

A LISP Telemetry Tool

loc8tr

September 2018

What is *loc8tr*

- Have the overlay gather telemetry data about the underlay
- Runs on a LISP ITR/RTR/PITR to query the map-cache
- Obtains RLOC addresses and LISP computed RTTs and bidirectional hop-counts
- Runs `traceroute` to each RLOC, obtains underlay hops and per-hop RTT

What *loc8tr* Produces

- Each run writes data to directory:

`loc8tr-<date>-<timestamp>`

- Writes the following data files:

`loc8tr.log` - output from command (and to stdout)

`loc8tr.json` - RLOC and traceroute data in JSON

`loc8tr-mc.json` - LISP map-cache in JSON from xTR

loc8tr.log

```
xtr-1:/lispers.net# python loc8tr.py -u nexus:demo
Found 12 map-cache entries with 18 distinct RLOC(s):
RLOC 172.17.0.47, rtt(secs) [0.123, 0.126, 0.113], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.10.10/32']
RLOC 172.17.0.46, rtt(secs) [0.131, 0.101, 0.185], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.9.9/32']
RLOC 2.0.0.39, rtt(secs) [0.126, 0.211, 0.187], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.3.3/32']
RLOC 2.0.0.38, rtt(secs) [0.102, 0.086, 0.046], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.2.2/32']
RLOC 172.17.0.45, rtt(secs) [0.139, 0.113, 0.076], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.8.8/32']
RLOC 172.17.0.44, rtt(secs) [0.133, 0.019, 0.118], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.7.7/32']
RLOC 172.17.0.43, rtt(secs) [0.116, 0.121, 0.107], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.6.6/32']
RLOC 172.17.0.42, rtt(secs) [0.123, 0.133, 0.094], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.5.5/32']
RLOC 172.17.0.41, rtt(secs) [0.115, 0.099, 0.189], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.4.4/32']
RLOC 172.17.0.40, rtt(secs) [0.111, 0.193, 0.174], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.3.3/32']
RLOC 2.0.0.44, rtt(secs) [0.078, 0.05, 0.167], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.8.8/32']
RLOC 2.0.0.45, rtt(secs) [0.172, 0.17, 0.149], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.9.9/32']
RLOC 2.0.0.46, rtt(secs) [0.173, 0.188, 0.125], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.10.10/32']
RLOC 172.17.0.39, rtt(secs) [0.115, 0.168, 0.052], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.2.2/32']
RLOC 2.0.0.40, rtt(secs) [0.172, 0.173, 0.164], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.4.4/32']
RLOC 2.0.0.41, rtt(secs) [0.168, 0.179, 0.209], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.5.5/32']
RLOC 2.0.0.42, rtt(secs) [0.183, 0.188, 0.151], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.6.6/32']
RLOC 2.0.0.43, rtt(secs) [0.188, 0.151, 0.132], hops ['1/1', '1/1', '1/1']
EIDs: ['[1]240.0.7.7/32']
```

```
Run traceroute -n -m 15 -q 1 -w 1 172.17.0.47 ...
1 172.17.0.47 (?), rtt 0.153ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.46 ...
1 172.17.0.46 (?), rtt 0.126ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.39 ...
1 2.0.0.39 (xtr-3.eth1), rtt 0.120ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.38 ...
1 2.0.0.38 (xtr-2.eth1), rtt 0.769ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.45 ...
1 172.17.0.45 (?), rtt 0.682ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.44 ...
1 172.17.0.44 (?), rtt 0.141ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.43 ...
1 172.17.0.43 (?), rtt 0.124ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.42 ...
1 172.17.0.42 (?), rtt 0.120ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.41 ...
1 172.17.0.41 (?), rtt 0.807ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.40 ...
1 172.17.0.40 (?), rtt 0.589ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.44 ...
1 2.0.0.44 (xtr-8.eth1), rtt 0.718ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.45 ...
1 2.0.0.45 (xtr-9.eth1), rtt 0.664ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.46 ...
1 2.0.0.46 (xtr-10.eth1), rtt 0.715ms !

Run traceroute -n -m 15 -q 1 -w 1 172.17.0.39 ...
1 172.17.0.39 (?), rtt 0.743ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.40 ...
1 2.0.0.40 (xtr-4.eth1), rtt 0.714ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.41 ...
1 2.0.0.41 (xtr-5.eth1), rtt 0.532ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.42 ...
1 2.0.0.42 (xtr-6.eth1), rtt 0.727ms !

Run traceroute -n -m 15 -q 1 -w 1 2.0.0.43 ...
1 2.0.0.43 (xtr-7.eth1), rtt 0.758ms !
```

