

EMIX

Current Status and Strategy

Emirates Telecommunication Corporation
(Etisalat)

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Agenda

- EMIX Overview
- EMIX Status
- Strategy and Future Plans
- Localize Traffic
- Addressing Failures
- Challenges Ahead
- Conclusion

EMIX Overview

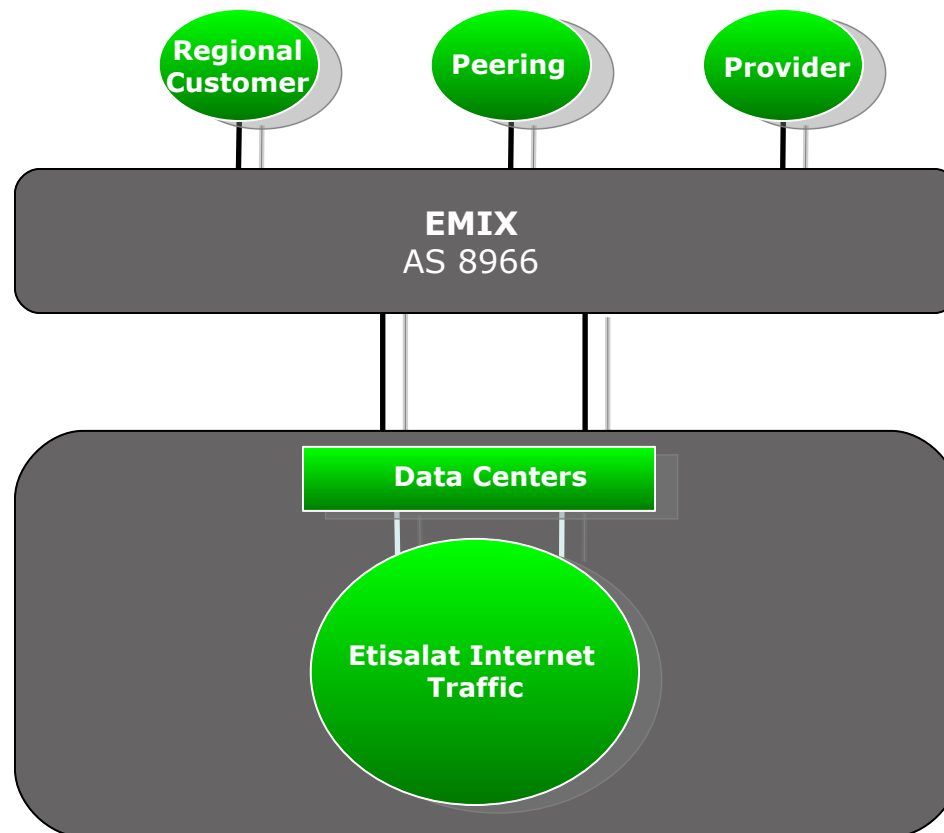
Emirates Internet Exchange

- Stands for Emirates Internet Exchange.
- It is a Network Access Point (NAP).
- Launched on 1998.
- EMIX POPs:
 - Fujairah (two pops)
 - New York
 - London
 - Amsterdam
 - Singapore
 - Frankfurt
 - West coast in US (4th Q of 2008)
 - More to come..

