Target **probes** in universities and NRENs (both universities and NRENs are in our research interest)

1. Identify probes we want to launch experiments from (either using RIPE API or manually with [Global RIPE Atlas Network Coverage](https://atlas.ripe.net/results/maps/network-coverage/))
2. Go into API and launch experiments.

[How to create measurements](https://atlas.ripe.net/docs/measurement-creation-api/) - target: listing of IP Addresses

type: traceroute

Traceroute: - Try with different protocols (ICMP/UDP/TCP) to see if it affects

- Use standard and then once more confident, use Paris

Need to write a script to specify all destinations (IPs to probe into belonging to different universities).

Use curl to push scripts to server.

1. Then obtain results with another API. JSON data format. [User Defined Measurement - retrieving results](https://atlas.ripe.net/docs/rest/)

Will need a key to access the API → create an account on RIPE Atlas then create key (Josiah will transfer credits to me)

* measurements etc work on credits; you get credits from hosting a probe; you use those credits to do measurements like ping/traceroute from Atlas Probes; Josiah reckons we have enough credits to complete our experiments

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**NETFLOW** - hosted on one of Hussein’s servers; over 40gb of data

* Josiah will organise that we get accounts on the server

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Mapping IP Addresses to AS number based on **geolocation** databases:

* [Maxmind Geolite](http://dev.maxmind.com/geoip/legacy/geolite/)
* Download Geolite ASN
* Geolite City will also prob be useful to get lat/long coordinates
* can install on unix/linux - terminal interface…?

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**Visualisation:**

* Geographically based
  + universities as dots layered on NRENs
    - NB to see relationship between NRENs, universities
  + to see links between universities in one NREN; also to see traffic between NRENs
  + links can indicate latency with colour scale or varying thickness
* Non-geographic
  + length of links can indicate latency
* Show exchange points with different node type to see if they’re being used (universities might use a private path between them to exchange data instead of the IXP)
* map to evolve to discover different paths; show that there are alternate paths but indicate which is current one; possibly indicate dead paths (paths no longer used)
* How many probes available in countries to maybe encourage Ubuntu to get more probes for further research
  + would be interesting to UbuntuNet people to see how things are