

IPv6 Toolkit v2.0

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Introduction

Overview

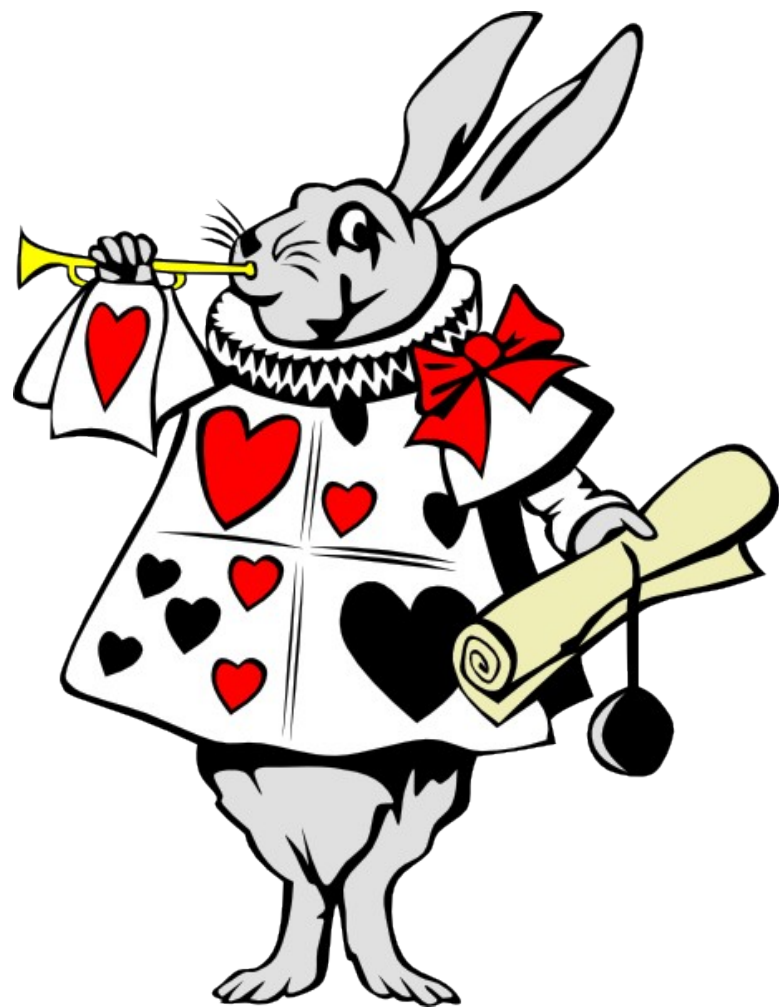
- Supported OSes:
 - Linux, FreeBSD, NetBSD, OpenBSD, and Mac OS
- License:
 - GPL (free software)
- Home:
 - <http://www.si6networks.com/tools/ipv6toolkit>
- Collaborative development:
 - <https://www.github.com/fgont/ipv6toolkit.git>

SI6 Networks' IPv6 toolkit: Tools

- `addr6`: An IPv6 address analysis tool
- `scan6`: An IPv6 address scanner
- `path6`: A versatile IPv6-based traceroute
- `frag6`: Play with IPv6 fragments
- `tcp6`: Play with IPv6-based TCP segments
- `ns6`: Play with Neighbor Solicitation messages
- `na6`: Play with Neighbor Advertisement messages
- `script6`: Rather complex tasks made easy

IPv6 toolkit: Tools (II)

- rs6: Play with Router Solicitation messages
- ra6: Play with Router Advertisement messages
- rd6: Play with Redirect messages
- icmp6: Play with ICMPv6 error messages
- ni6: Play with Node Information messages
- flow6: Play with the IPv6 Flow Label
- jumbo6: Play with IPv6 Jumbograms



IPv6 Toolkit v2.0 preview!

“Smart” host-scanning

Overview (scan6 tool)

- scan6 can automatically leverage patterns in IPv6 addresses
- Example:

```
# scan6 -d www.netbsd.org/64
```


A versatile traceroute6 tool

Overview (path6 tool)

- No existing traceroute tool supported IPv6 extension headers
- We needed to measure packet drops resulting from IPv6 EHS
- Hence we produced our path6 tool
 - Supports IPv6 Extension Headers
 - Can employ TCP, UDP, or ICMPv6 probes
 - It's faster ;-)
- Example:

```
# path6 -u 100 -d fc00:1::1
```

Dst Opt Hdr

Finding IPv6 blackholes

blackhole6: Overview

- How it works?
 - It works as we explained with Jen in our earlier presentation on IPv6 EHs

```
fgont@satellite:~$ sudo blackhole6 www.google.com do8
SI6 Networks IPv6 Toolkit v2.0
blackhole6: A tool to find IPv6 blackholes
Tracing www.google.com (2607:f8b0:400b:807::1012)...

Dst. IPv6 address: 2607:f8b0:400b:807::1012 (AS15169 - GOOGLE - Google
Inc.,US)
Last node (no EHs): 2607:f8b0:400b:807::1012 (AS15169 - GOOGLE - Google
Inc.,US) (13 hop(s))
Last node (DO 8): 2001:5a0:12:100::72 (AS6453 - AS6453 - TATA
COMMUNICATIONS (AMERICA) INC,US) (7 hop(s))
Dropping node: 2001:4860:1:1:0:1935:0:75 (AS15169 - GOOGLE - Google
Inc.,US || AS15169 - GOOGLE - Google Inc.,US)
```

Producing stats for IPv6 blackholes

Producing stats for IPv6 blackholes

- 1) Get address sets
- 2) Filter addresses
- 3) Find blackholes
- 4) Produce stats

Producing stats: Get address sets

- Obtain different web addresses

```
cat domains.txt | script6 get-aaaa
```

- Obtain mail addresses:

```
cat domains.txt | script6 get-ns | script6 get-aaaa
```

- Obtain mailserver addresses:

```
cat domains.txt | script6 get-mx | script6 get-aaaa
```

Producing stats: Filter out addresses

- Only accept addresses that are:
 - global scope
 - unicast type
 - unique
- Done with `addr6` with:

```
cat addresses.txt | addr6 --stdin --print-  
unique --block-type unspecified --block-type  
multicast --accept-scope global
```


Producing stats: Obtain stats

- Produce stats based on bulk results
- Need to filter out cases where:
 - Destination is unreachable without EHs
 - path with EHs != path without EHs
 - ... and others
- Done with script6 as:

```
cat trace-results.txt | script6 get-trace-stats
```

**Questions and/or feedback is
welcome (patches too ;-))**