

# EMIX overview and Optimizing International Capacity

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# Agenda

## Agenda of presentation

- Peering Definition and advantages
- Peering Example
- Peering Types
- List of Peerings and Providers
- Etisalat Network Overview
- Emix Network Overview
- International Links Redundancy
- Blackholing and Monitoring

# Peering

## Peering definition and advantages

- Peering is the arrangement of exchange traffic between Internet service providers (ISPs).
- Settlement- Free Interconnection.

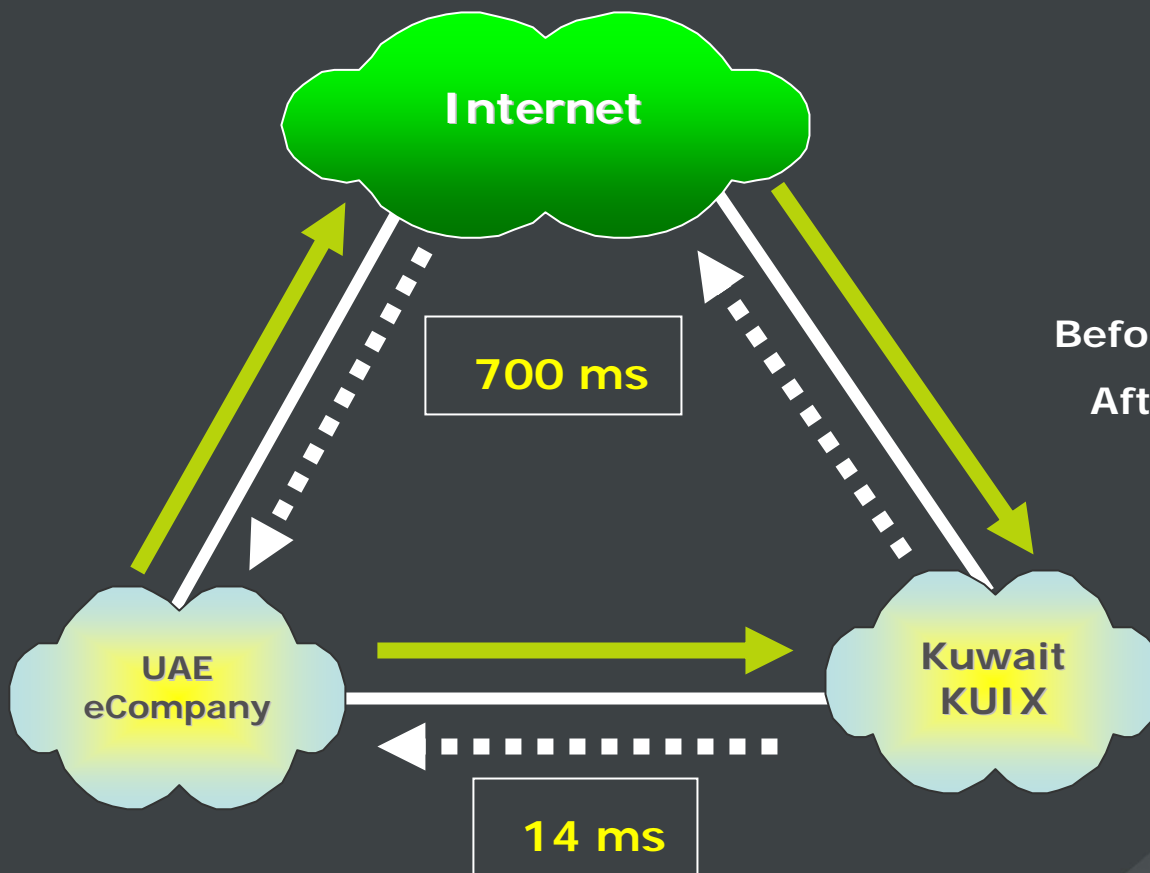
## Advantages

- Improve Network Performance
  - Reduce Delay
  - Localize traffic between ISPs
  - Better utilization of international provider capacity.
- Cost Effective
  - Peering setup cost is shared between both parties.
  - No charge for IP port