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EMIX Overview

Internet Services

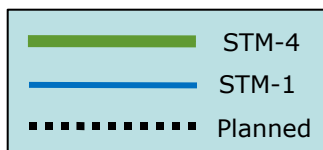
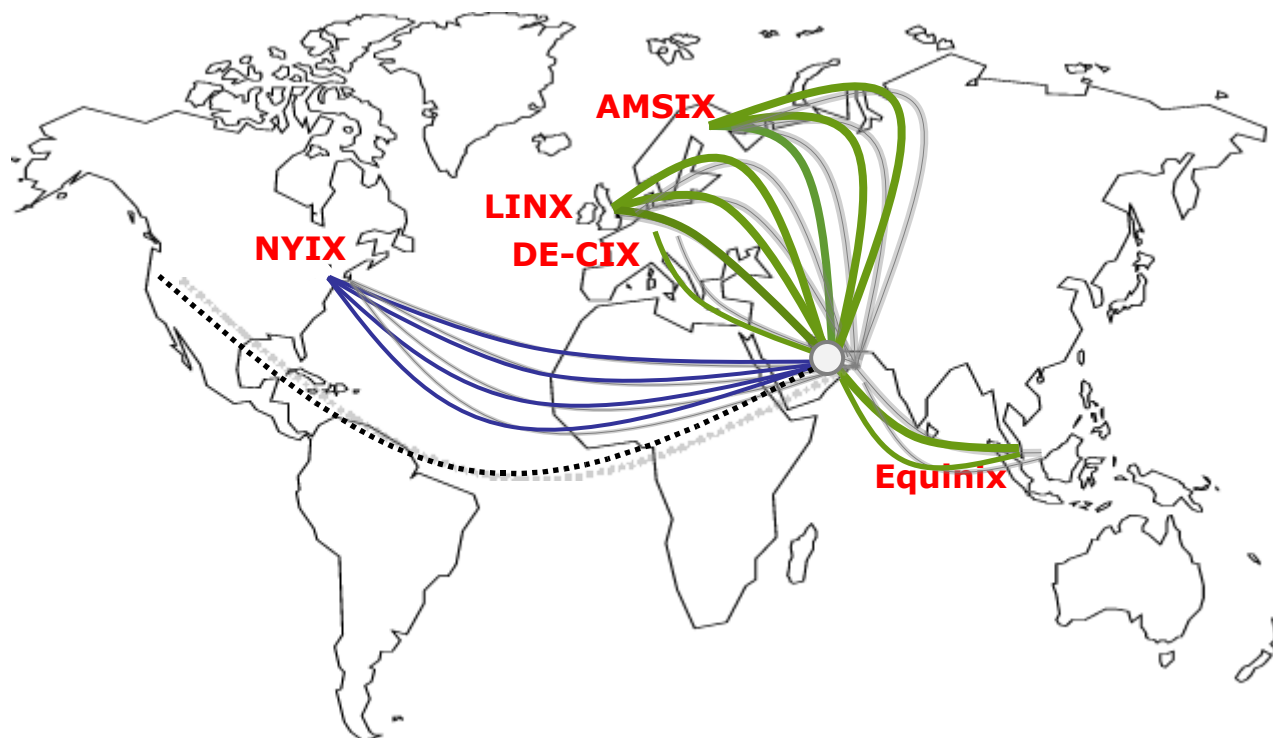


- Provides IP transit service for Etisalat and others
- 20% out of total bandwidth utilized by EMIX customers
- 187 STM1 international links (6 stm16, 18 stm4, 19 stm1) equivalent to 29 Gbps
- Upgrade capacity if bandwidth exceeded 70%
- EMIX peers with all GCC countries

