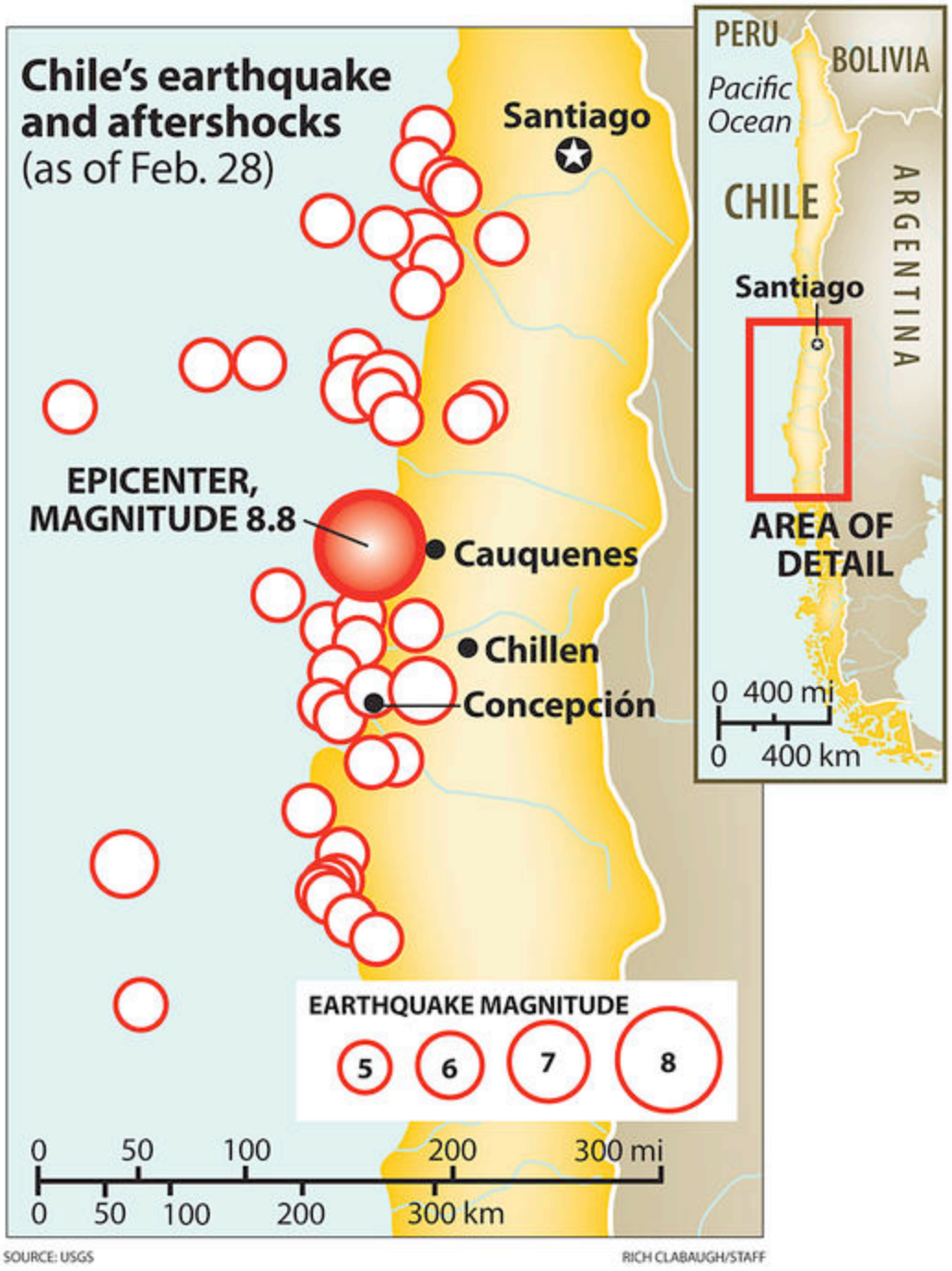
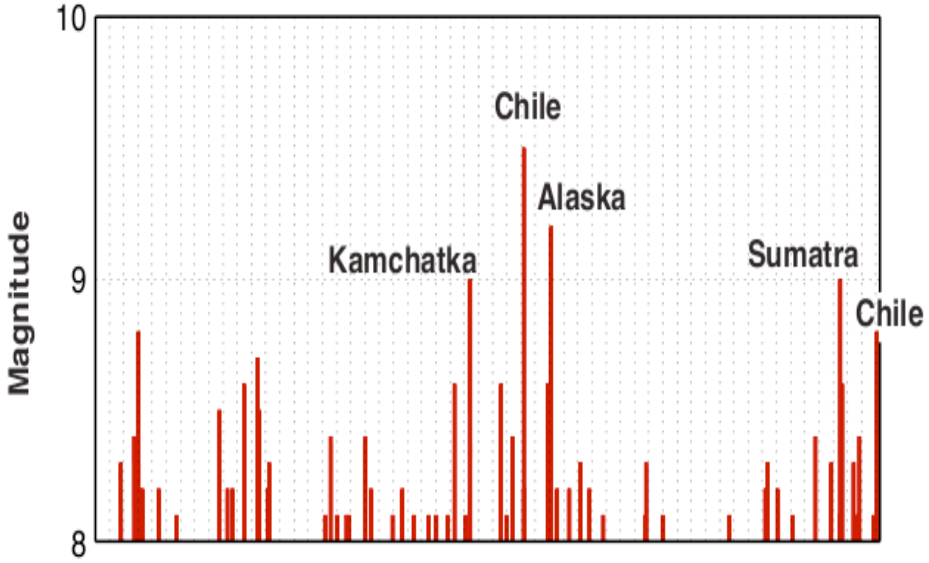
NIC CHILE
Somos el punto CL

