

How to configure basic IPv6 interoperability between an Allied Telesyn AR450 router and Microsoft Windows XP

Introduction

This document introduces basic IPv6 interoperability testing between an AR450 router and Microsoft® Windows® XP. This document is essentially a lab note, and assumes you have a basic knowledge of IPv6 implementation as well as knowledge of configuring the Windows XP operating system.

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Hardware and software used

The configuration example in this document uses:

- an Allied Telesyn AR450 router running AlliedWare™ software release 54-252 patch 02.
- Microsoft Windows XP SP1.

AR450 configuration

Set up the AR450 IPv6 configuration.

This configuration enables the router to send Router Advertisements and include the prefix information in the Router Advertisement messages.

```
enable ipv6
create ipv6 int=vlan1
add ipv6 int=vlan1 ip=3ffe:0001::0001/64 publish=yes
enable ipv6 advertise
```

AR450 SHOW command outputs

```
sh ipv6 int=vlan1
```

Figure 1: Example output from the AR450 SHOW IPV6 INTERFACE command

```
IPV6 Interface Configuration
-----
Interface ..... vlan1
Ipv6 Interface Index ..... 1
Link-layer address ..... 00-00-cd-0a-40-65
Link-layer state ..... Up
EUI-64 Interface Identifier ..... 0200CDFFFE0A4065
IPSec ..... No
True MTU/Link MTU ..... 1500/1500
Multicast status ..... Enabled
Send Router Advertizements ? ..... Yes
Ipv6 Interface Addresses :
Int Addresses PLen Decrement
Type Scope State Enabled Valid Preferred Publish
-----
0 fe80::0200:cdff:fe0a:4065 /64 No
unicast link preferred Yes infinite infinite No
1 3ffe:0001::0001 /64 No
unicast global preferred Yes 2592000 604800 Yes
```

```
sh ipv6 route
```

Figure 2: Example output from the AR450 SHOW IPV6 ROUTE command

```
IPV6 Routing Table Entries
Destination prefix ---> Next Hop
Int. Age Policy Protocol Metric Pref Tunnel DLCI Flags
-----
3ffe:0001::/64 ---> ::
vlan1 no 0 interface 1 0 no - P
-----
Codes: P=publish, D=default, A=addrconf, S=stale, L=onlink
N=nonexthop, C=cache, F=flow, Y=policy, U=unknown
```

Windows XP configuration

Set up the Windows XP configuration

If you have not already installed IPv6, use the command:

```
ipv6 install
```

then enter:

```
E:\>ipv6 if 7
```

Figure 3: Example output from the Windows XP IPV6 IF 7 command

```
Interface 7: Ethernet: Local Area Connection 3
{03D770B7-7338-4776-8D14-7AFA1BD3D630}
  uses Neighbor Discovery
  uses Router Discovery
link-layer address: 00-03-47-6b-93-fb
preferred global 3ffe:1::ad1a:2858:cfe:2932,
  life 6d23h59m33s/23h56m46s (anonymous)
preferred global 3ffe:1::203:47ff:fe6b:93fb,
  life 29d23h59m33s/6d23h59m33s (public)
preferred link-local fe80::203:47ff:fe6b:93fb, life infinite
multicast interface-local ff01::1, 1 refs, not reportable
multicast link-local ff02::1, 1 refs, not reportable
multicast link-local ff02::1:ff6b:93fb, 2 refs, last reporter
multicast link-local ff02::1:fffe:2932, 1 refs, last reporter
link MTU 1500 (true link MTU 1500)
current hop limit 255
reachable time 30500ms (base 30000ms)
retransmission interval 1000ms
DAD transmits 1
```

The number 7 in the command "ipv6 if 7" is derived from the command output of "ipv6 if". It represents the interface number created by Windows XP for the specific interface in use. A computer may have more than one interface and this number varies among computers. The global addresses in Windows XP are autoconfigured with the prefix information advertised in the Router Advertisement messages.

Windows automatically generates an anonymous IP address (see Figure 3) as per RFC 3041 "Privacy Extensions for Stateless Address Autoconfiguration in IPv6". This can be modified using the windows command:

```
ipv6gpu useanonymousaddresses
```

It can be seen from Figure 3 that the lifetime of this address type is one day.

Ping results from the AR450

```
ping 3ffe:1::203:47ff:fe6b:93fb
```

Figure 4: Example output from the AR450 PING command

```
Echo reply 1 from 3ffe:0001::0203:47ff:fe6b:93fb time delay 1 ms
Echo reply 2 from 3ffe:0001::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 3 from 3ffe:0001::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 4 from 3ffe:0001::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 5 from 3ffe:0001::0203:47ff:fe6b:93fb time delay 0 ms
```

```
ping 3ffe:1::ad1a:2858:cfe:2932
```

Figure 5: Example output from the AR450 PING command

```
Echo reply 1 from 3ffe:0001::ad1a:2858:0cfe:2932 time delay 0 ms
Echo reply 2 from 3ffe:0001::ad1a:2858:0cfe:2932 time delay 0 ms
Echo reply 3 from 3ffe:0001::ad1a:2858:0cfe:2932 time delay 0 ms
Echo reply 4 from 3ffe:0001::ad1a:2858:0cfe:2932 time delay 0 ms
Echo reply 5 from 3ffe:0001::ad1a:2858:0cfe:2932 time delay 0 ms
```

```
ping fe80::203:47ff:fe6b:93fb%vlan1
```

Figure 6: Example output from the AR450 PING command

```
Echo reply 1 from fe80::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 2 from fe80::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 3 from fe80::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 4 from fe80::0203:47ff:fe6b:93fb time delay 0 ms
Echo reply 5 from fe80::0203:47ff:fe6b:93fb time delay 0 ms
```

Ping testing from AR450 to the global address (public), global address (anonymous) and link-local address of Windows XP is successful.

Ping results from Windows XP

```
E:\>ping6 3ffe:1::1
```

Figure 7: Example output from the Windows XP PING command

```
Pinging 3ffe:1::1
from 3ffe:1::ad1a:2858:cfe:2932 with 32 bytes of data:
  Reply from 3ffe:1::1: bytes=32 time<1ms
  Reply from 3ffe:1::1: bytes=32 time<1ms
  Reply from 3ffe:1::1: bytes=32 time<1ms
  Reply from 3ffe:1::1: bytes=32 time<1ms
Ping statistics for 3ffe:1::1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
E:\>ping6 fe80::0200:cdff:fe0a:4065%7
```

Figure 8: Example output from the Windows XP PING command.

```
Pinging fe80::200:cdff:fe0a:4065%7
from fe80::203:47ff:fe6b:93fb%7 with 32 bytes of data:
  Reply from fe80::200:cdff:fe0a:4065%7: bytes=32 time<1ms
  Reply from fe80::200:cdff:fe0a:4065%7: bytes=32 time<1ms
  Reply from fe80::200:cdff:fe0a:4065%7: bytes=32 time<1ms
  Reply from fe80::200:cdff:fe0a:4065%7: bytes=32 time<1ms
Ping statistics for fe80::200:cdff:fe0a:4065%7:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Ping testing from Windows XP to the global address (VLAN1), and link-local address of the AR450 is successful.

