

Impact of the Middle East Cable Breaks

A Global BGP Perspective

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Overview

- Several cables in the Mediterranean and the Persian Gulf were damaged around 30 January 2008
- At least 3 cables were impacted (Flag, SEA-ME-WE 4, Flag-Falcon), some were severed, some had power problems
- Impacted regions: Middle East / North Africa, The Gulf, The Indian Subcontinent
- 6856 networks from 23 countries suffered outages

Renesisys Data and Assumptions

- BGP updates from over 250 peering sessions from over 170 unique ASes
- Time range used in analysis:
 - 30 January to 6 February, 2008
- Analysis limited only to outages
 - Reachable prefixes can still be impacted
 - Capacity reduced + long latencies
 - => BGP sessions resets => BGP instability
- Ignored countries with fewer than 5 networks (e.g., Oman, Yemen, etc.)

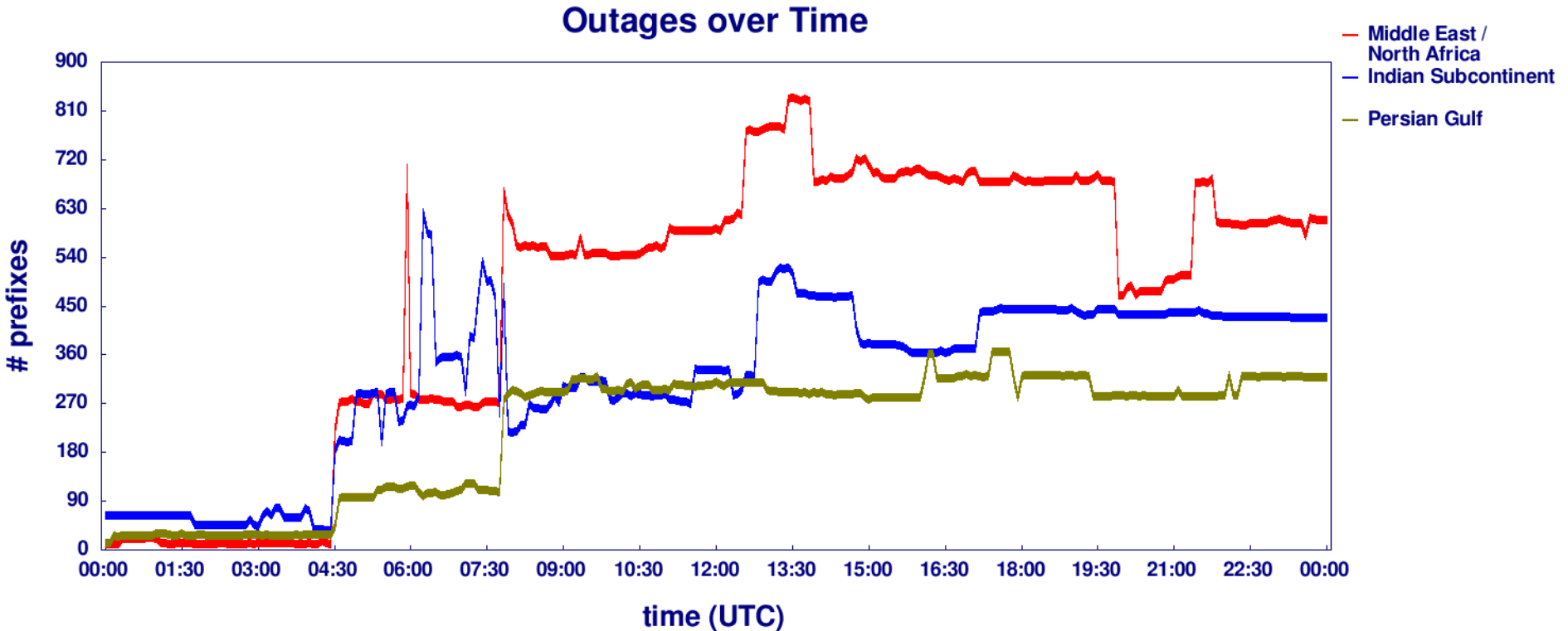
Impacted Countries



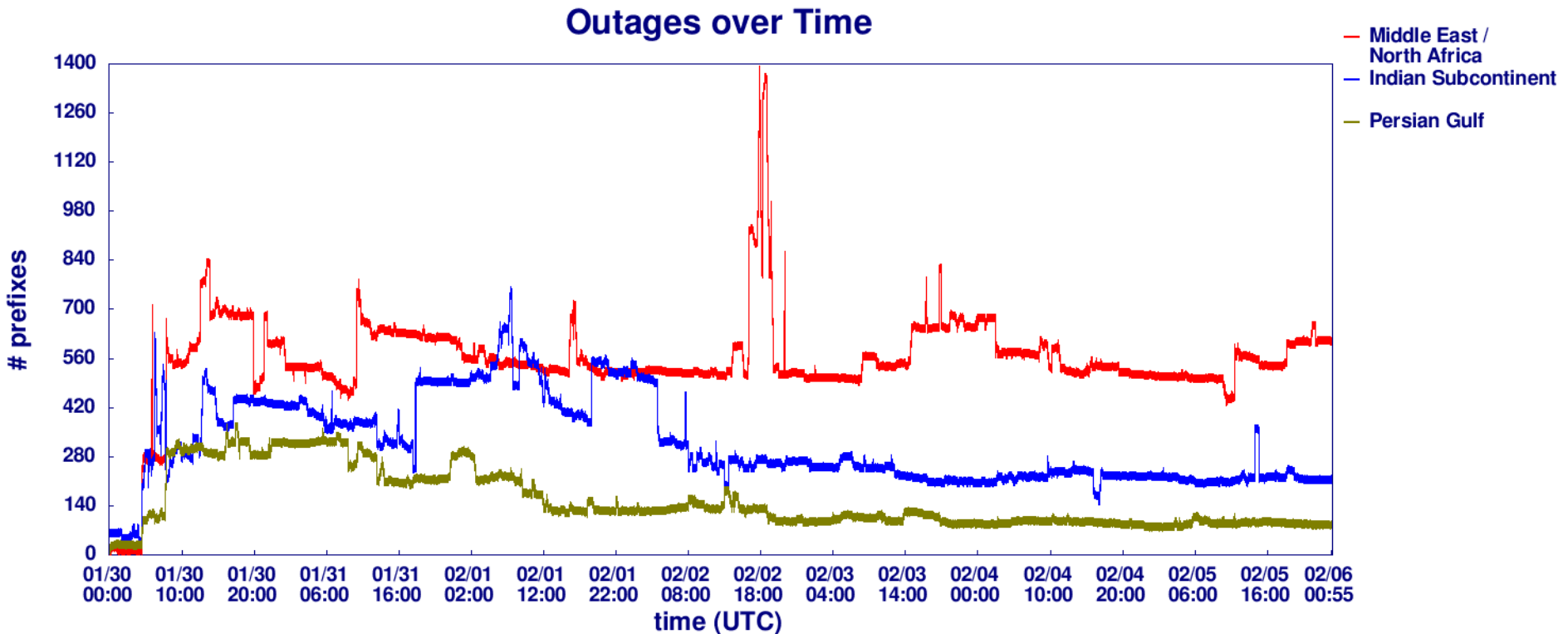
source: Asia Netcom

Darker colors represent countries that had outages for more than 50% of their prefixes