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EMIX Status

EMIX International Peerings POP



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EMIX Status

GCC Peering connectivity

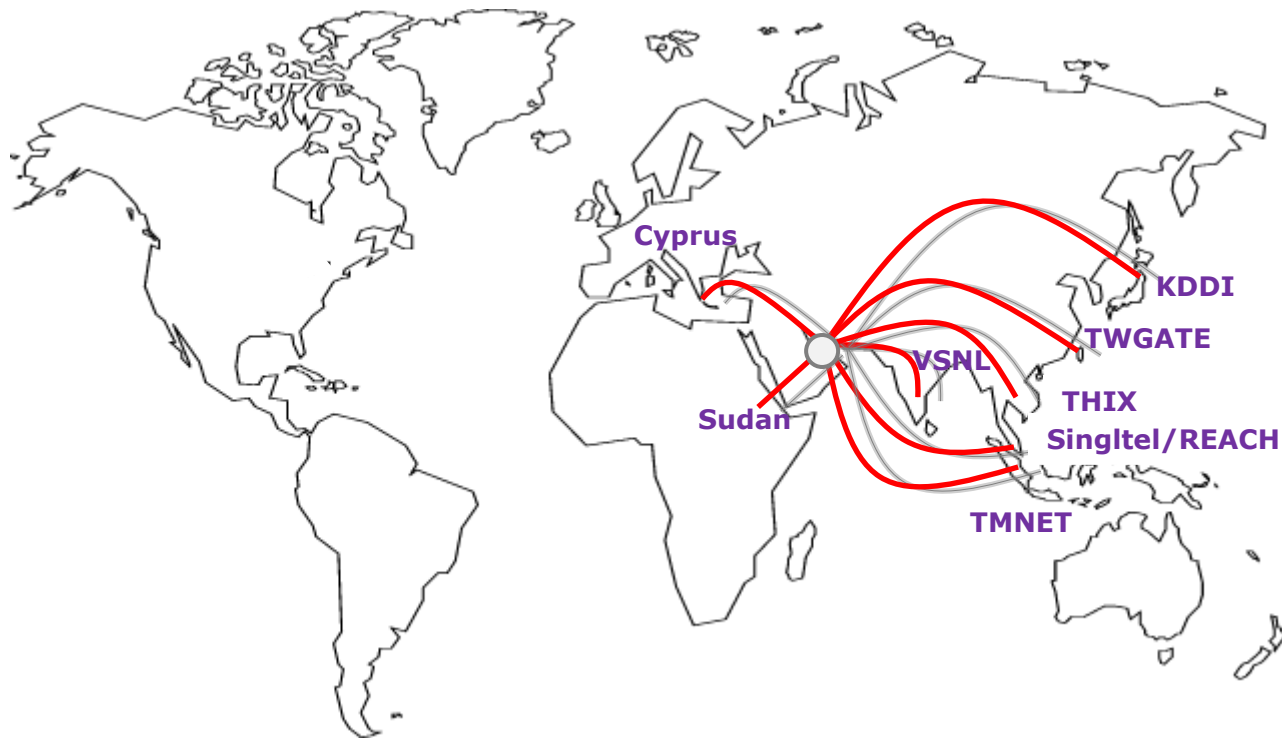
Localize traffic between GCC countries



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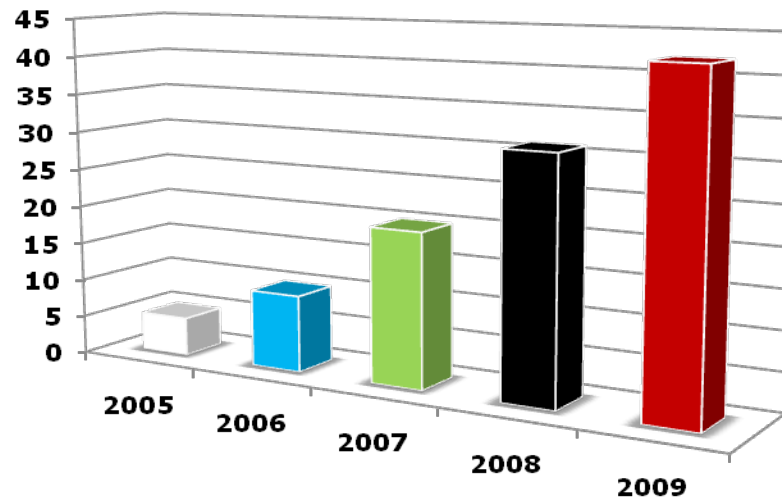
EMIX Status

Other Private Peerings



EMIX Figures

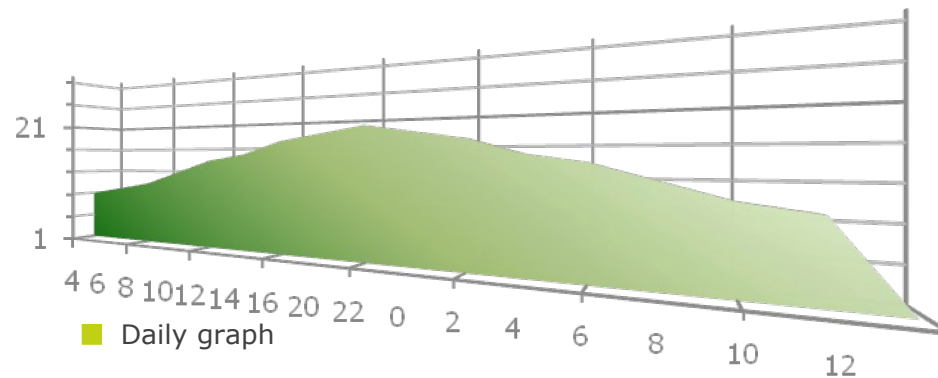
- Emix 2009 forecasted capacity is equal to 50 Gbps
- Bandwidth is doubling in the recent years



