TULIP and UNDNS

UNDNS

Undns is a package that uses the naming conventions of routers to estimate their location. It is part of Rocketfuel which is a project of a team from University of Washington.

The project is quite old (last updated in 2006) and hence some of the heuristics are outdated. Also not all of the routers are supported including those part of ESnet. Furthermore, since the script uses hostnames to find the location, it obviously doesn't work for routers with only IP addresses.

In our experience, it only works for a handful of routers.

Examples

-TULIP trace is red, Maxmind trace is blue and Undns trace is orange.

Traceroute from brunsvigia.tenet.ac.za (Cape Town, South Africa) to ping.riken.jp (Tokyo, Japan). Here Undns misses Europe and Maxmind misses North America. TULIP shows the actual path.

Hop #	Hostname	IP Address	ASNet	RTT	RTT bar	Coordinates	Hop Distance
4	te0-0-0-0-els1-pe2.tenet.ac.za	155.232.6.46		36.148 ms		-32.8511,19.0142 (cache)	131.2 km
5	te2-0-0-dur1-pe1.tenet.ac.za	155.232.6.70		35.568 ms		-25.4723,28.3125 (cache)	1220.4 km
6	xe0-0-0-dur1-pe2.tenet.ac.za	155.232.6.134		36.825 ms		-25.5148,28.2583 (cache)	7.2 km
7	te1-1-700-mtz1-pe1.tenet.ac.za	155.232.6.85		36.546 ms		-25.3974,28.3170 (cache)	14.3 km
8	xe-0-0-2.ams1.nl.ubuntunet.net	196.32.209.118		223.644 ms		Can't geolocate	_
9	ubuntunet.mx1.ams.nl.geant.net	62.40.125.21		223.746 ms		52.0111,4.3855 (cache)	8928.7 km
10	nyc-gate1-RM-GE-7-2-0-207.sinet.ad.jp	150.99.188.201		298.162 ms		40.8583,-73.8507 (cache)	5830.8 km
11	tokyo-dc-gm1-xe4-3-0-vlan10.s4.sinet.ad.jp	150.99.2.73		480.776 ms		35.4231,139.7212 (cache)	10879.2 km
12	tokyo-dc-rm-ae3-vlan10.s4.sinet.ad.jp	150.99.2.49		484.758 ms		35.6889,139.6936 (cache)	29.7 km
13	riken-LAN.gw.sinet.ad.jp	150.99.192.170		487.937 ms		35.5496,139.7149 (cache)	15.6 km
15	snoopy.riken.go.jp	134.160.4.17		475.516 ms		35.5524,139.7147 (cache)	0.3 km

[Visual Traceroute took : 36secs |Total Hop Distance: 27057.4 km | Total End-to-end Distance: 14747.4 km | Directivity = 0.55]

Traceroute from pinger.cern.ch (Switzerland) to mel-a-ext1.aarnet.net.au (Melbourne, Australia). Here Undns is only able to identify the last two hops in Sydney and Melbourne respectively. It is unable to identify the routers in North America.

Hop #	Hostname	IP Address	ASNet	RTT	RTT bar	Coordinates	Hop Distance
3	xe-0-3-0.110.rtr.newy32aoa.net.internet2.edu	198.71.46.37		123.880 ms		40.5624,-74.3641 (cache)	6250.2 km
4	et-3-0-0.101.rtr.wash.net.internet2.edu	198.71.45.1		121.985 ms		39.0943,-77.2697 (cache)	297.3 km
5	et-5-0-0.104.rtr.atla.net.internet2.edu	198.71.45.6		128.799 ms		32.8023,-82.4514 (cache)	841.5 km
6	et-1-0-0.105.rtr.hous.net.internet2.edu	198.71.45.13		144.278 ms		30.3162,-95.3743 (cache)	1255.9 km
7	et-5-0-0.111.rtr.losa.net.internet2.edu	198.71.45.21		176.822 ms		34.0124,-118.2695 (cache)	2191.8 km
8	aarnet-2-is-jmb-776.sttlwa.pacificwave.net	207.231.241.4		183.364 ms		47.6585,-122.2893 (cache)	1555.9 km
9	et-1-0-0.bb2.a.syd.aarnet.net.au	202.158.194.109		326.424 ms		-33.8827,151.2026 (cache)	12492.3 km
10	ge-7-0-0.bb1.b.mel.aarnet.net.au	202.158.194.64		322.417 ms		-37.8367,144.9866 (cache)	712.7 km
11	mel-a-ext1.aarnet.net.au	202.158.195.132		322.487 ms		-37.8372,144.9853 (cache)	0.1 km