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# Peering Example

Delay before and after



Before peering the delay = 700 msec

After peering the delay = 14 msec

**700/14=50 times faster !!**

# Peering Types

- **Private “point to point peering”**

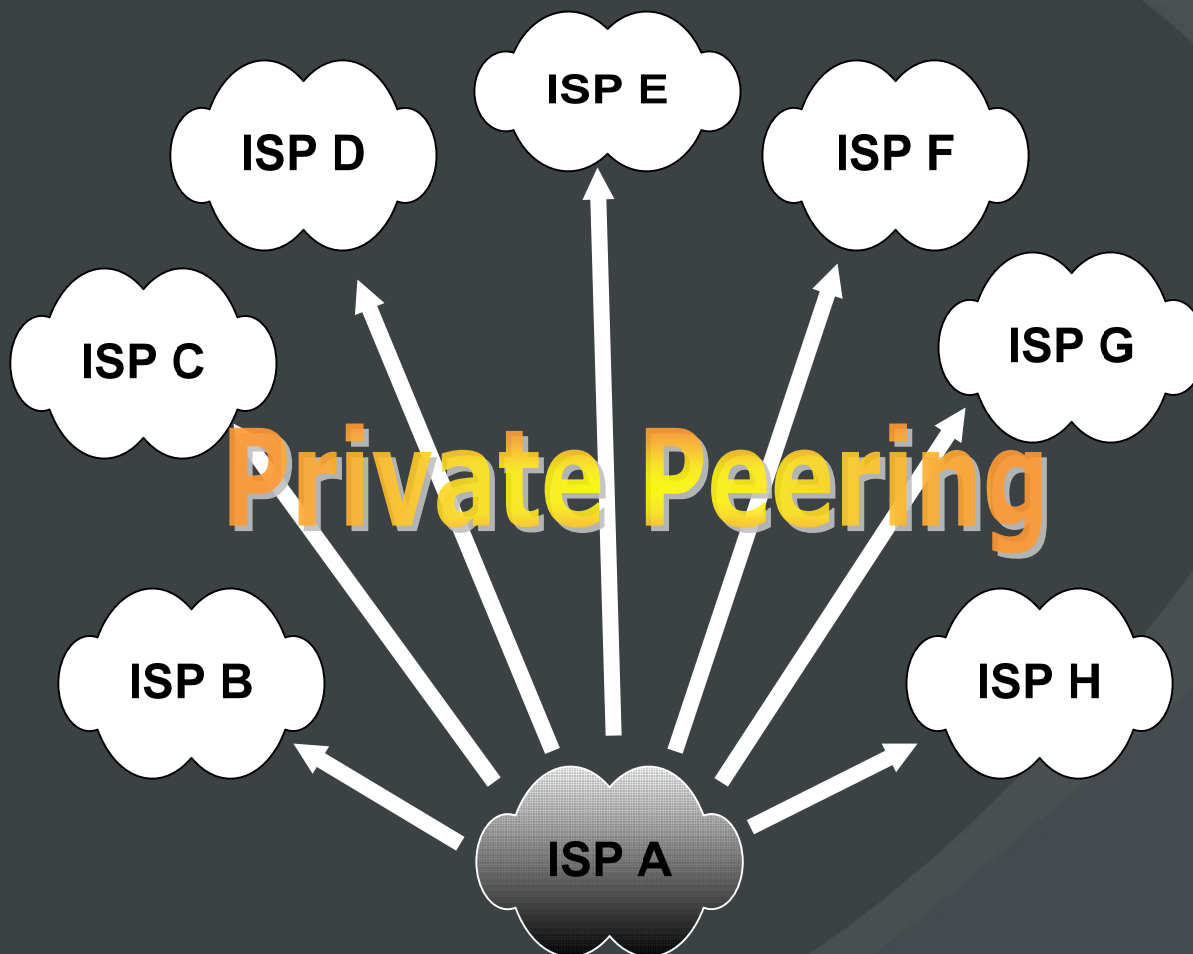
Private peering is point to point connection between two ISPs on a dedicated link.

