

CUSTOMER FIRST

24 - 26 SEPTEMBER, 2019 | CASCAIS, PORTUGAL



DAY 2, TOMORROW'S HERE

12:15 - 12:45, WEDNESDAY, SEPT 25

The Long Hot Roaming Summer

An IPX use case: what were the roaming business and traffic dynamics and challenges during the Summer and how were they addressed?

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Serving more than 4.5 million customers in fixed, mobile & TV

26 years of operations

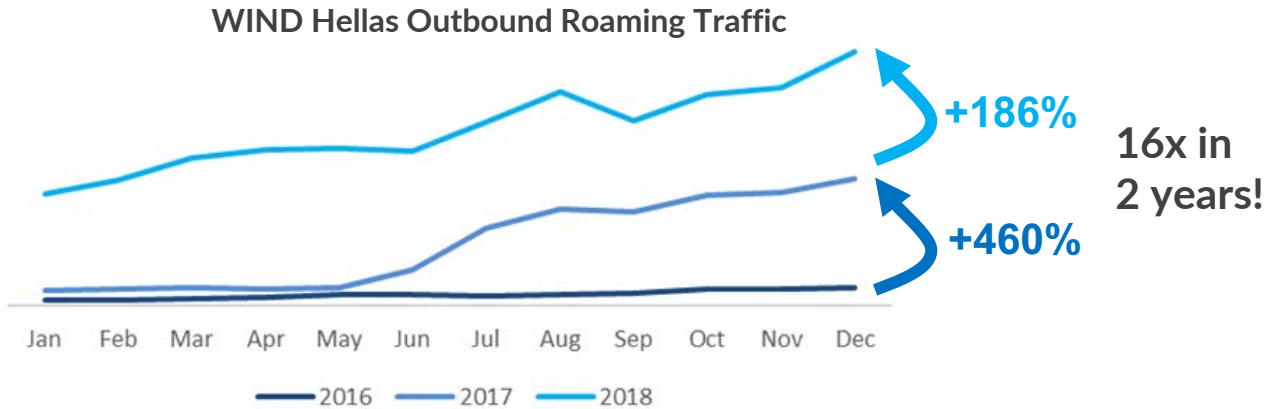
22% market share in mobile / 29% share amongst alternative fixed line

Probably the fastest growing integrated telco in Europe: +3% per annum organic growth in each of the past 3 years (H1 2019 @ 3.2%)



EU REGULATION DRASTICALLY CHANGED ROAMING TRAFFIC PATTERNS

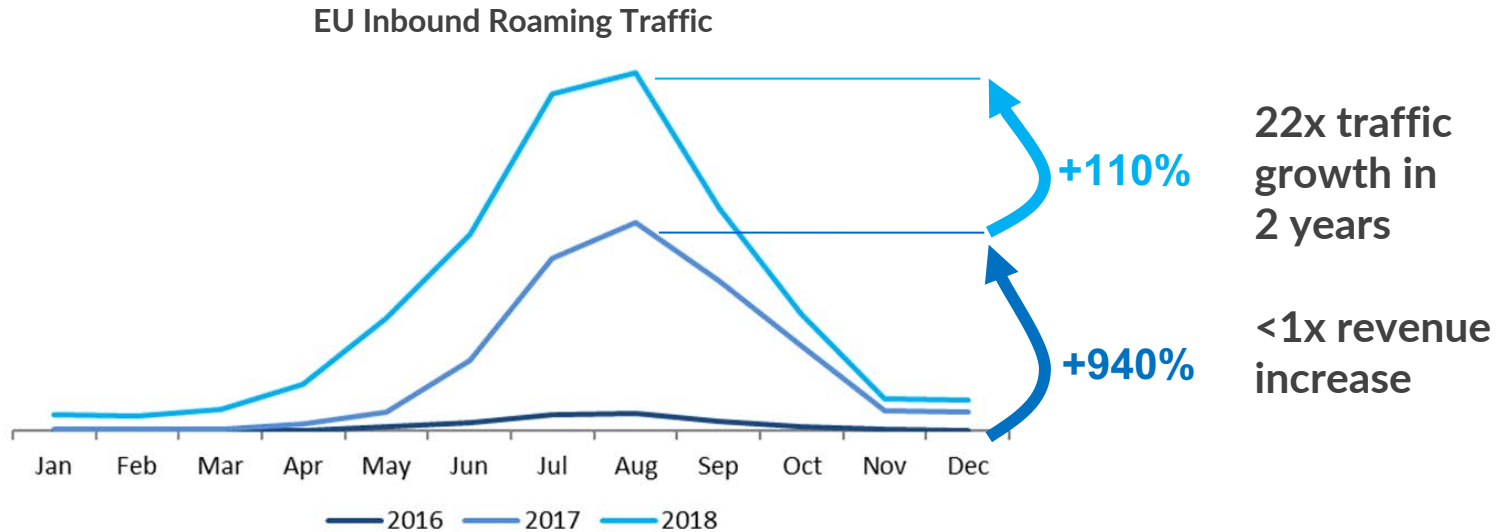
- Since June 2017 EU roamers pay domestic prices when roaming in EU (Roam Like At Home regulation)
- RLAH created high elasticity and change of traffic trends leading to significantly increased volumes of Outbound roamers



