:** `RouterX(config-if)# ipv6 nd managed…`)
(**Tip2:** `RouterX(config-if)# ipv6 nd other…`)

Step 3: Using Ethereal/Wireshark capture some Router Advertisement messages. Afterwards, on the ICMPv6 parameters of the captured messages, visualize the flag's values configured on the previous step.

IMPORTANT!! At this point on time, the current Operating Systems ignore these two flags. There's no full support of RFC 2462 and 3315 by current Operating Systems. This is one of the drawbacks of current IPv6 support.
That's why we have to run an external DHCPv6 client

Summary

After completing these exercises, you should be able to:

- *Modify Router Advertisements parameters in order to force hosts to use stateful auto-configuration*

Appendix A

The purpose of managed address configuration and other stateful configuration flags on Router Advertisement messages

When a host connects to a network it tries to find if there is a local router. If a router is found, then the client examines the router advertisements. Router Advertisements contain two flags indicating what type of stateful auto-configuration (if any) should be performed. A ***managed address configuration*** flag indicates whether hosts should use stateful auto-configuration to obtain, or not, addresses.
The ***other stateful configuration*** flag indicates if the hosts should use stateful auto-configuration to obtain additional information (excluding addresses), like the DNS server address for example.

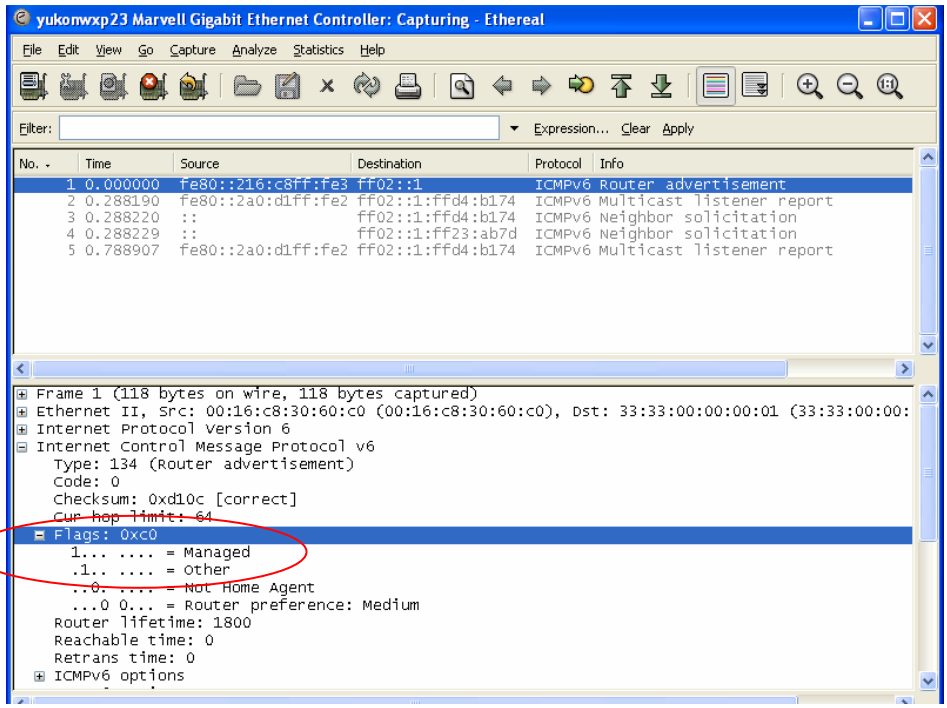

Figure 2: Router Advertisement with both ***managed address configuration*** and ***other stateful configuration*** enabled.