- **Public “point to multi-point peering”**

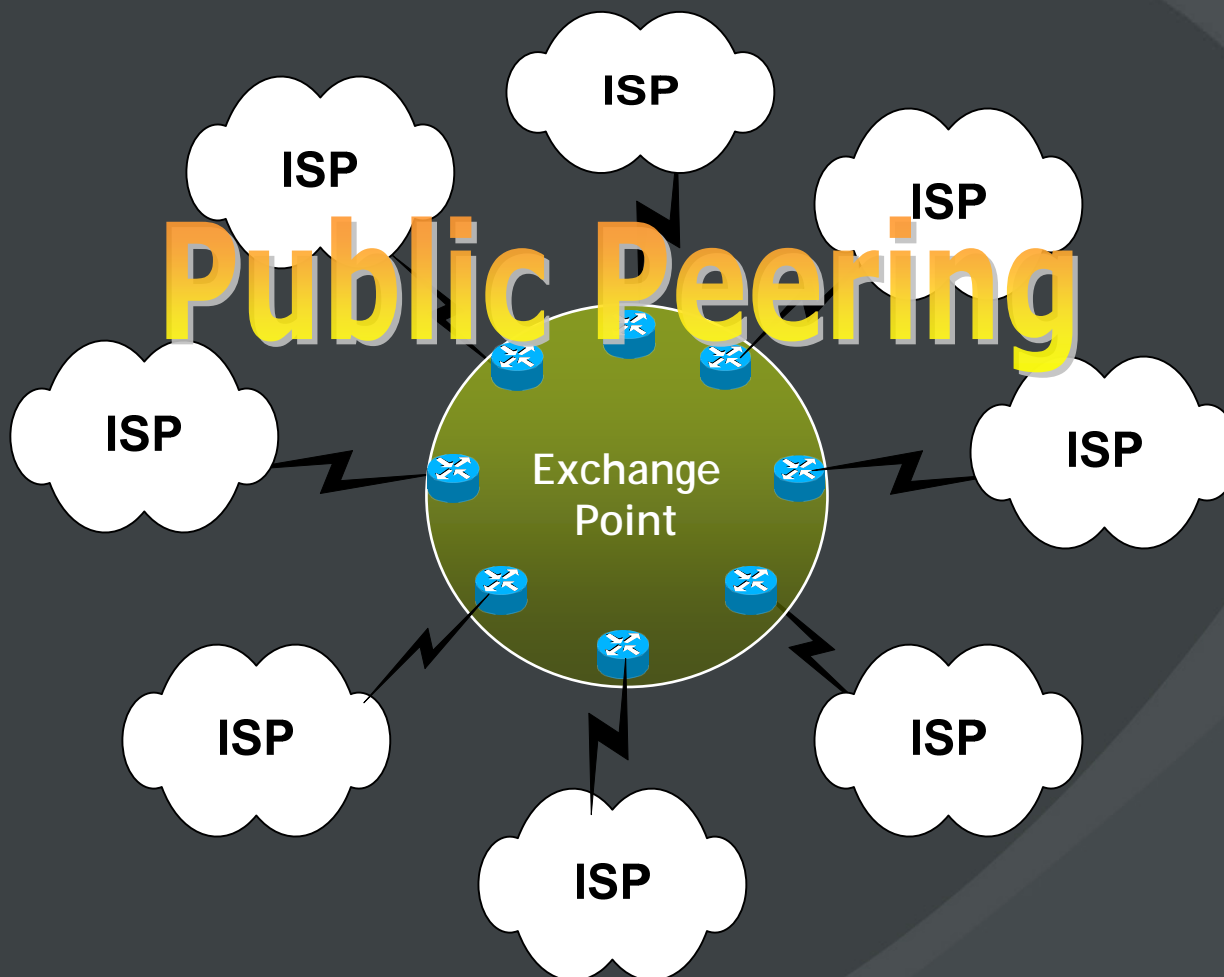
Public peering is a place where multiple ISPs exchange traffic at one point.

Description	Private	Public
No. of Links	High	Low
Cost	High	Low
Network Performance	Highest	High

# Private Peering



# Public Peering



# Peering

## Peering List and Providers

- **Private Peering**

Singtel Singapore, Thix Thailand, TMNet, TWGate, VSNL, QTEL Qatar, BATELCO Bahrian, KUIX Kuwait, KDDI Japan, CYPRUS, Saudi Telecom, Reach, KANARTEL Sudan

- **Public peering**

We have more than 300 peering

- Examples "Finnet, BBC, Thorn, Malaysia Exchange, Microsoft, yahoo, GLOBIX, Hong Kong, Kish Trading, OmanTel, Easynet, DACOM, stealth, Blue Stream, TimeWarner Telecom,..etc"