Outages -- January 30th

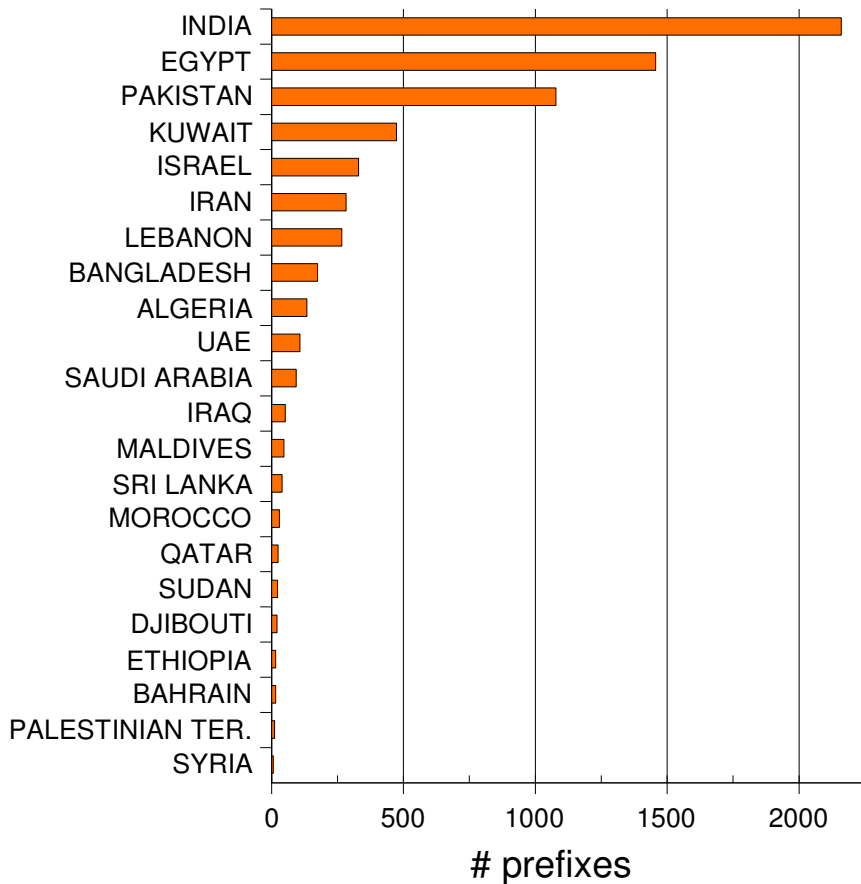


Outages -- A week from January 30th

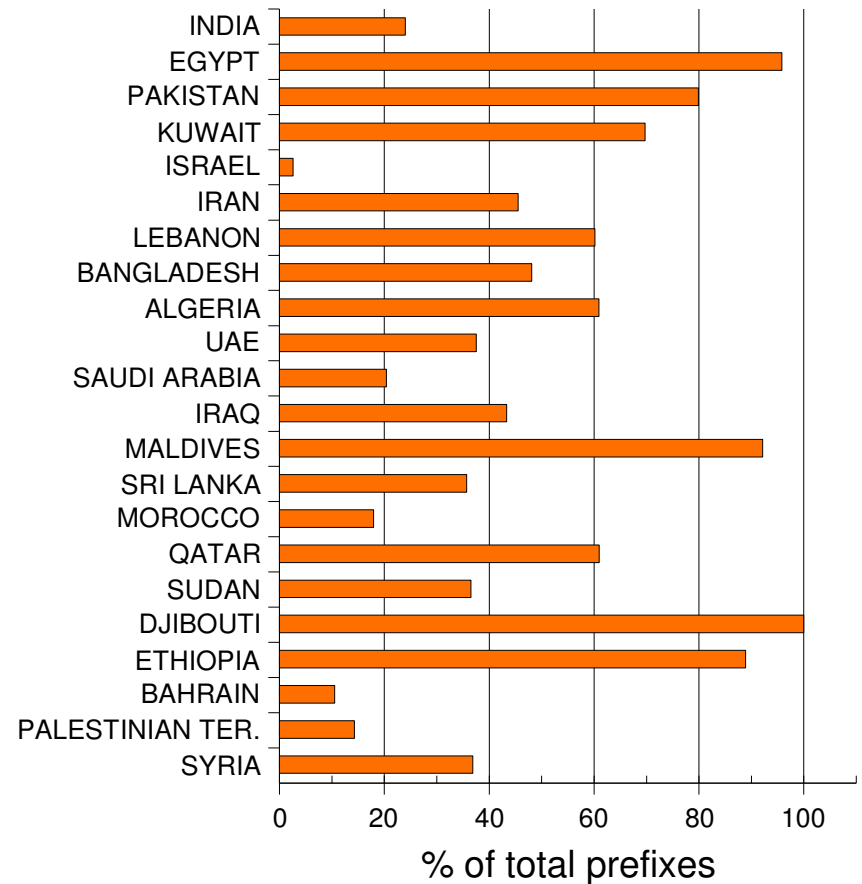


Outages per Country

Outages per country (# pfxs)