EU regulated retail roaming tariffs

- Retail roaming revenues on the other hand were nearly eliminated: end of EU retail roaming as a business

- Summer season (May to September) denoting ~ 80% of WIND Hellas' annual roaming traffic
- In 2017, inbound volumes skyrocketed as a direct result of RLAH and LTE coverage reaching >95%
- As a result of the above, inbound traffic growth from the EU reached unprecedented levels:



Greek peculiarities making roaming traffic fairly expensive

- Seasonal concentration on 2-3 months
- Geographic concentration on holiday islands

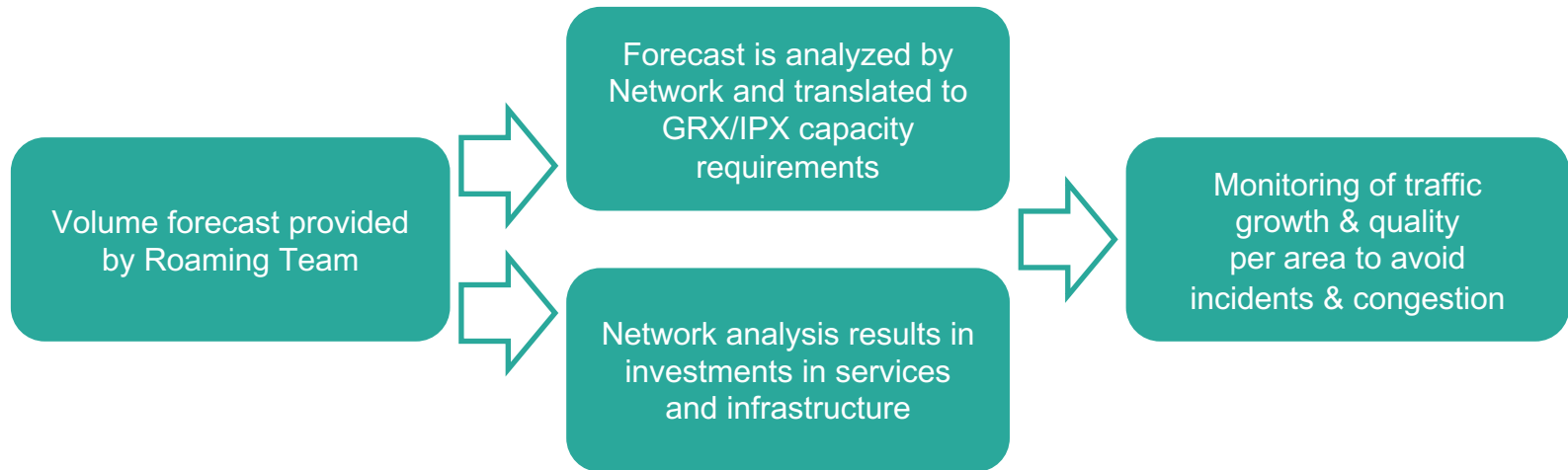
Therefore, roaming traffic requires dedicated extra investment

- In July, inbound roaming >30% of overall network traffic
- On touristic islands such as Zakynthos & Rhodes roaming traffic share exceeds 65%

“We build an extra network just for 2-3 months in the summer and make it twice as big just for roaming”
(WIND CTO)