- **Providers**

Tsystem, Flag, Teleglobe, C&W, BTN, Singtel, Telecom Italia, Sprint and BT



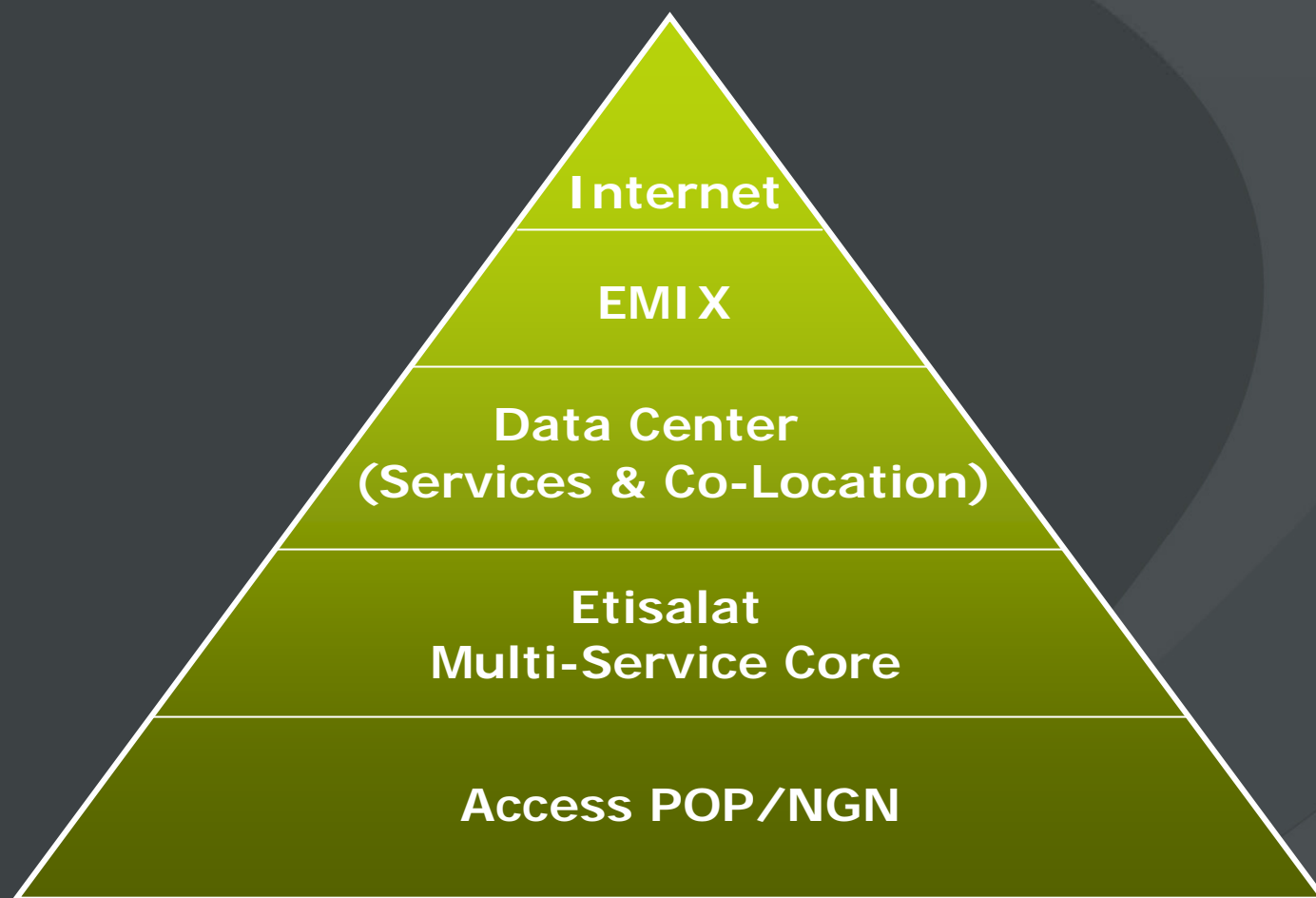
## General overview of Etisalat network

- Access POPs
- Etisalat Multi-service Core
- Data Centers
- Emirates Internet Exchange (EMIX)

1:09

# EPIN

General overview of EPIN



# EMIX Overview

- **Stands for Emirates Internet Exchange.**
- **It is a Network Access Point (NAP).**
- **Launched on 1998.**
- **EMIX has 5 POPs:**
  - Dubai
  - Abu Dhabi
  - New York
  - London
  - Amsterdam
  - More to come..

## EMIX Overview

- EMIX has 3 types of connections: Providers, Peering and Customers.
- Currently EMIX capacity is equal to 9 Gbps.
- 2006 forecasted capacity more than 10 Gbps.
- 2006 forecasted capacity is more than double the capacity of 2005.