[Visual Traceroute took : 34secs | Total Hop Distance: 25597.7 km | Total End-to-end Distance: 16560.1 km | Directivity = 0.65]

Traceroute from www-wanmon.slac.stanford.edu (Menlo Park,USA) to nust.edu.pk (Islamabad, Pakistan). Undns fails to locate even a single router.

Hop #	Hostname	IP Address	ASNet	RTT	RTT bar	Coordinates	Hop Distance
1	134.79.197.131	134.79.197.131	AS3671	0.435 ms		37.4178,-122.2020 (cache)	0.1 km
2	rtr-core1-p2p-serv01-02.slac.stanford.edu	134.79.253.253	AS3671	0.308 ms		37.4178,-122.2020 (cache)	0.0 km
3	rtr-border2-p2p-core1.slac.stanford.edu	134.79.252.141	AS3671	0.368 ms		37.4178,-122.2020 (cache)	0.0 km
4	slac-mr2-p2p-rtr-border2.slac.stanford.edu	192.68.191.249	AS3671	0.255 ms		37.4178,-122.2020 (cache)	0.0 km
6	sacrcr5-ip-a-sunncr5.es.net	134.55.40.5	AS293	4.168 ms		38.8948,-121.5655 (cache)	173.6 km
7	denvcr5-ip-a-sacrcr5.es.net	134.55.50.202	AS293	25.037 ms		39.7444,-104.9792 (cache)	1429.6 km
8	kanscr5-ip-a-denvcr5.es.net	134.55.49.58	AS293	35.501 ms		40.9859,-97.1059 (cache)	681.8 km
9	chicrs5-ip-a-kanscr5.es.net	134.55.43.81	AS293	46.538 ms		42.0598,-88.5048 (cache)	726.5 km
10	starcr5-ip-a-chicrs5.es.net	134.55.42.42	AS293	46.739 ms		42.1455,-88.4460 (cache)	10.7 km
11	198.125.140.182	198.125.140.182	AS291	49.348 ms		41.7171,-87.6243 (cache)	83.1 km
12	tengige0-2-0-1.daltr1.Dallas.opentransit.net	193.251.242.129	AS5511	75.424 ms		Can't geolocate	_
13	tengige0-4-0-6.ashtr2.Ashburn.opentransit.net	193.251.243.250	AS5511	91.352 ms		Can't geolocate	_
14	pos0-6-0-0.pastr1.Paris.opentransit.net	193.251.240.69	AS5511	170.513 ms		Can't geolocate	_
15	gigabitethernet1-0-0.marcr2.Marseille.opentransit.net	193.251.151.20	AS5511	177.066 ms		48.4410,2.3139	6691.0 km
17	static-10GE-KHI275-P01-SwB.pie.net.pk	202.125.128.156	AS17557	312.956 ms		24.9389,67.1232 (cache)	6138.9 km
18	rwp44.pie.net.pk	221.120.251.30	AS17557	310.474 ms		24.8878,67.0668 (cache)	8.0 km
19	rwp44.pie.net.pk	221.120.236.190	AS17557	332.600 ms		33.6827,73.0545 (cache)	1138.1 km

[Visual Traceroute took : 348secs | Total Hop Distance: 17081.4 km | Total End-to-end Distance: 11967.3 km | Directivity = 0.70]