

# TULIP methods to improve speed

## Introduction

TULIP Geolocates any host by first calling all of the landmarks (in the target's region) to ping the target. Then it uses the values of RTTs returned to perform multilateration. The latter only takes a second and requires no attention in context of speed improvement. The RTT measurement process however can take around 60 seconds.

## PingER & PerfSONAR

Both PingER and PerfSONAR landmarks use traceroute.pl to send pings to the target host when called. Each landmark sends 5 pings to the target and the min RTT value is selected for use in multilateration. By default the waiting time between pings is 1 sec but this can be changed from version 6.3 or later of traceroute.pl. Using a gap of 0.2 sec reduces the time taken per landmark by 4 fold. Since we have over 100 active PingER and PerfSONAR, this change would greatly increase the geolocation speed. All landmarks should be upgraded to the latest version of traceroute.pl

The current (10/3/13) list of traceroute.pl versions installed is : [traceroute\\_versions.xlsx](#)

## PlanetLab

~~Currently each PlanetLab landmark sends a total of 10 ping probes, if we reduce this number to 5 then this might reduce the time to half.~~ (NOTE : We tried changing the number of pings of PlanetLab from 10 to 5 but it didn't improve the speed)

## Reflector.cgi

Reflector is the script responsible for calling all the landmarks to ping a target. It uses parallel UA to call upon 20 landmarks at a time for speed improvement. (NOTE: Increasing the number of parallel landmark calls to 80 even doesn't improve speed, this doesn't make sense)

## Landmark Selection

Response speed should be an additional factor when deciding which landmarks to be kept active and which to be disabled. Only fastest landmarks should be considered for tier 0 selection. The landmarks that take too long to respond should be disabled as long as we have additional landmarks nearby.