Surviving the 8.8 Richter Chilean Earthquake of 27 Feb 2010 3:34am

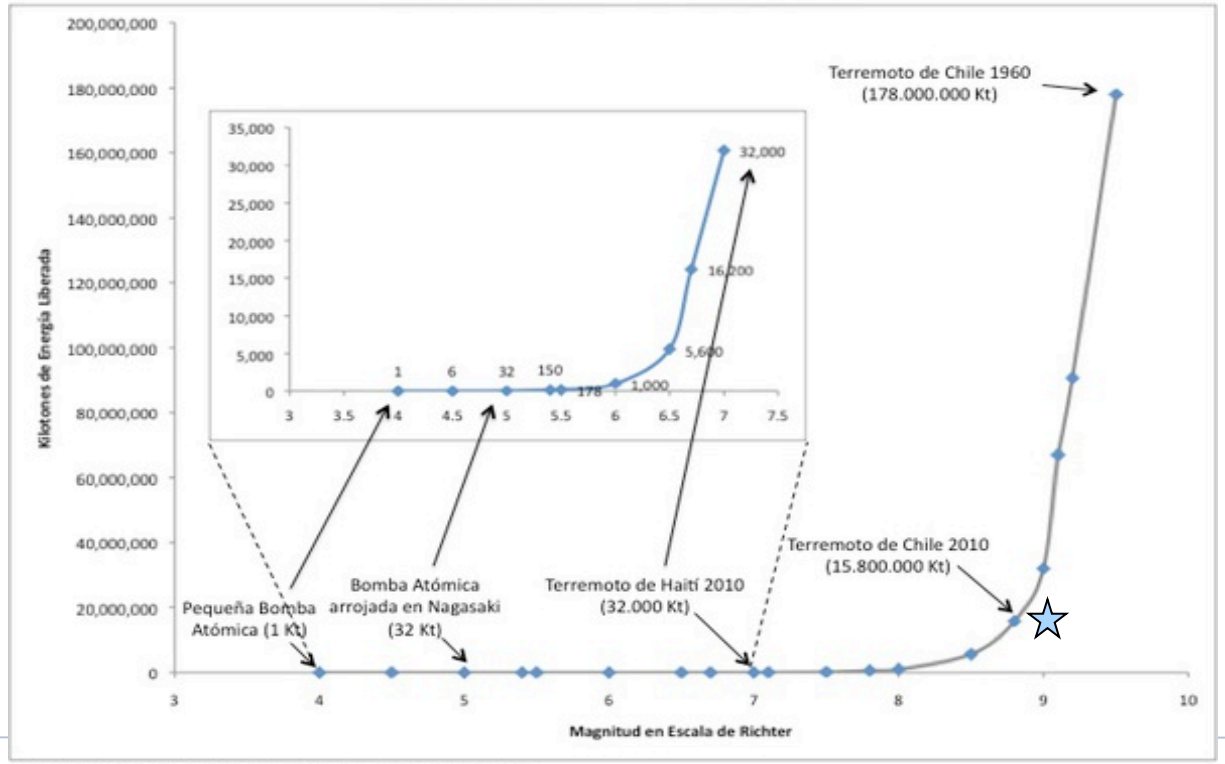
Patricio Poblete
NIC Chile

March 2010


Chile's earthquake and aftershocks
(as of Feb. 28)
Santiago
EPICENTER, MAGNITUDE 8.8
Cauquenes
Chillen
Concepción
EARTHQUAKE MAGNITUDE
5
6
7
8
0 50 100 200 300 mi
0 50 100 200 300 km
PERU
BOLIVIA
Pacific Ocean
CHILE
ARGENTINA
Santiago
AREA OF DETAIL
0 400 mi
0 400 km
SOURCE: USGS
RICH CLABAUGH/STAFF