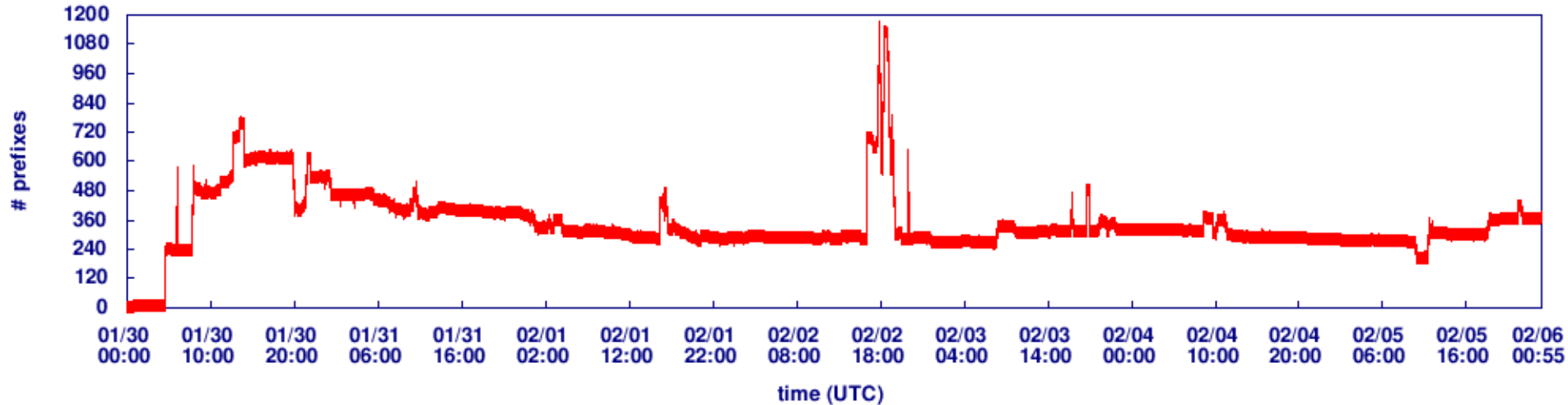


Outages per Country (%)



