ESCC Winter 2014 SLAC site report

Organizational changes since last ESCC
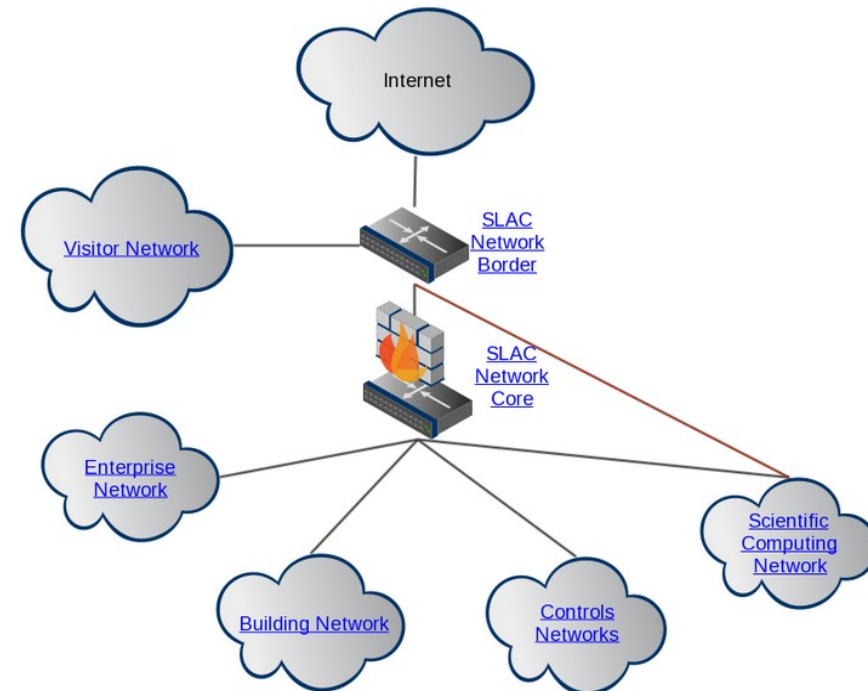
SLAC

- SLAC has a new Cyber Security officer (CISO), Ben Calvert

- Cyber Security Improvement Project

  - Multiple working groups and review boards

  - More on the technical network aspects later

- Positions open for UNIX HPC sys admin

Technical developments - Security

• As part of the Cyber Security Improvement Project, we will be busy working on the following projects for the remainder of FY14:

  • Integrated Security Appliances (firewalls), ScienceDMZ

  • Adopt open source IPAM solution,
    required for IPv6 deployment

  • Wireless upgrade (Cisco WCS),
    developing internal wireless

  • IDS capabilities - BRO

Technical developments - HPC

- Stanford Research Computing Facility online as of last January

  - SLAC occupancy expected by Apr 2014; under review

  - Planning to provide 100G backbone and 40G DTNs to HPC services; main workhorse Cisco N7K and FEX.

- Diverse fiber route between

  SLAC and Stanford completed

Visual Traceroute (VTrace). Using ping delay-based geolocation.

This can take from 20 secs up to 10 minutes, depending on what is cached. Works best for routers in N. America, Europe, Pakistan, Taiwan and Australia. [Documentation | Help | View VTrace cache | Pinger Landmarks | perfSONAR Landmarks]

Target: nust.edu.pk   From Landmark: SLAC USA

Maxmind database

Choose Landmarks in ~ 20 countries

Accuracy error

Click for more info

http://www.slac.stanford.edu/comp/net/tulip/

Run traceroute from landmark to target

Use Trilateration Utility for Locating IP hosts (TULIP) to locate router

- pings target router from multiple known landmarks,
- derives distance from min RTT
- uses trilateration to locate target
- accuracy = landmark density (#/M sqkm)
- enough landmarks in N. America, Europe, Pakistan, Taiwan and Australia for reasonable accuracy
  - 950 landmarks from PingER, perfSONAR & PlanetLab, ~300 work at any time. **Want more**
  - **Developed by SLAC / NUST (Pakistan)**