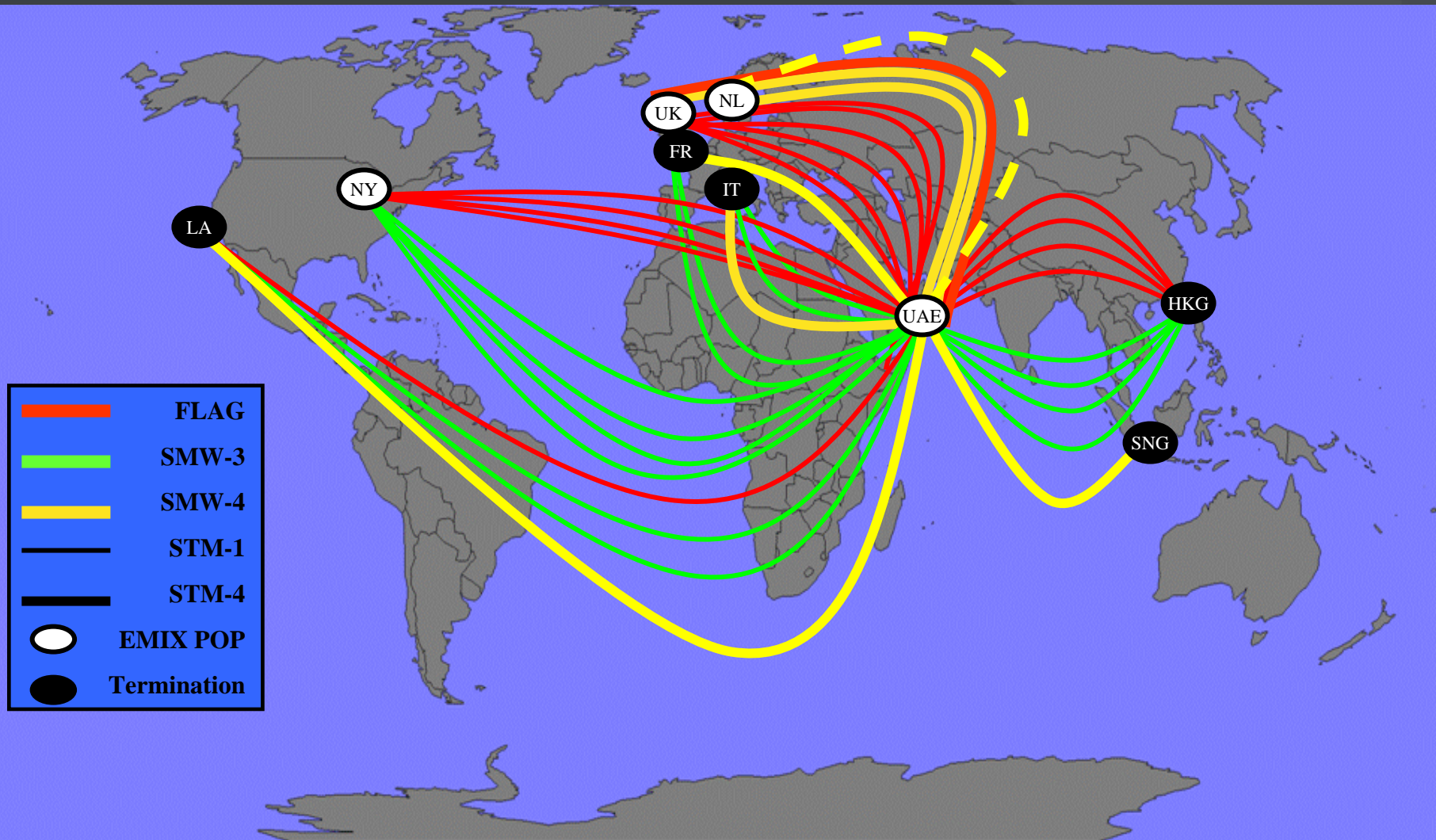
# EMIX Overview

## International Link Redundancy

Three type of cable service providers for extra redundancy and flexibility

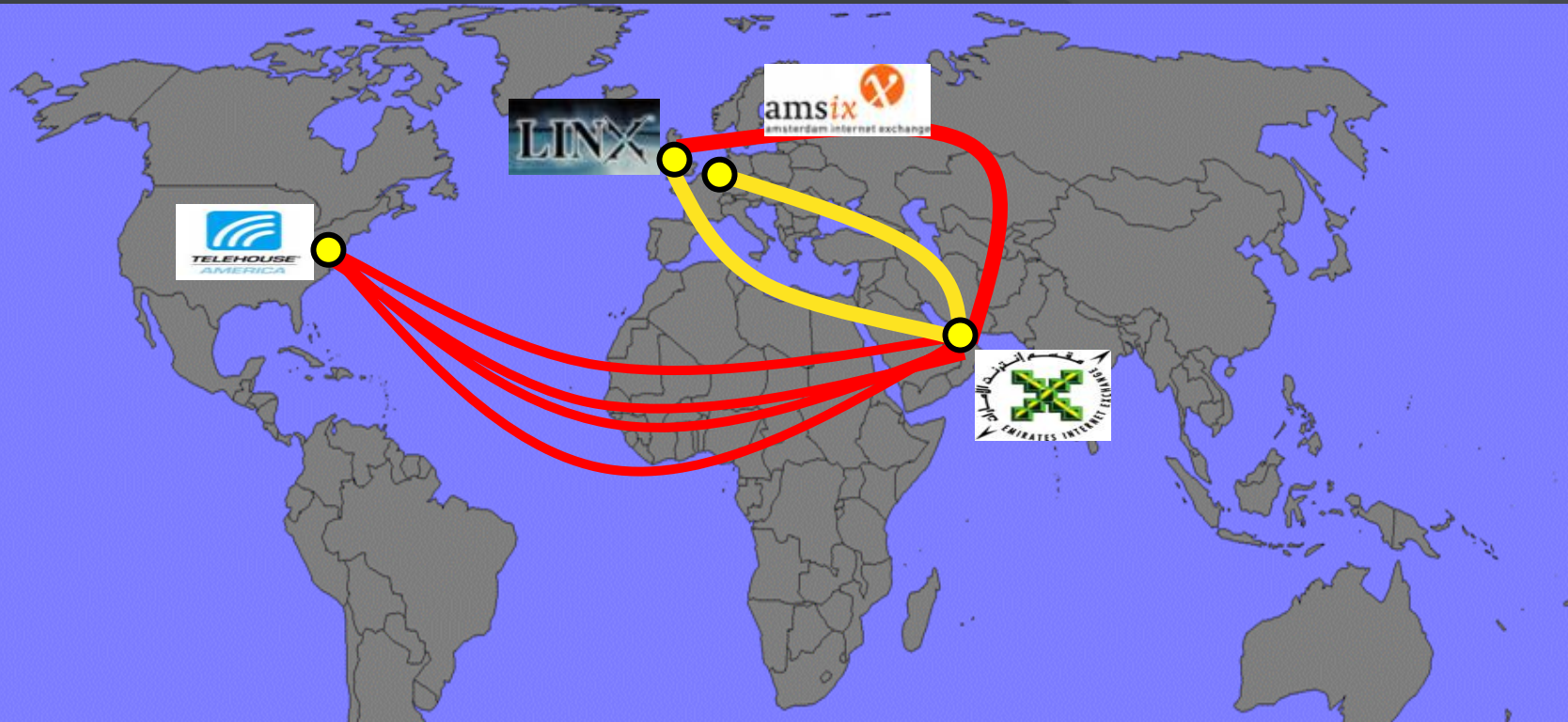
- Connected through FLAG east and west
- Connected through SMW3 east and west
- Connected through SMW4 east and west