Egypt

Outages

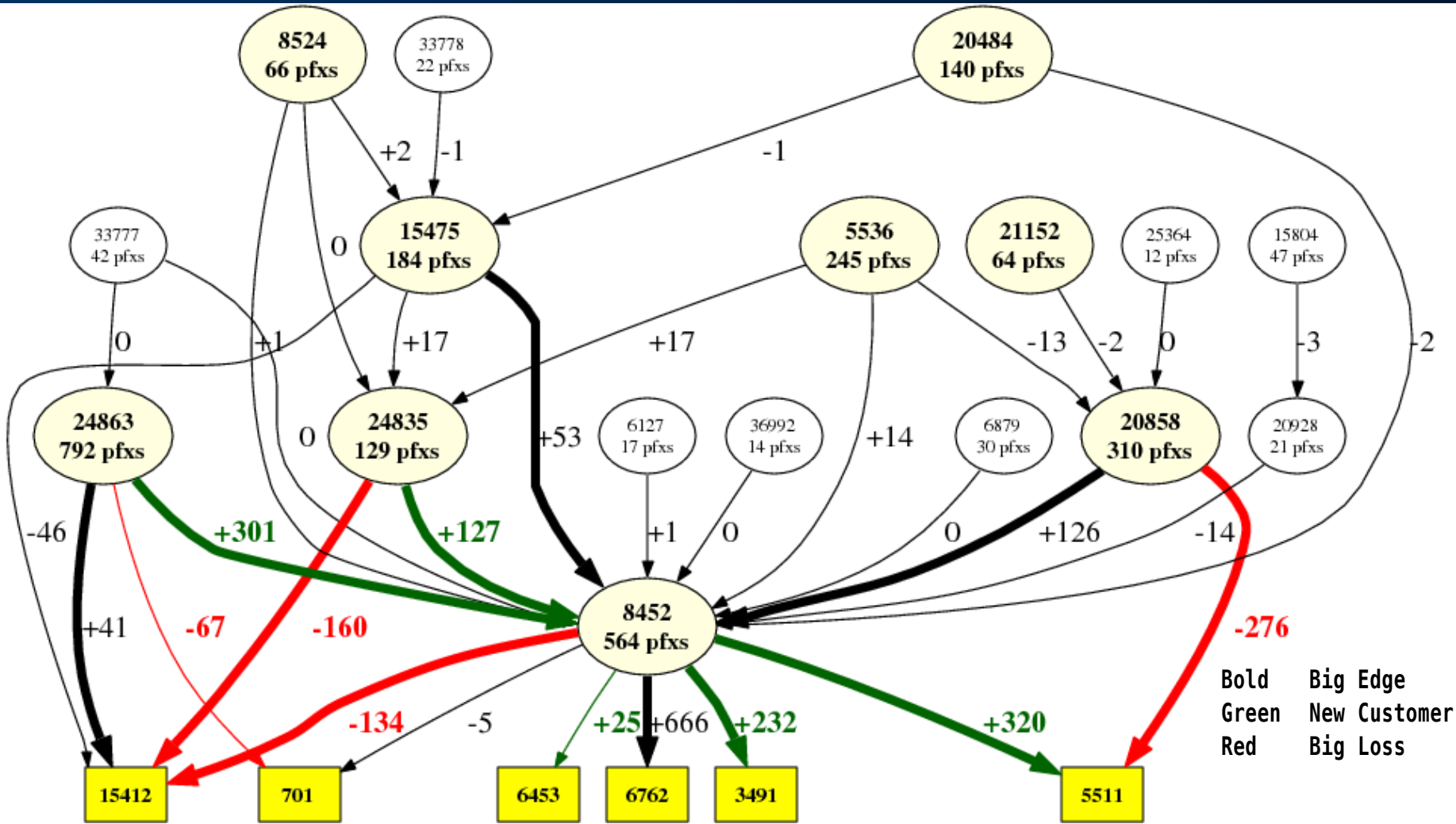


- 95% of prefixes suffered some outage
 - 1456 out of 1502
- Events:
 - Jan 30th around 4:30 UTC and 8:00 UTC
 - Feb. 2nd from 16:25 UTC to 19:45 UTC

Egyptian Stories

- AS8452 (Telecom Egypt) gets new providers:
 - AS3491 (PCCW)
 - AS5511 (France Telecom)
 - AS6453 (VSNL)
- AS8452 picks routes from several Egyptian ISPs:
 - AS24863 (LINKdotNET)
 - AS24835 (RAYA Telecom)
 - AS20858 (EgyNet)
 - AS15475 (Nile Online)
- AS15412 (Flag) was significantly impacted

