

Utility network asset sharing

The future for FTTH?

Strictly private and confidential

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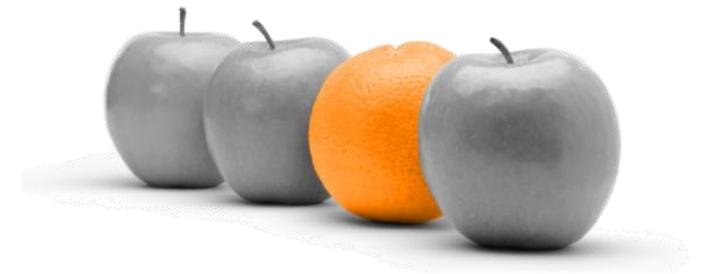
Network overlays

Electricity network sharing

Financial models

Implications for rural connectivity

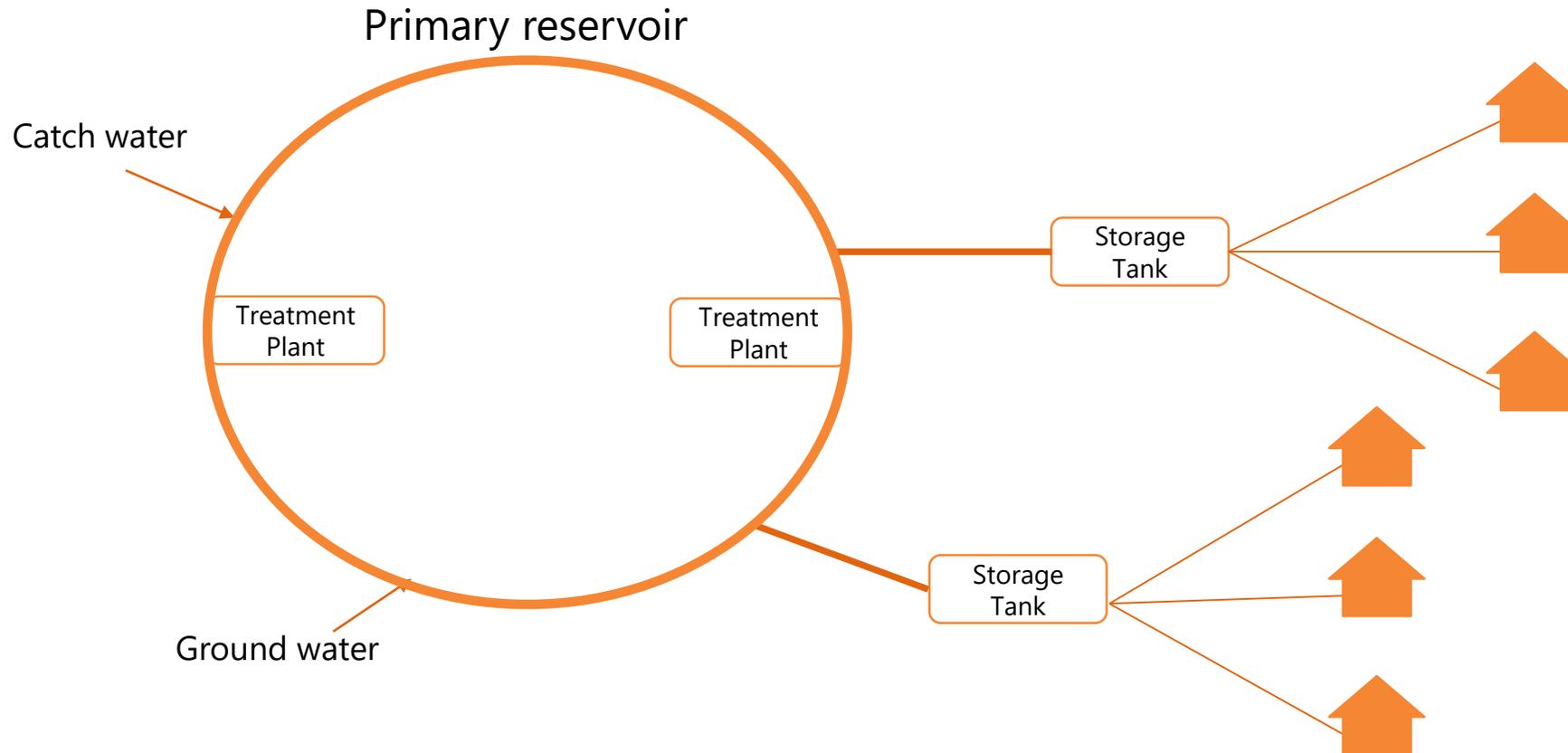
Conclusions



Shape of networks

A typical drinking water network topology

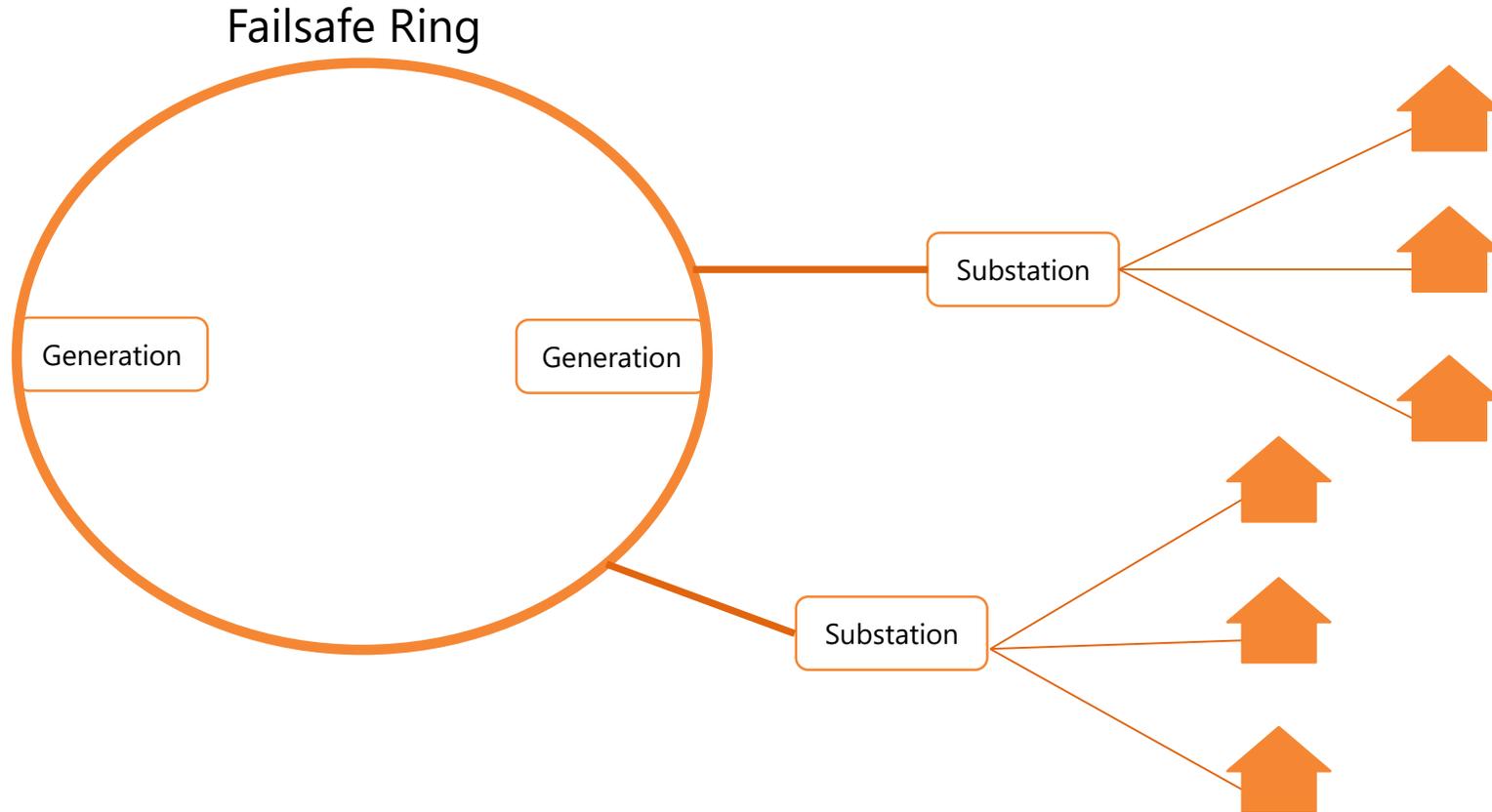
Urban Fresh Water Network



Shape of networks

A typical electricity network topology

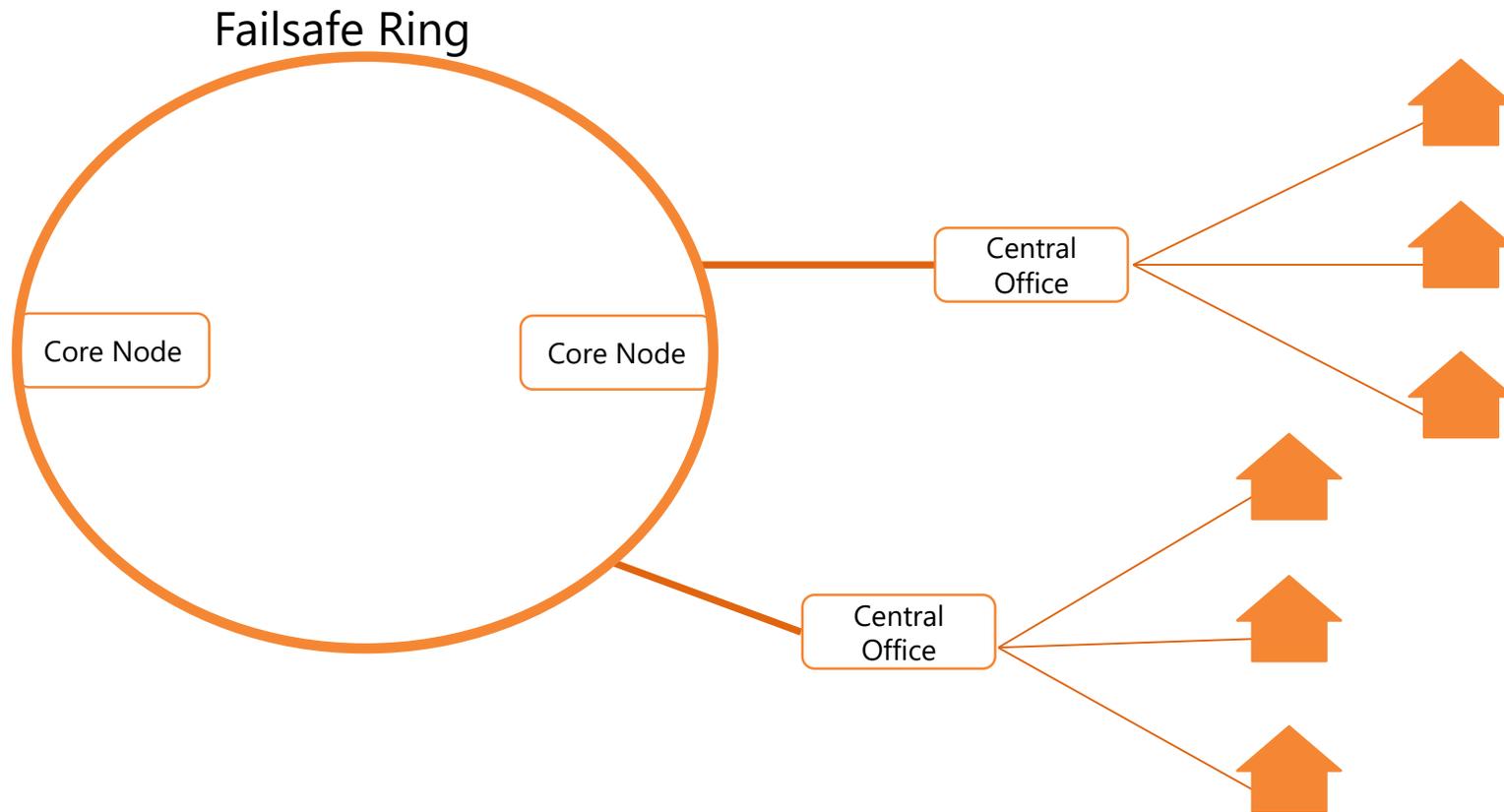
Typical Electricity Network



Shape of networks

A typical GPON fibre network topology

Typical GPON Network



Shape of networks

Utility networks can be upgraded to carry telecom but not the other way round

- These networks all have similar topologies, as you might expect. Yet all have been constructed independently of one another. These networks typically use separate ducts and have their own Operations and Maintenance teams etc..
- Utility networks have evolved over time. water and sewage networks appeared in the 19th century and electricity networks in the early 20th century then telecommunications networks in the later half of the 20th century. Each has been operated as independent services. Modern planned cities as in Saudi Arabia and Ghana of course have the opportunity to build a consolidated utility, yet often fail to do so, while older cities tend to be stuck with distinct separate infrastructure
- Utility companies have an advantage because it is possible for telecommunication networks to piggy-back on their infrastructure. A water company, or an electricity company can become a FTTH provider by utilising their existing networks to the home, but a traditional telecom operator cannot become a water company, or a electricity company.
- Many utility companies are now examining options for providing telecommunication services over their network and this represents a new and serious threat to established telecommunications providers