## EMIX International Connectivity



# EMIX Overview

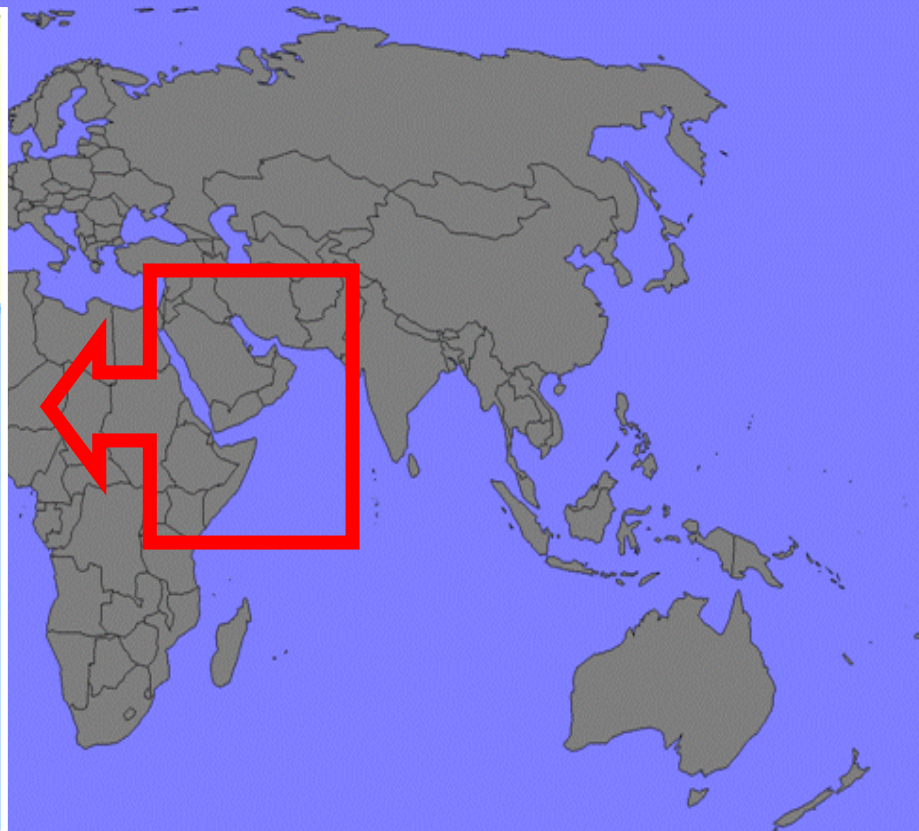
Public Peering World Wide



	London Internet Exchange
	Amsterdam Internet Exchange
	New York Internet Exchange

