MENA to Europe Infrastructure diversification

MENOG 19
Beirut, Apr 3rd 2019
Agenda

- Submarine cable global scenario
- Focus on the Mediterranean basin
- Marseille: from a landing gateway to a large continental hub
- Concentration vs Diversification
- What can we learn from other regions? The USA East coast case
- Reshaping the Med basin outlook

MENA to Europe Infrastructure diversification: is Marseille becoming a SPOF?
Submarine cables: what is the global scenario?

Global bandwidth demand: exponential growth!

2016-2020 Average Investment: 2.7 B$/y approx. +6 times vs 2013-2015

Big OTTs are the largest investors

Content proximity to eyeballs & Cloud proximity/data localization

Used International Bandwidth, 2008 - 2018

Source: TeleGeography
Submarine routes in the Mediterranean: today outlook

The Mediterranean basin is crossed by a number of submarine cables, most of which are consortia cable and connect Asia to Europe through Middle East (SMW 3-4-5, IMEWE, EIG, AAE-1), but there are also a number of private ones (FLAG-FEA, Hawk, TATA TGN Euroasia, Seacom, MENA/GBI).

There are also a number of regional cables, both bilateral and private (MedNautilus, TE North, Atlas Offshore).
Submarine Cable Systems in the Med Basin

- **3 intercontinental existing systems**: 24,500 route km in the basin, 16 Tbit/s design capacity
- **13 major intra-regional existing systems**: 28,000 route km, 29 Tbit/s design capacity
How much international connectivity from/to M.E.?
... and where to?

Middle East Used International Bandwidth

- Others
- Middle East-Europe

Used International Bandwidth (Gbps)

2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018
---|---|---|---|---|---|---
0 | 5,000 | 10,000 | 15,000 | 20,000 |
Marseille from Landing point to primary interconnection hub

- Marseille development was driven by **submarine cable** followed by **terrestrial** and **data center** development.

- In **2005 SMW-4** (0.6Gb) with 2 Landing Stations in Marseille did bust the need of backhaul solutions to the main European hubs of that age: London, Paris, Frankfurt.

- SMW-4 is soon followed by **Atlas Offshore, IMEWE, EIG, Hawk** and **TE North**, together bringing the capacity lit there to increase tenfold in a few years.

- Marseille grew to a gateway to Europe and then to a primary IXP, competing with the main European hubs: London, Frankfurt, Paris and later on Amsterdam and Milan.

### Submarine Network Name Table

<table>
<thead>
<tr>
<th>Submarine Network Name</th>
<th>RFS Year</th>
<th>Length (km)</th>
<th>Lit Capacity (Gbps)</th>
<th>Max Capacity (Gbps)</th>
<th>Marseille</th>
</tr>
</thead>
<tbody>
<tr>
<td>SeaMeWe-4</td>
<td>2005</td>
<td>20.000</td>
<td>10.720</td>
<td>16.900</td>
<td>75%</td>
</tr>
<tr>
<td>Atlas Offshore</td>
<td>2007</td>
<td>1.634</td>
<td></td>
<td>320</td>
<td>100%</td>
</tr>
<tr>
<td>IMEWE</td>
<td>2010</td>
<td>12.091</td>
<td>8.220</td>
<td>16.200</td>
<td>60%</td>
</tr>
<tr>
<td>Europe India Gateway (EIG)</td>
<td>2011</td>
<td>15.000</td>
<td></td>
<td>24.000</td>
<td>100%</td>
</tr>
<tr>
<td>Hawk</td>
<td>2011</td>
<td>3.400</td>
<td>1.780</td>
<td>17.200</td>
<td>100%</td>
</tr>
<tr>
<td>TE North/TGN-Eurasia/SEACOM/Alexandros</td>
<td>2011</td>
<td>3.634</td>
<td>3.710</td>
<td>32.000</td>
<td>100%</td>
</tr>
<tr>
<td>SeaMeWe-5</td>
<td>2016</td>
<td>20.000</td>
<td>8.000</td>
<td>24.000</td>
<td>75%</td>
</tr>
<tr>
<td>Asia Africa Europe-1 (AAE-1)</td>
<td>2017</td>
<td>25.000</td>
<td>5.000</td>
<td>50.000</td>
<td>80%</td>
</tr>
</tbody>
</table>

*Sources: TeleGeography, Maroc Telecom*
The design dilemma: Concentration vs Diversification

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Diversification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economy of scale/cost efficiency</td>
<td>Network resiliency</td>
</tr>
<tr>
<td>Ease of Traffic mgt/interconnection</td>
<td>Customer/Traffic segmentation</td>
</tr>
<tr>
<td>Marketplaces creation</td>
<td>Competitive leverage</td>
</tr>
</tbody>
</table>

And what about the **latency**?

- Latency is “mission critical” to a growing number of applications: gaming and gambling, to financial trading, IoT applications
- The effort to reduce it causes the convergence on the most direct routes available between two points, pushing for concentration.
- But for the same applications above, network availability and reliability is “mission critical”, which brings in the need for diversification.
- Is it a deadlock we cannot exit out of?
What can we learn from other regions?
The USA East coast case

Transatlantic routes show an interesting recent trend in landing development

1. NYC Area, as a major center of business and connectivity, used to attract most of the transatlantic cables

2. In the recent past, the need to bypass the congested and expensive NYC area promoted a new open CLS model in Wall, NJ

3. Today, other new cables (OTT driven) are planning to land further South in Virginia, regardless the lack of terrestrial infrastructure. Also new DC’s are planned there, where content can be stored, to keep latency low.
So, is Marseille becoming a SPOF....?

- **All submarine cables** from Africa, Middle East and Asia to Europe are laid West of Sardinia.
  - They follow, north of Sicily, exactly the same path
  - Most of the capacity on these cables is deployed into Marseille
The need of diversification and resiliency:

- The Tyrrhenian corridor, passing East of Sardinia, guarantees complete diversification to the overcrowded west corridor.

- Genoa offers a diversified gateway to Europe thanks to the close and rich Milan ecosystem.

- Accessing to Palermo Sicily Hub, for content/cloud improved latency

... with a new corridor through the Tyrrhenian Sea
Several new projects in Med Basin may see the light

<table>
<thead>
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<th>Submarine Network Name</th>
<th>RFS Year</th>
<th>Length (km)</th>
<th>Max Capacity (Gbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEACE</td>
<td>2019</td>
<td>8,800</td>
<td>60,000</td>
</tr>
<tr>
<td>Eagle</td>
<td>2020</td>
<td>16,650</td>
<td>144,000</td>
</tr>
<tr>
<td>Africa-1</td>
<td>2021</td>
<td>20,000</td>
<td>36,000</td>
</tr>
</tbody>
</table>
BlueMed: Sparkle new Palermo-Genoa-Milan route

- Multi-fiber (up to 12 FP) and BUs System
- 18Tbps per FP
- OPEN cable technology
- Genoa: new open landing station platform
- Terrestrial segment: Genoa - Milan duct

New Tyrrhenian submarine route
Terrestrial routes

shorten latency between Palermo and Milan: -50% vs terrestrial path
Shùkran!