Doubling of traffic

EMIX Status

- Current international bandwidth reaches 20 G

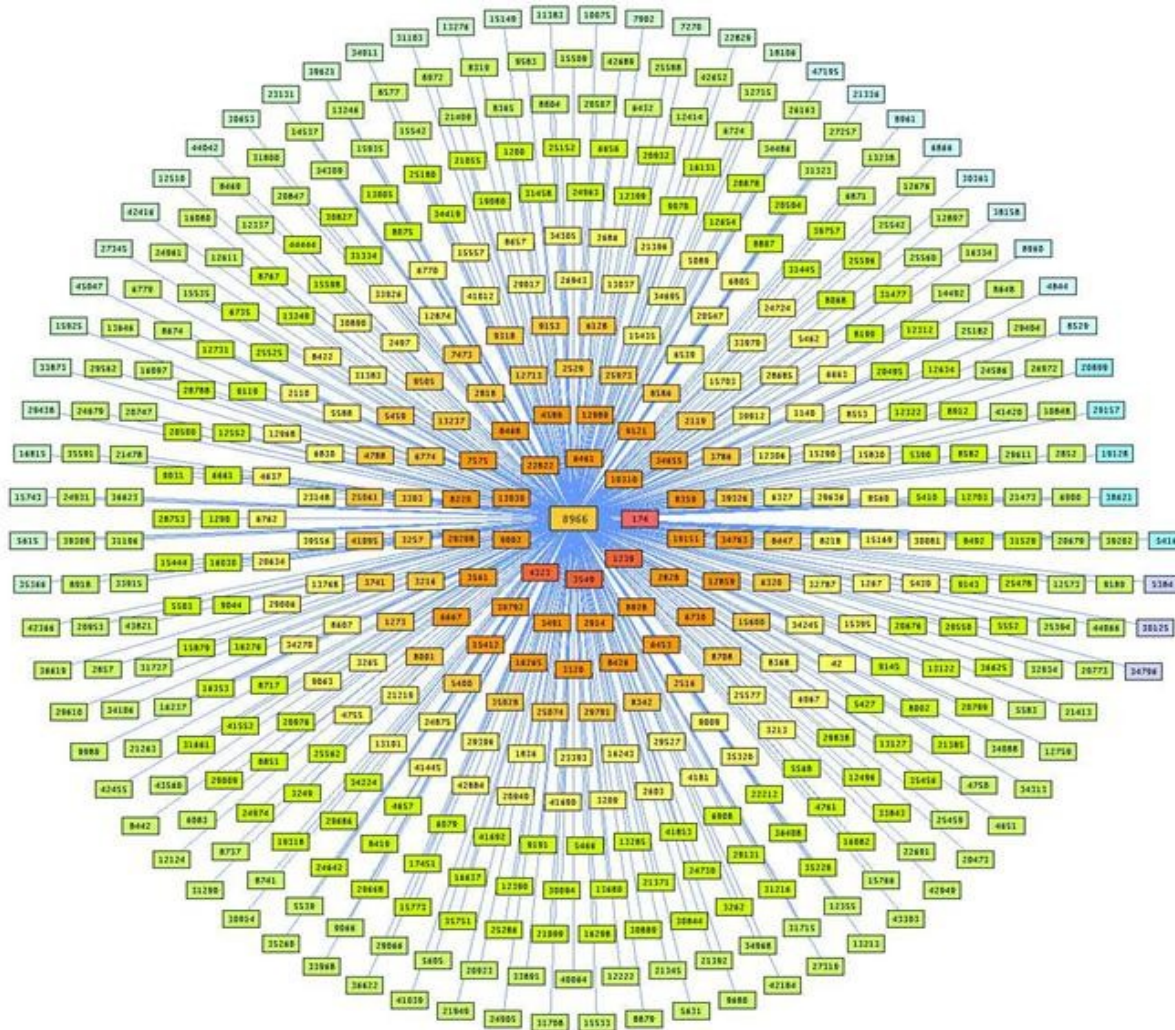


- Emix Cable providers "SMW3, SMW4, FLAG and FOG "more to come".
- 50% internet routes received by our peerings

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EMIX Status

500 Direct Providers and Peerings



- Participate more in IXP and increase capacity
- Utilize EMIX for other services (VPN, IPV6, Internet2, VOIP, Multicast..etc)
- Replace existing STM1 links with STM16
- Provide VPN (L2VPN and L3VPN) services

Improve Redundancy:

- Links using different cable systems
- Geographical by terminating links east and west.
- IP Providers

EMIX Strategy

- Move toward connecting to tier 1 providers & peer with tier 2 & 3 and others
- Localize traffic by having partnership with content providers and collocate their Infrastructure in UAE
- Activate more capacity to peering and less to providers
- Open new peering POPs based on traffic demand

Localize traffic

- Getting content from other continent leads to:
 - High delay
 - High cost



- Bring data closer to the end user and regional customers

How to:

- Private and public peering
- Caching P2P content
- Introduce web caching
- Build infrastructure for Arabic content and maybe other languages
- Introduce Content Delivery Network.