# EMIX Overview

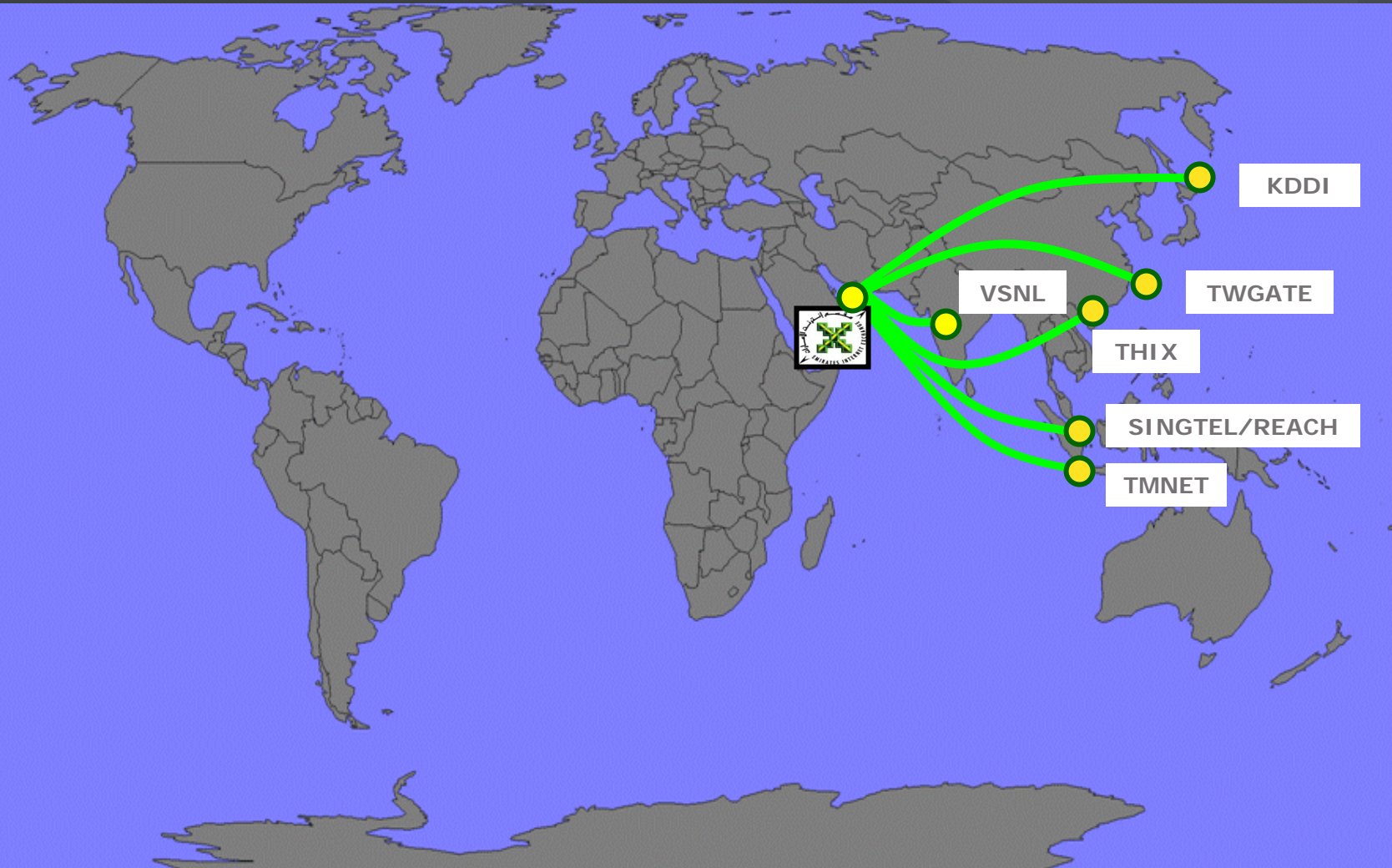
GCC Peering Connectivity





# EMIX Overview

## Far East Private Peering



# EMIX Overview

## BLACKHOLE

It's process of blocking all traffic destined for a targeted network. BGP can be used to stop DOS attacks. This provides ISPs a tool that can be used to respond to security related events

- Customer can only blackhole from his Network IPs
- It is very fast in reacting to attacks
- It is easy to implement
- Internal network will still access that IP

