MGEN6

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MGEN measurement tool

- MultiGENerator Toolset (MGEN) developed by Brian Adamson (Naval Research Laboratory, http://manimac.itd.nrl.navy.mil/MGEN/)

- Allows generating and analyzing UDP flows
  - Both unicast and multicast

- Three components
  - mgen: Traffic generator
    - Flexible flow definition (concurrent flows, several traffic patterns, etc.)
  - drec: Traffic receiver
  - mcalc: Analysis over received traffic
MGEN6 new capabilities

- Generation of IPv6 extension headers
  - Hop-by-hop
    - ROUTER_ALERT_OPTION
    - JUMBO_PAYLOAD_OPTION # num (>65535)
  - Routing Header
    - ROUTING_HEADER <dir1><dir2>...<dir23>
  - Mobility
    - HOME_ADDRESS_OPTION <dir_of_the_home_address>
    - BINDING_UPDATE # prefix # lifetime <coa>
    - BINDING_ACK # status # lifetime # refresh
    - BINDING_REQ
Example of MGEN6 script

Time          Destination  Dest. Port  Type of flow
00000 1 ON 0:0:0:0:0:0:0:1 3ffe:3328:1:1f:2c0:26ff:fe70:1358 5000 PERIODIC 1
02000 1 ON 0:0:0:0:0:0:0:1 fe80::2c0:26ff:fe10:1931
04000 1 ON 0:0:0:0:0:0:0:1 3ffe:3328:1:1f:2c0:26ff:fe70:1358
10000 1 OFF 0:0:0:0:0:0:0:1
30000 1 OFF

Size

Flow is finished
**MGEM6 programming**

- Using advanced API: RFC 2292bis
  - [draft-ietf-ipngwg-rfc2292bis-07.txt](draft-ietf-ipngwg-rfc2292bis-07.txt)
  - Portable interface for
    - ICMPv6
    - MLD (Multicast Listener Discovery)
    - Extension headers, etc.
- Flow Label ?
- Supported by FreeBSD and Linux USAGI
**MGEN6 programming**

- **Optimizations:**
  - Resize of socket buffers
  - Switch to Round-Robin-Real-Time Scheduling
  - Processes are executed with higher priority
  - Not needed KAME/USAGI kernels
  - Conditional Compilation is bad for understanding

- **TO-DO** (Add more IPv6 extension header support)
  - Authentication Header (AH)
  - Encapsulation Security Payload (ESP)
Downloads

http://matrix.it.uc3m.es/~long/software.html

Or if you use IPv6,
http://matrix.ipv6.it.uc3m.es/~long/software.html

More info available on

- Deliverable 3.1. “Requirements and guidelines for distributed laboratories application migration”. LONG Project.
  http://long.ccaba.upc.es/