El Terremoto Chile 2010 en Perspectiva



Fuente: elaboración propia, en base a datos del USGS

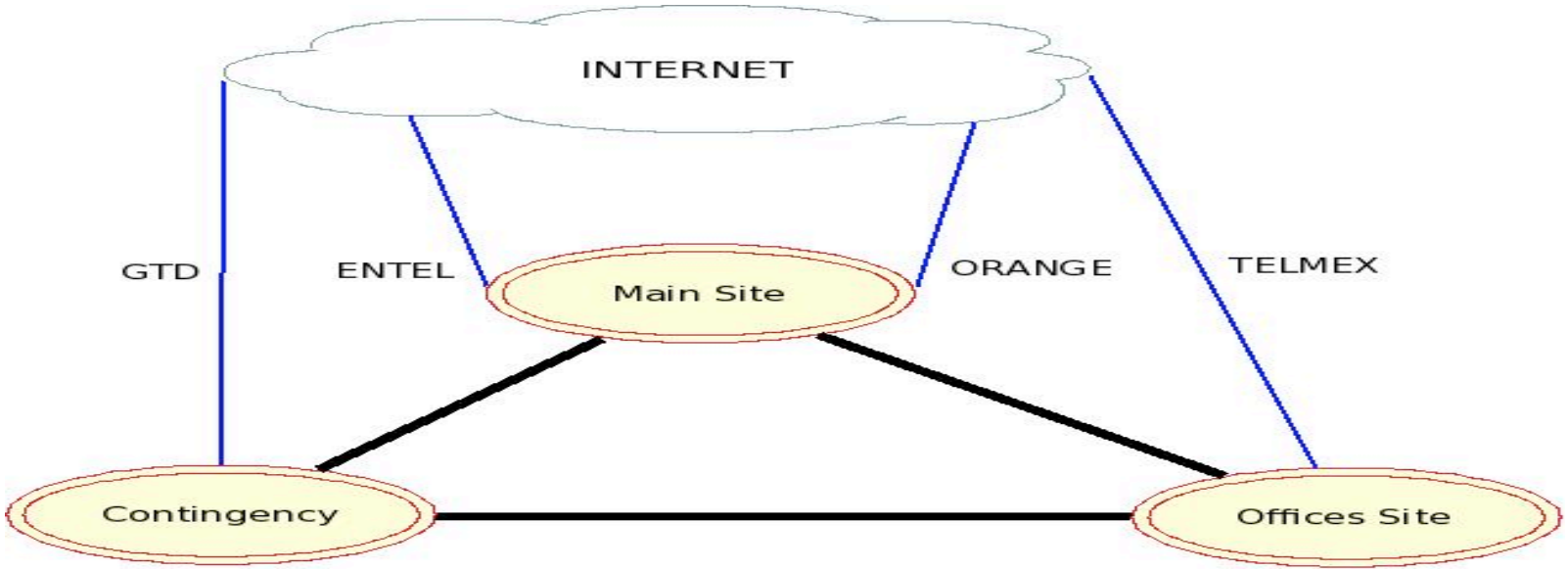
Alto Rio building at Concepción

before

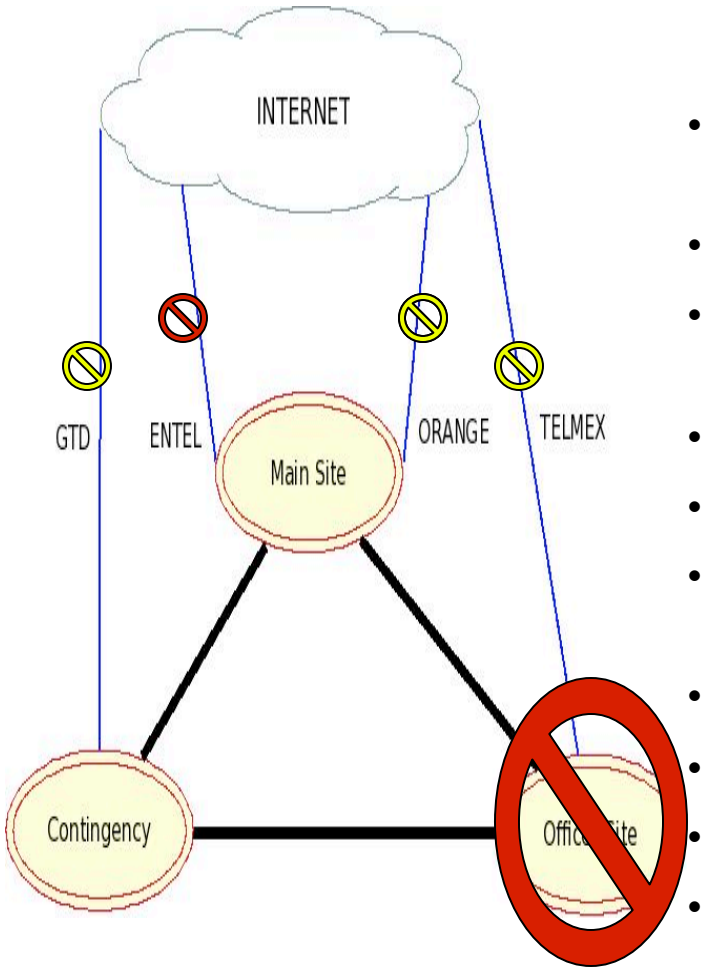
after

NIC Chile's Non-DNS infrastructure

- 3 sites, Main (UPS+power generator), Offices (UPS), Contingency (UPS+power generator)
- All production servers with 2 mirrors, one on same site, other in contingency site.
- All network equipment duplicated