# EMIX Overview

## BLACKHOLE

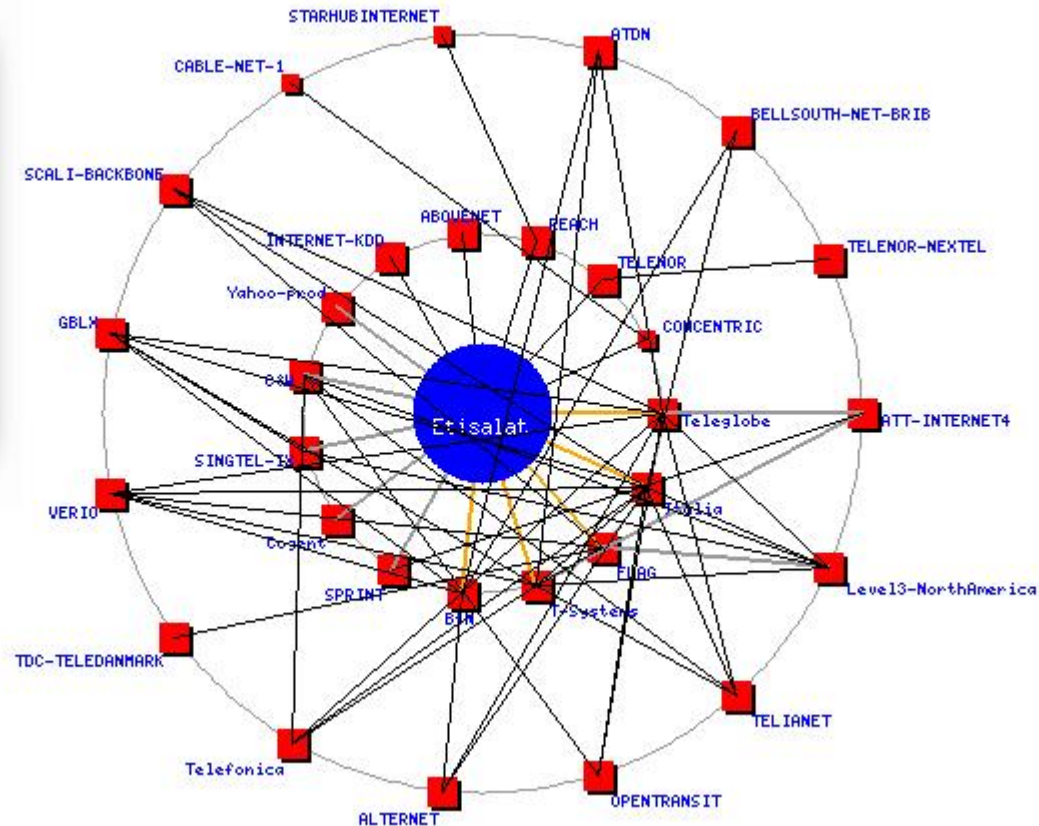
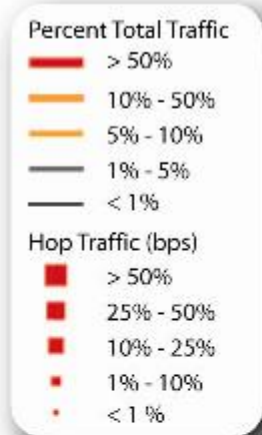
- Cant block port based attacks. At the end the targeted IP will not be reachable from outside
- Top talkers can give good view of attackers which can be collected from netflow.
- Normal route with the correct next-hop marked with a community which will blackhole the IP

```
ip route 10.0.10.147 255.255.255.255 10.0.0.13 tag 65999
```

# EMIX Overview

## Network Monitoring

Tools can help in monitoring and troubleshooting



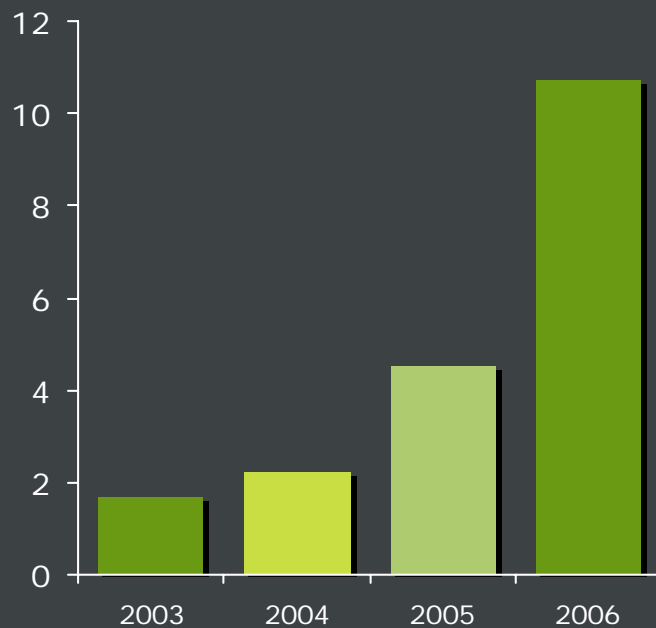
# EMIX Overview

## Facts and numbers

- 62000 routes come from peering
- 20% out of total bandwidth utilized by EMIX customers
- 57 STM1 international links ( 29 stm1, 7 stm4)
- Upgrade capacity if bandwidth exceeded 70%
- EMIX peers with all GCC countries

# EMIX Overview

## EMIX international Capacity Statistics



### 2005

Capacity is more than double compared to 2004

### 2006

Capacity is more than double compared to 2005

- 2003
- 2004
- 2005
- 2006

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**Thank You**  
**Any question?**