Egypt Leaves The Internet

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Traffic Out of Egypt

What Egypt Traffic Normally Looks Like

- 10-15 Gbps and almost entirely inbound traffic (95%+)
- Through four upstreams
- Looks like normal consumer network in US / Europe
Traffic In to Egypt

What Egypt Traffic Normally Looks Like

Week of January 17, 2011

Credit: Arbor Networks
Egypt Traffic Disruption (Day View)

- Normally estimate 3-5 Gbps of traffic
- Dropped to several hundred Mbps January 27
- Further dropped to tens of Mbps last night
Underlying Problem: What Happened?

- Shortly after midnight Friday in Cairo, Renesys observed EG providers withdrawing BGP routes from the global table.
- Egypt went from appx 3500 routed prefixes to about 150 routed prefixes in the space of 20min.
- Global BGP convergence on the order of 30-60 seconds.
- Interprovider spacings of first onset were longer: a minute to several minutes apart.
http://stat.ripe.net/egypt
Egypt’s Internet Embedding: IPv4 Space

- Grey: routed
- Black: unrouted
- Orange: Egypt
Before and After: A Hole In The Internet

26 January 2011

1 February 2011
Staggered downtimes: no kill switch?

Globally Reachable Egyptian Networks (Jan 2011)

- RAYA Telecom AS24835
- ETISALAT MISR AS36992
- Link Egypt (link.NET) AS24863
- TE AS8452
- Internet Egypt Network AS5536

Jan 27, 2011 (times UTC)
No clear signs of congestion beforehand
Same view from the inside

Note 180ms median latencies for domestic routes under NORMAL conditions

Distribution of Traceroute Latencies From Cairo to Egyptian Destinations
Who was left?

- Prefixes remained alive from several sources
- Traffic continued to flow at minimal levels
- Inbound traces to routed blocks now die on Seabone at Palermo, suggesting additional problems; routing not sufficient for connectivity
- Lots of sites have DNS issues and other reachability issues, even if routes remain
- Eg., stock exchange up, settlement down
- Some IPv6 remained (nobody noticed)
Monday, 20:27 UTC: Noor Group down
Noor customers support EG financial industry, market operations
About 75 prefixes still up, but most traceroutes die at Palermo on Seabone

Telecom Egypt’s Jordanian customers are still online and reachable

This is very different from an Egyptian cable cut

No signs of problems on SMW3, SMW4, FLAG, etc. for regional providers downstream

Renesys continuing to monitor regional networks carefully for signs of instability or outage
Visualization: Egypt Outage

- [http://www.youtube.com/watch?v=b_jRcxuemtg](http://www.youtube.com/watch?v=b_jRcxuemtg)

- 60x playback; one second per minute
- Announced routes depicted per origin ASN
- Withdrawal events flash white
- Piecewise Hilbert curve map depicts actual prefixes within Egypt’s IPv4 allocations
- Individual providers are color-coded
- Fades to black as Egypt leaves the Internet