Impact on Non-DNS Infrastructure



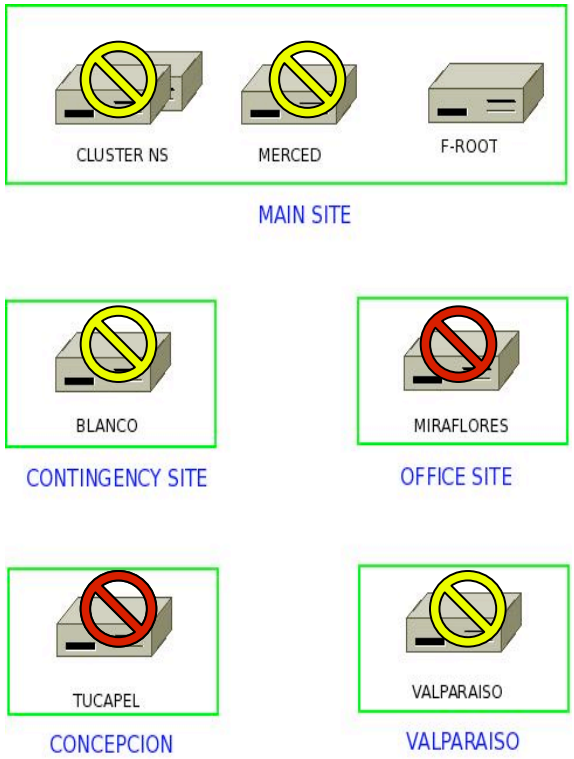
- 3:34 Earthquake, links degraded, one switch power off (ORANGE link down). Sites operating with local auxiliary power.
- 3:59 Web site operation verified using blackberry network by engineering team.
- 4:04 ENTEL link down.
- 4:30 Engineering team arrives at offices for inspection
- 6:06 UPS down at Office site.
- 9:14 ENTEL link up.
- 10:00 Engineering team arrives at Main site for inspection.
- 11:06 ORANGE link up degraded
- 11:08 Offices energy return, TELMEX link normal
- 12:48 GTD link normal
- 14:30 Contingency site inspection by engineering team.
- 21:30 Zone generation completely normalized
- 24:00 ORANGE link normal

NIC Chile's DNS infrastructure

- More than 50 secondary of .CL servers; 3 anycast clouds (>30 Netnod, 4 SNS@ISC, 8 NIC Chile), 1 cluster (NIC Chile), 2 unicast (AFNIC, NETNOD).
- 6 servers active in Chile: 4 in Santiago, 1 in Concepción, 1 in Valparaiso
- Local mirror of F-ROOT in Main site in Santiago

Impact on DNS Infrastructures

International nodes unaffected.



February 27

- 3:34 Earthquake, epicenter near Concepción. blanco, merced, minimal traffic.
- 3:40 valparaiso minimal traffic
- 3:45 tucapel minimal traffic, blanco, valparaiso ok
- 4:04 ns minimal traffic.
- 6:06 miraflores down.
- 9:14 ns, merced ok.
- 11:00 tucapel down.
- 11:08 miraflores up.