Log and JSON files created in directory ./loc8tr-09-17-18-19-56-09

loc8tr.json

```
{
  "172.17.0.47": [
    "traceroute to 172.17.0.47 (172.17.0.47), 15 hops max, 60 byte packets\n",
    "1 172.17.0.47 0.153 ms",
    [
      ["172.17.0.47", "0.153"],
      [0.123, 0.126, 0.113],
      ["1/1", "1/1", "1/1"],
      ["[1]240.0.10.10/32"]
    ],
    "172.17.0.46": [
      "traceroute to 172.17.0.46 (172.17.0.46), 15 hops max, 60 byte packets\n",
      "1 172.17.0.46 0.126 ms",
      [
        ["172.17.0.46", "0.126"],
        [0.131, 0.101, 0.185],
        ["1/1", "1/1", "1/1"],
        ["[1]240.0.9.9/32"]
      ],
      "2.0.0.39": [
        "traceroute to 2.0.0.39 (2.0.0.39), 15 hops max, 60 byte packets\n",
        "1 2.0.0.39 0.120 ms",
        [
          ["2.0.0.39", "0.120"],
          [0.126, 0.211, 0.187],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.3.3/32"]
        ],
      ],
      "2.0.0.38": [
        "traceroute to 2.0.0.38 (2.0.0.38), 15 hops max, 60 byte packets\n",
        "1 2.0.0.38 0.769 ms",
        [
          ["2.0.0.38", "0.769"],
          [0.102, 0.086, 0.046],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.2.2/32"]
        ],
      ],
      "172.17.0.45": [
        "traceroute to 172.17.0.45 (172.17.0.45), 15 hops max, 60 byte packets\n",
        "1 172.17.0.45 0.682 ms",
        [
          ["172.17.0.45", "0.682"],
          [0.139, 0.113, 0.076],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.8.8/32"]
        ],
      ],
      "172.17.0.44": [
        "traceroute to 172.17.0.44 (172.17.0.44), 15 hops max, 60 byte packets\n",
        "1 172.17.0.44 0.141 ms",
        [
          ["172.17.0.44", "0.141"],
          [0.133, 0.019, 0.118],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.7.7/32"]
        ],
      ],
      "172.17.0.43": [
        "traceroute to 172.17.0.43 (172.17.0.43), 15 hops max, 60 byte packets\n",
        "1 172.17.0.43 0.124 ms",
        [
          ["172.17.0.43", "0.124"],
          [0.116, 0.121, 0.107],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.6.6/32"]
        ],
      ],
      "172.17.0.42": [
        "traceroute to 172.17.0.42 (172.17.0.42), 15 hops max, 60 byte packets\n",
        "1 172.17.0.42 0.120 ms",
        [
          ["172.17.0.42", "0.120"],
          [0.123, 0.133, 0.094],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.5.5/32"]
        ],
      ],
      "172.17.0.41": [
        "traceroute to 172.17.0.41 (172.17.0.41), 15 hops max, 60 byte packets\n",
        "1 172.17.0.41 0.807 ms",
        [
          ["172.17.0.41", "0.807"],
          [0.115, 0.099, 0.189],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.4.4/32"]
        ],
      ],
      "172.17.0.40": [
        "traceroute to 172.17.0.40 (172.17.0.40), 15 hops max, 60 byte packets\n",
        "1 172.17.0.40 0.589 ms",
        [
          ["172.17.0.40", "0.589"],
          [0.111, 0.193, 0.174],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.3.3/32"]
        ],
      ],
      "2.0.0.44": [
        "traceroute to 2.0.0.44 (2.0.0.44), 15 hops max, 60 byte packets\n",
        "1 2.0.0.44 0.718 ms",
        [
          ["2.0.0.44", "0.718"],
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          ["1/1", "1/1", "1/1"],
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      "2.0.0.45": [
        "traceroute to 2.0.0.45 (2.0.0.45), 15 hops max, 60 byte packets\n",
        "1 2.0.0.45 0.664 ms",
        [
          ["2.0.0.45", "0.664"],
          [0.172, 0.17, 0.149],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.9.9/32"]
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      ],
      "2.0.0.46": [
        "traceroute to 2.0.0.46 (2.0.0.46), 15 hops max, 60 byte packets\n",
        "1 2.0.0.46 0.715 ms",
        [
          ["2.0.0.46", "0.715"],
          [0.173, 0.188, 0.125],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.10.10/32"]
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      "172.17.0.39": [
        "traceroute to 172.17.0.39 (172.17.0.39), 15 hops max, 60 byte packets\n",
        "1 172.17.0.39 0.743 ms",
        [
          ["172.17.0.39", "0.743"],
          [0.115, 0.168, 0.052],
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        "traceroute to 2.0.0.40 (2.0.0.40), 15 hops max, 60 byte packets\n",
        "1 2.0.0.40 0.714 ms",
        [
          ["2.0.0.40", "0.714"],
          [0.172, 0.173, 0.164],
          ["1/1", "1/1", "1/1"],
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        "traceroute to 2.0.0.41 (2.0.0.41), 15 hops max, 60 byte packets\n",
        "1 2.0.0.41 0.532 ms",
        [
          ["2.0.0.41", "0.532"],
          [0.168, 0.179, 0.209],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.5.5/32"]
        ],
      ],
      "2.0.0.42": [
        "traceroute to 2.0.0.42 (2.0.0.42), 15 hops max, 60 byte packets\n",
        "1 2.0.0.42 0.727 ms",
        [
          ["2.0.0.42", "0.727"],
          [0.183, 0.188, 0.151],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.6.6/32"]
        ],
      ],
      "2.0.0.43": [
        "traceroute to 2.0.0.43 (2.0.0.43), 15 hops max, 60 byte packets\n",
        "1 2.0.0.43 0.758 ms",
        [
          ["2.0.0.43", "0.758"],
          [0.188, 0.151, 0.132],
          ["1/1", "1/1", "1/1"],
          ["[1]240.0.7.7/32"]
        ],
      ],
    ]
  ]
}
```

json
record

traceroute
output

tracroute
data

from LISP

Command Line

```
python loc8tor.py [-n] [-up <user>:<pw>]  
                  [-hp <host>:<port>]
```

- n Runs command without DNS lookups
- up Queries with username <user> & password <pw>, default "root:"
- hp Queries <host>:<port>, default "localhost:8080"