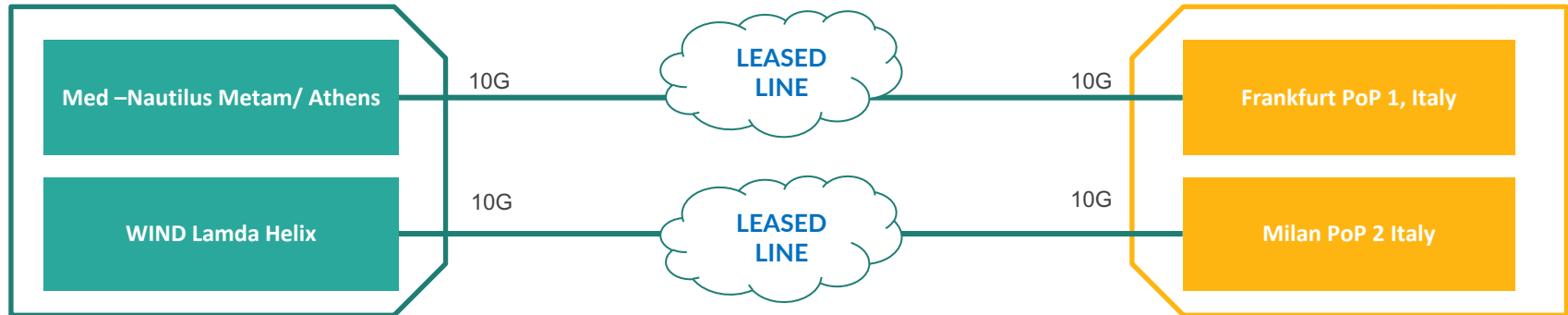
- After the initial explosion, Data growth is flattening out with lesser expectations for 2020 growth
- WIND as inbound roaming MNOs needs to secure margins and also cover the high network costs
- Planning network/backhaul and IPX capacity to secure volumes and QoS is crucial to support the high demand and deliver top notch service to our roaming partners also during peak season



- WIND was connected to a single IPX service provider before 2017
- After RLAH multiple IPX providers were required for geo-redundancy and scalability
- WIND chose iBASIS to fill these requirements
- Backbone & links designed to serve maximum throughput (redundancy on service level)
- WIND using diverse links to meet GRX providers in international PoPs for better visibility and fault resilience & detection
- Uncapped use of installed capacity: no need for further upgrades

WIND

iBASIS
POWERED BY TOFANE



WIND and iBASIS initiated cooperation for LTE & GRX/IPX services in Q1 2019

- Joint architecture agreed providing a stable and redundant solution
- iBASIS cooperated with WIND's providers to establish connections at its PoPs
- Smooth & successful migration plan for the services

During high season O&M requirements were fulfilled by all involved teams:

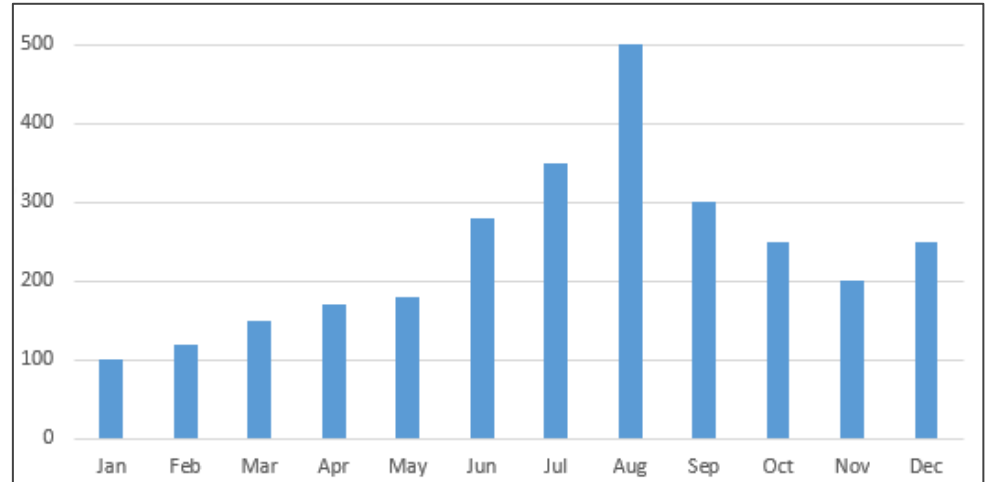
- forecast updates
- close monitoring & notification alerts
- frequent interaction & babysitting of the service
- exchange of statistics
- enhanced escalation process
- quick response on every occasion
- support on any issues occurred

Plan to have enough transmission capacity for:

- Core network routers / reporting infrastructure
- POPs (increasingly using 10/100Gbps wave connections)
- Peering partners (this includes managing paid-peering cost)

Have monitoring teams on standby, outages would have significant operational and financial consequences.

Agree clear escalation procedures with customers, providing transparent access to essential staff on both sides.



iBASIS combined GRX traffic profile throughout the year

NOC
Monitoring Network



Quality Team
Monitoring Service Statistics



Service Management
Monitoring Roaming Statistics



NOC monitors network and service KPIs in real-time 24/7 and takes immediate action when required.

Quality Team monitors traffic statistics and aim to detect issues before they become service affecting.

Operational **Service Management** team keeps an eye on roaming KPIs, checks SLA compliance and reaches out to the customer when required.

Account Management stays in close contact with customer throughout.

THANK YOU