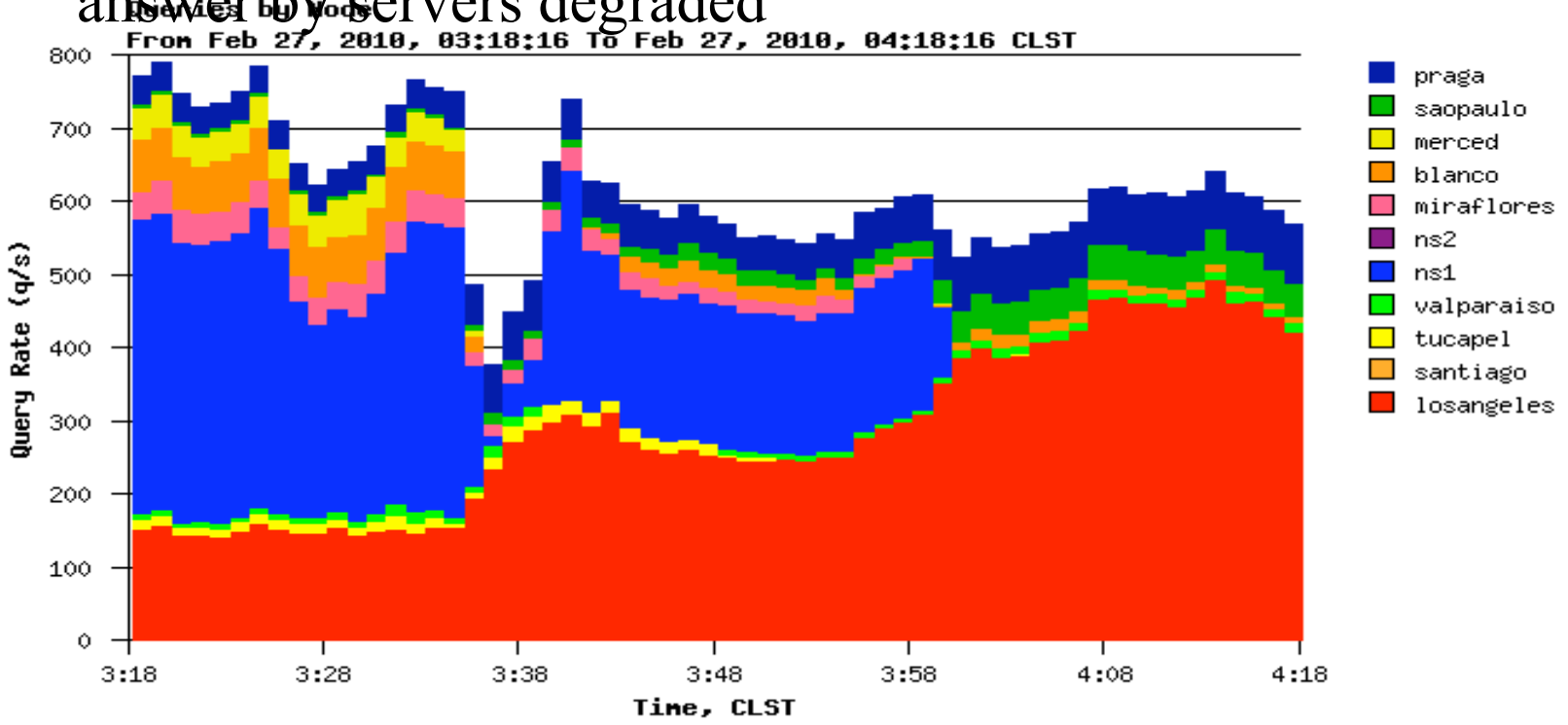
March 1

- 11:10 tucapel up, minimal traffic.
- 11:40 tucapel ok.