Egypt -- Provider Map

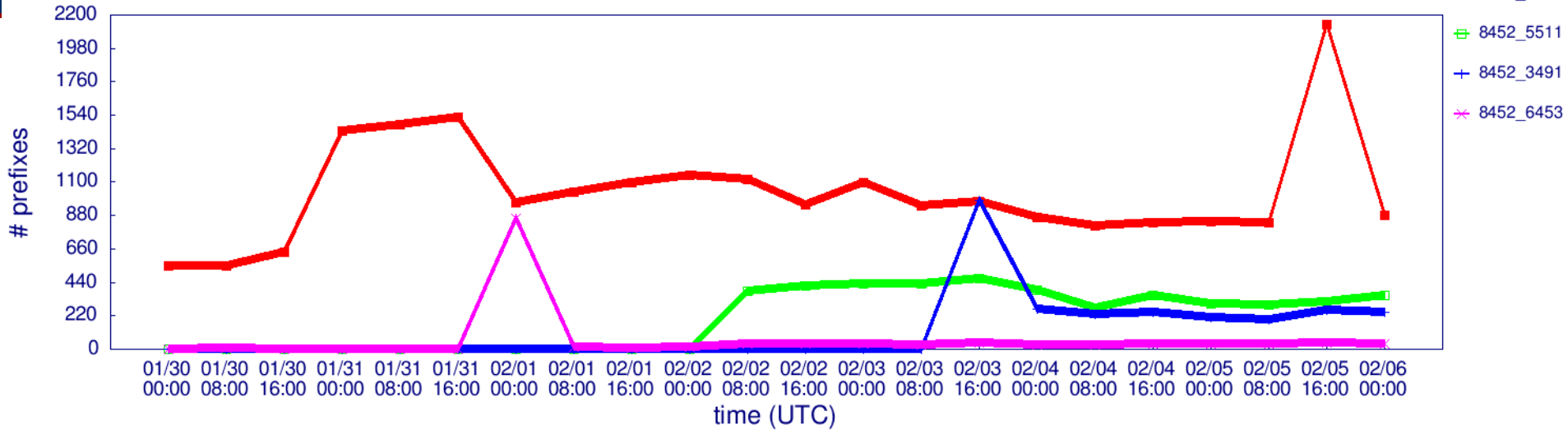


Bold Big Edge
Green New Customer
Red Big Loss

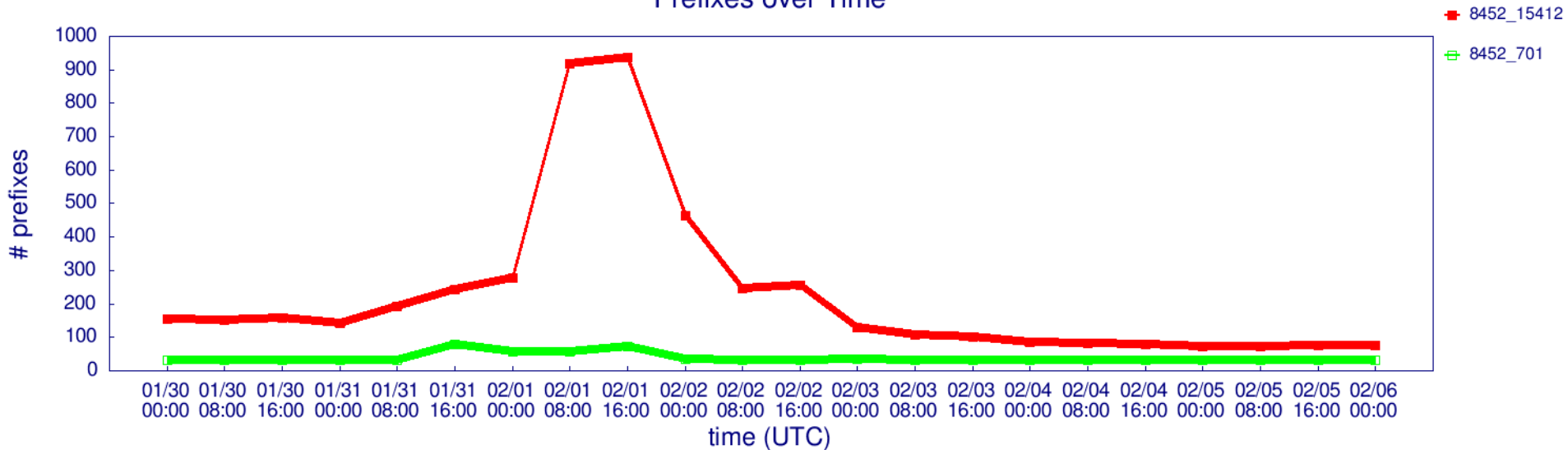
- | | | | | |
|-----------------------------|---------------------|--------------------|----------------------------------|-------------------------|
| 701 Verizon | 6453 VSNL | 1512 Flag Telecom | 20928 Noor Advanced Technologies | 33777 Egypt Network SAE |
| 3491 PCCW | 6762 Telecom Italia | 15475 Nile Online | 21152 Soficom | 33778 Mantrac Group |
| 5511 France Telecom | 6879 EUnet Egypt | 15804 The Way Out | 24835 RAYA Telecom - Egypt | 36992 ETISALAT MISR |
| 5536 Internet Egypt Network | 8452 TEDATA | 20484 Yalla Online | 24863 LINKdotNET | |
| 6127 IDSC | 8524 AUCEGYPT | 20858 EgyNet | 25364 Egypt Cyber Cenyer Network | |

