FROM ASIA TO EUROPE AND BEYOND

BUILDING A GLOBAL NETWORK
Topics of Discussions…

- DNSSEC
- IPv6
- Content
- Peering
- Internet Exchange (IX)
- Connectivity
Service Provider Challenges

1. Capacity Planning
   (Forecasting traffic beyond one year)

2. Performance
   (Finding the shortest path to the highest content concentration)

3. Network Failures
   (Submarine Cable Cuts)

4. OTT Players
   (iLaunch of Netflix, Amazon Prime)

5. User Behavior
   (i.e. Instagram, Snapchat, Youtube)
Traffic Growth - Omantel

### Yearly Traffic Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>87%</td>
<td>164%</td>
<td>84%</td>
<td>75.5%</td>
<td>80.4%</td>
</tr>
</tbody>
</table>

### Contributors to Growth

- **Social Media**
  - 25% (From Total Usage)
- **Streaming**
  - 43% (From Total Usage)
- **Netflix/Shahid Growth**
  - (Last 12 Months)
  - 200% growth

### 2018 - 2020

- Cloud
- Virtual Reality
- 5G
- IoT
INT`L BANDWIDTH GROWTH FORECAST FOR THE REGION

Middle East

- 2015: 4 Tbps
- 2016: 6 Tbps
- 2017: 8 Tbps
- 2018: 11 Tbps
- 2019: 14 Tbps
- 2020: 19 Tbps

37% p.a.

South Asia

- 2015: 22 Tbps
- 2016: 29 Tbps
- 2017: 39 Tbps
- 2018: 52 Tbps
- 2019: 69 Tbps
- 2020: 91 Tbps

33% p.a.

East Africa

- 2015: 1.2 Tbps
- 2016: 1.7 Tbps
- 2017: 2.4 Tbps
- 2018: 3.2 Tbps
- 2019: 4.3 Tbps
- 2020: 5.7 Tbps

36% p.a.

Tbps per annum
Source: Telegeography, Arthur D. Little analysis
THE OPPORTUNITY
The Opportunity

- Eight years ago we took aim on becoming a regional hub for international carriers and content providers by connecting the East with the West.

- The strategy focused on improving the following in our region:
  - Capacity
  - Diversity
  - Latency
  - Content

- We used our strategic geographic position as a foundation for our strategy.
OUR GEOGRAPHICAL POSITION IS MUCH MORE THAN THE ENTRANCE TO THE GULF…

- Gateway to East Africa
- Bridge to India and South East Asia
- Bridge to Europe/US
- Hub for the Middle East
- Gateway to Iran
- Alternative route to EU
- Corridor to China
- Bridge to India and South East Asia

Traditional Competitive Routes

New Golden Routes
OMANTEL INT`L SUBMARINE CABLES

FALCON
TWA 1
MENA
POI
SMW3
EIG
GBI
OMRAN
BBG
AAE1
G2A
SRG-1

access/ownership

IMEWE
SMW4
TGN
SMW5
APG
ASE
PC1
JP-US

Investment ownership
Landing Partner

13 Submarine Cables by End of 2017
Game Changing Approach
AAE-1 WILL BE ONE OF THE WORLD’S LARGEST CABLES PASSING THROUGH 20 COUNTRIES WITH OMAN IN THE MIDDLE

- AAE-1 (Africa-Asia-Europe) will be a brand new state-of-the-art cable spanning approximately 25,000kms
- It is currently under construction, due to be completed in November 2017
- It is one of the first unique cable systems to connect Hong Kong to Singapore (via Thailand), Africa and Europe via Oman reaching close to 50% of the world population
- It will provide an alternative and low latency short route between Hong Kong/Singapore and Europe
- Omantel is the landing party in Oman and as well as in France (first GCC operator to land a submarine cable in EU)

AAE-1 has over 15 global carriers:
- China Unicom
- Telecom Egypt
- Time dotCom
- Omantel
- Djibouti Telecom
- OTEGLOBE
- Pakistan Telecom
- PCCW
- Ooredoo
- Mobily
- Viettel Corporation
- TeleYemen
- Chuan Wei
- Retelit
- VNPT
- Reliance

Omantel
The combination of BBG – the highway between Oman and Singapore – together with the EPEG cable – terrestrial direct route to Frankfurt – will provide something truly unique.

- EPEG is a brand new high capacity fiber optic cable system which links Europe with Middle East as a transit route alternative to the Red Sea, Suez Canal and the Mediterranean Sea regions and plays an important role for traffic re-routing in case of earthquakes and disasters.
- BBG will enhance the robustness and reliability of connectivity between Oman and Singapore with the main trunk directly between Singapore and Oman.
- Omantel will be able to offer a redundant and unique latency of 160ms between Frankfurt and Singapore: two of the world’s main capacity hubs accessible directly from within Omantel’s carrier neutral data centre.
OMANTEL WILL BE THE FIRST OPERATOR CONNECTING AFRICA AND CHINA BY NOT CROSSING INDIAN OCEAN OR SINGAPORE STRAIT

Silk Route Gateway 1 (SRG-1)
- SRG-1 will provide additional capacity to underserved Pakistan, complementing the existing cables, with landings in Gwadar and Karachi.
- Furthermore, Omantel will extend SRG-1 on terrestrial redundant routes to Islamabad and then to China, connecting Omantel’s carrier neutral data centers with 1.4bn voice users and 254mn broadband users as of 2015.

Gulf to Africa (G2A)
- G2A will be Omantel’s first own cable to Africa, providing connectivity for Somalia through landings in Puntland State and Somaliland.
- Phase 1, in the East Africa expansion of Omantel’s own network, G2A will be extended on terrestrial cable to Ethiopia.
- In Phase 2, G2A will be extended to Mogadishu (Somalia), Kenya, and Tanzania.

Legend:
- Terrestrial
- Subsea
- Future Expansion

G2A, SRG-1, and the terrestrial extensions will provide the lowest latency between China and Africa.
Global Nodes
Global Nodes

Objectives

- PoPs are deployed using our submarine assets.
- Sourcing Content.
- Direct Peering.
- Resilience.
- MPLS Inter-connection.
- Underlying Network for building services on top of it.

2014
- Amsterdam
- Frankfurt

2016
- London
- Marseille
- Dubai
- Los Angeles
- Singapore

2017
- Paris
- Milan
- Ashburn (US)
- New York
- Hong Kong
Outcome of Our Strategy

**Submarine Cables**
- Position Oman as a connectivity hub for OTT and Telecom Operators.
- Serving the region by leveraging on the connectivity.

**Global Nodes**
- Regional and local parties benefit from the peers that are in place without having to establish their own PoPs in other regions.

**Content**
- More than 70% of the Internet is sourced directly through:
  - Local Content Nodes.
  - Peering.
  - Internet Exchange(s).
Thank you and
Enjoy your time in
beautiful Oman

Bridge between Europe and Asia
The Connectivity Hub

www.omantel.om
wholesale@omantel.om