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Working landmark distribution

Locate router via TULIP

Autonomous System Number

SLAC

Initiating traceroute from w-wanmon.slac.stanford.edu to nust.edu.pk (111.68.101.101)

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	0.1 km
2	rtr-core2-p2p-serv01-01.slac.stanford.edu	134.79.254.65	AS3671	0.314 ms		37.4178,-122.2020	0.0 km
3	rtr-border2-p2p-core1.slac.stanford.edu	134.79.252.141	AS3671	0.706 ms	|	37.4178,-122.2020	0.0 km
4	slac-mr2-p2p-rtr-border1.slac.stanford.edu	192.68.191.245	AS3671	0.259 ms		37.4178,-122.2020	0.0 km
6	sacrcr5-ip-a-sunncr5.es.net	134.55.40.5	AS293	3.750 ms	|	38.8948,-121.5655	173.6 km
7	denvcr5-ip-a-sacrcr5.es.net	134.55.50.202	AS293	24.712 ms	■	39.7444,-104.9792	1429.6 km
8	kanscr5-ip-a-denvcr5.es.net	134.55.49.58	AS293	39.732 ms	■	40.9859,-97.1059	681.8 km
9	chiccr5-ip-a-kanscr5.es.net	134.55.43.81	AS293	46.505 ms	■	42.0598,-88.5048	726.5 km
10	starcr5-ip-a-chiccr5.es.net	134.55.42.42	AS293	46.750 ms	■	42.1455,-88.4460	10.7 km
11	198.125.140.182	198.125.140.182	AS291	82.717 ms	■	41.7171,-87.6243	83.1 km
12	tengige0-1-0-5.nyktr2.NewYork.opentransit.net	193.251.242.52	AS5511	71.128 ms	■	Can't geolocate	_
13	tengige0-11-0-5.nyktr1.NewYork.opentransit.net	193.251.129.49	AS5511	70.209 ms	■	Can't geolocate	_
14	pos0-0-0-0.auvtr1.Aubervilliers.opentransit.net	193.251.241.137	AS5511	156.219 ms	■	Can't geolocate	_
15	xe-3-1-6.marcr3.Marseille.opentransit.net	193.251.128.241	AS5511	168.234 ms	■	48.1684,3.9571	6810.9 km
16	abitethernet5-2-2.marcr2.Marseille.opentransit.net	193.251.151.5	AS5511	166.009 ms	■	48.3831,4.1641	28.4 km
18	static-10GE-KHI275-P01-SwB.pie.net.pk	202.125.128.156	AS17557	294.940 ms	■	24.9389,67.1232	6002.1 km
19	static-10GE-KHI275-P01-SwB.pie.net.pk	221.120.251.30	AS17557	452.900 ms	■	24.8878,67.0668	8.0 km
20	static-10GE-KHI275-P01-SwB.pie.net.pk	221.120.236.190	AS17557	451.937 ms	■	33.6827,73.0545	1138.1 km
22	111.68.101.101.nust.edu.pk	111.68.101.101	AS38193	451.543 ms	■	33.6824,73.0549	0.0 km
23	111.68.101.101.nust.edu.pk	111.68.101.101	AS38193	451.999 ms	■	33.6824,73.0549	0.0 km
24	111.68.101.101.nust.edu.pk	111.68.101.101	AS38193	324.944 ms	■	33.6824,73.0549	0.0 km
25	111.68.101.101.nust.edu.pk	111.68.101.101	AS38193	452.637 ms	■	33.6824,73.0549	0.0 km
26	111.68.101.101.nust.edu.pk	111.68.101.101	AS38193	452.176 ms	■	33.6824,73.0549	0.0 km

[Visual Traceroute took : 44secs |Total Hop Distance: 17092.9 km | Total End-to-end Distance: 11967.3 km | Directivity ≈ 0.70]

Directivity=great circle distance / Sum(hop distance)

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