The Result

Lower latency, less hops, increase delivery speed, better performance and reduces cost

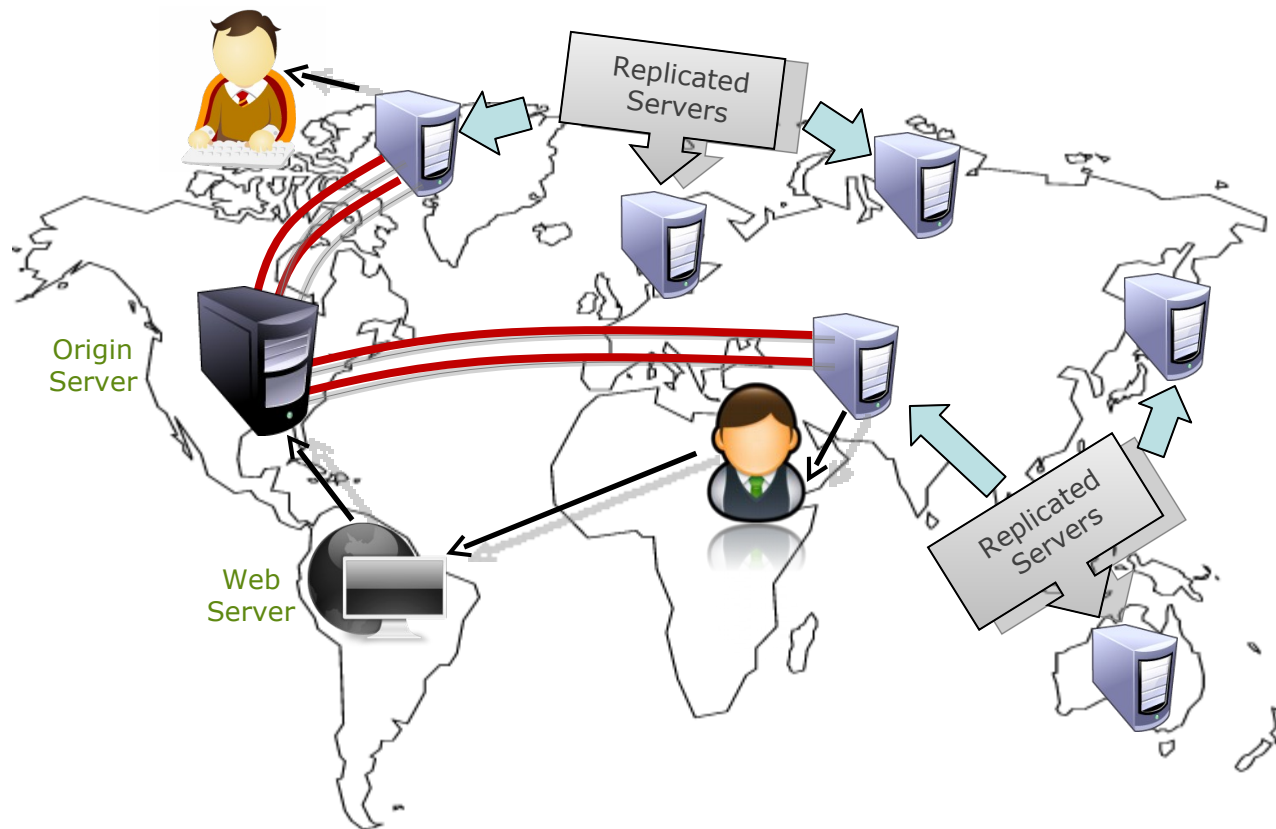
Content Delivery Network (CDN)

- Customer requests `www.ripe.net`
- The web server receives the request and decides to serve basic content (index page) or redirect it to the CDN
- The CDN serves the high bandwidth demanding and frequently asked contents (video, audio, images ..etc)
- Run selection algorithm, the CDN selects the replica server which is closest to the client
- Replica server gets embedded objects from the origin server, serves the client requests and cache it for future requests

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Localize Traffic

Content Delivery Network (CDN)



EMIX Experience

- Saving 5% of total traffic by hosting one CDN
- As traffic increases, the saving increase
- Traceroute will not display any difference, however download speed is higher

Addressing failure

- Preventive actions
 - Capacity planning
 - Physical redundancy
 - East west
 - Cable provider
 - Traffic management
- Network bandwidth peak at least should not exceed 70% in normal cases
- Analyze the type of traffic travelling on your network
- Categorize your traffic based on SLA or importance

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Addressing failure

Traffic Management

- Protect your infrastructure traffic
- Avoid effecting web traffic
- Throttle peer 2 peer traffic
- Media rich and social network sites are gaining considerable percentage on network. Example one of the social network site Consumes 1.5 gig In Etisalat core. You may consider shaping!



Challenges Ahead

Regional Challenges

- Can the regional cable operators:
 - Accommodate the current and future bandwidth
 - Provide higher level capacity such as STM16 and STM64?
- Convince regional ISP to peer with each others
- Having more local content
- How to handle bandwidth hunger applications such as P2P, social network?
- Migration to IPv6. When?

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Thank you

Any question?