Telecom Egypt

Prefixes over Time

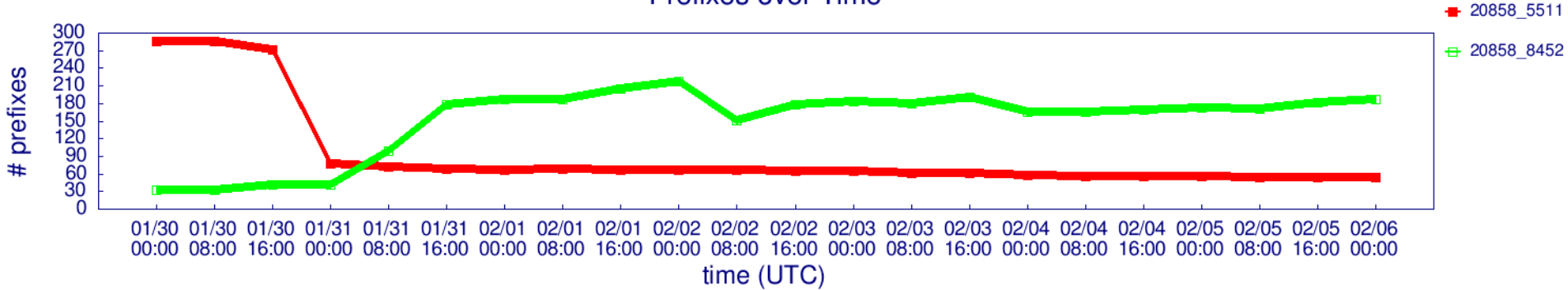


Prefixes over Time

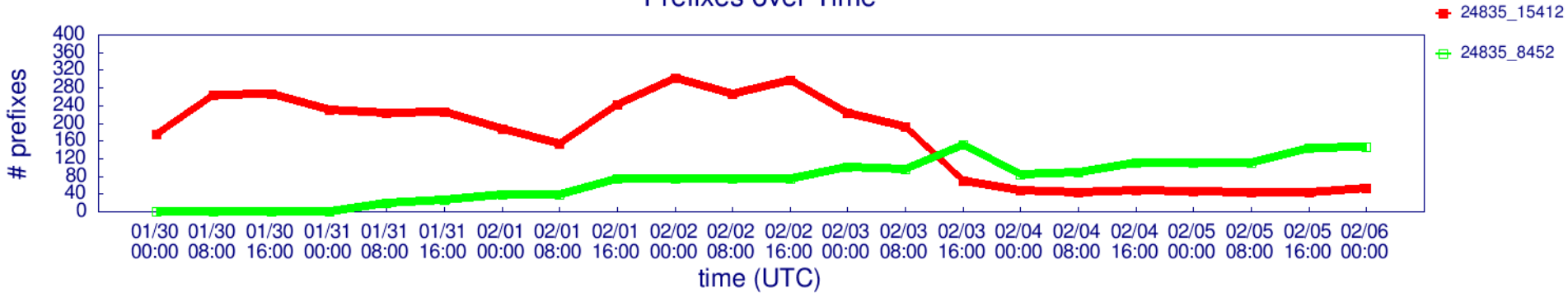


EgyNet, Raya Telecom, LINKdotNET

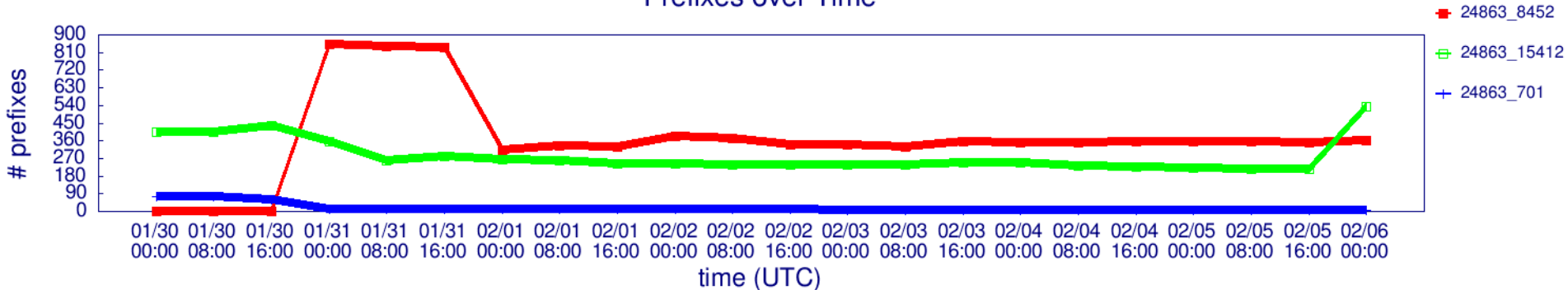
Prefixes over Time



Prefixes over Time



Prefixes over Time



Conclusions

- The Internet is vulnerable to disasters
 - Natural trade-off: cost vs. reliability
- Geography plays an important role
 - Cables break in the Atlantic all the time, nobody notices
 - Cables break in the Taiwan Straits or Suez Canal, entire geographic regions lose connectivity
- Internet intelligence is important for disaster planning and response
 - For local ISPs to select new providers
 - For a global ISP to acquire new customers

Thank You

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Outages – Jan 30 to Feb 17

Outages over Time