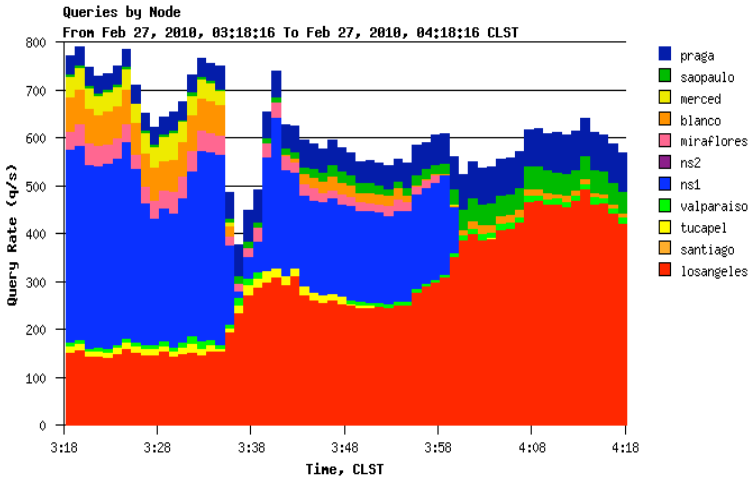
NIC Chile's DNS servers traffic impact

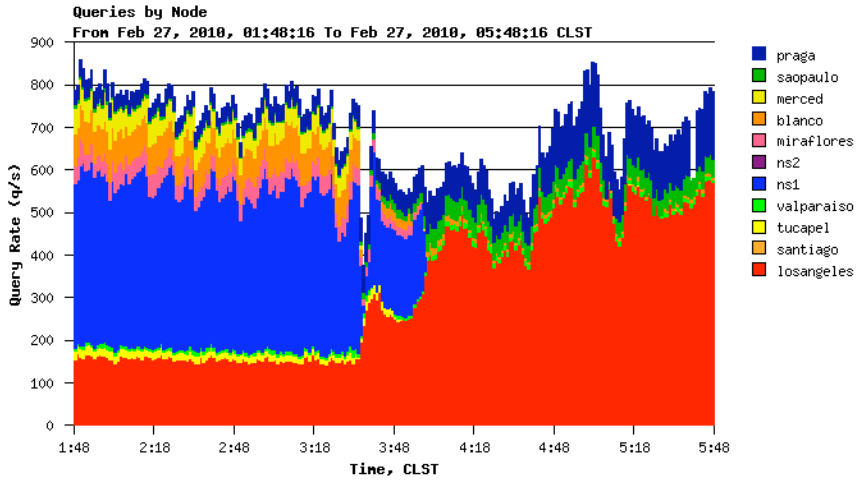
Anycast cloud a.nic.cl and ns

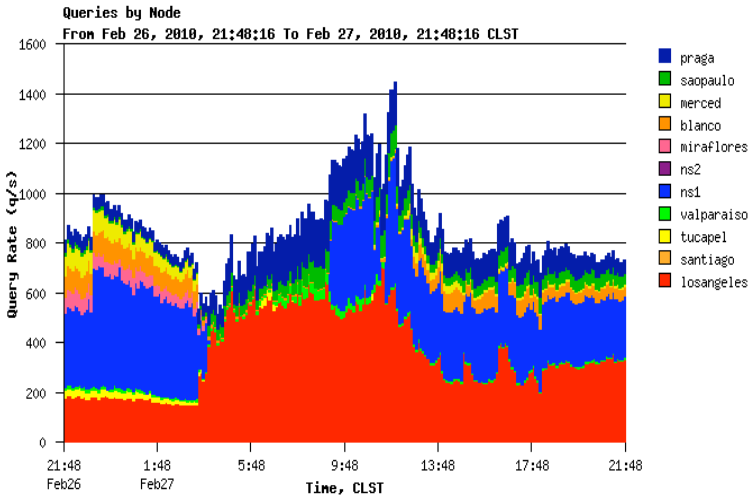
DNS Servers losangeles (Los Angeles CA, USA), praga (Praga, Czech Republic) and saopaulo (Sao Paulo, Brazil), answer by servers degraded

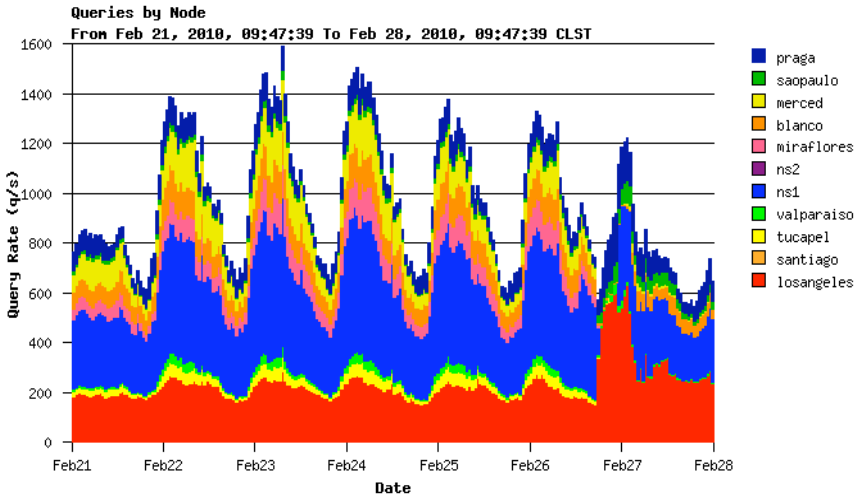


NIC Chile's DNS servers traffic impact
Different time scale









Conclusions

- The network of DNS servers around the world guaranteed uninterrupted domain name resolution service for .CL.
- Local mirror of F-ROOT allowed national Internet to operate even with all international links down.
- Sites responded as expected.
- Zone generation was normal each half hour, but between 4:00 and 21:30, some of the generated zones were not published
- We are analyzing the events, to improve response for future emergencies.
- One of the main problems was communications within the team while electrical power, cellphones and land lines were down.