But it is not easy to put surplus fiber to work

Spare assets represent a sunken investment by government and industry

- However there are significant barriers to a utility company rolling out FTTH. And in many countries, utility company fibres remain dark, except for their intended use for control systems. When I speak of utility fibres, I mean fibres originally laid for telemetry and SCADA systems. Indeed, utility companies have an additional motivation to provide FTTH, to connect homes with smart metering as well as energy and water saving systems. All of which are an important part of modern utility services
- Utility companies don't have it easy. Commercialising utility networks has proven difficult due to regulatory and licensing issues. For example, most regulators in the MENA region do not allow a water or electricity company to utilise its existing fibres for telecom use, as the utility has no telecom license.
- Many utility companies have been held back by a lack of clarity regarding the financial models to enable monetisation of surplus fibres. The business case is not immediately clear.
- However there is a massive investment in utility fibre across the MENA region, often made by government, with public money. Could we now be seeing the emergence of utility companies becoming FTTH infrastructure builders?

Electricity network sharing

How some assets are being used in the MENA region

- This does seem to be happening and there are a number of good examples in the region. I want to focus on electricity utility as this is where the most of the action is. Here are a few examples:
 - Dawiyat - Owned by SEC and aggressively rolling out FTTx in Saudi Arabia with an objective to connect 744,500 premises with FTTH by 2020
 - Oman Broadband – Created a 'clearing house' model to monetise the fibre assets of utility companies on a revenue sharing basis
 - DEWA – recently built the Moro Data Centre to leverage existing network assets and sell traditional data centre services

Vertical expansion into FTTH by an electricity provider (Dawiyat, Saudi Electric)

So let's take a look at Dawiyat. Dawiyat is 100% owned by Saudi Electricity Company. Due to updates in the licensing regime, they are now building FTTH networks. The CITC got fed up with the slow pace of fiber investment and changed the regulation to increase competition.

Dawiyat:

- An **independent operator with a Type (B) Class License, and a Data Hosting Provider (DHP) and Internet Service Provider (ISP) licenses. So CITC's new licensing framework is driving investment in FTTH**
- **Dawiyat already has a highly reliable existing network of 67,000 kilometres of fibre**, This is mostly their OPGW (Optical Ground Wire fibres) and security and monitoring systems, but the fibre for these systems has been over-provisioned and there are many spare fibres that can be used
- They already have 1,500 brick and mortar locations that can be used to house Central Office nodes and 200 telecom towers
- It is very efficient for them to utilise this network for telecommunications

Achievements to date

- **Objectives**
- **Within 3 months, tested and connected 81,000 homes**
- **MoUs signed STC, Zain KSA and Mobily.**
- **Already provides backbone services for Zain KSA,**
- **SEC signed a Letter of Intent with the Housing Ministry to lay out smart infrastructure**
- **So is Dawiyat the new reality?**

All of this is being driven by regulatory changes allowing the reuse of existing utility assets



The regulatory changes are underpinned by the Kingdom's Vision 2030 which has specific goals:



NTP 2020 Targets

(set in 2016)

- Increase internet users in KSA from 63.7% to 85%

Significant growth in Urban FTTH

- **Increase FTTH coverage in densely populated urban areas from 44% to 80%** (405,000 targeted homes*)
- **Increase FTTH coverage in other urban areas from 12% to 55%** (1.73Mn targeted homes*) at speeds not less than 100 MB/ sec

Massive growth in Rural FTTH and Wireless

- **Increase wireless broadband network coverage in remote areas from 10% to 70%** (>10Mbps)

Urban enablers:

- **SAR5.9Bn broadband Stimulation Fund for urban areas**
- **License Dawiyat to perform FTTH activities**

Rural enablers:

- **SAR7.3Bn Universal Service Fund**
- **STC to contribute 60%**

Projected Growth

Total fixed access lines in Saudi Arabia will continue to grow from 7.1m in 2017 to 8.9m in 2022, owing to:

- **FTTH/B**
- **FWA lines.**
- **DSL will decline to 21.2% from 24% by 2022**

Dawiyat is now directly competing with telecom operators to provide passive and active FTTx services.

FTTx shows consistent subscription growth in fixed connectivity in KSA – Saudi Electricity invests in Dawiyat

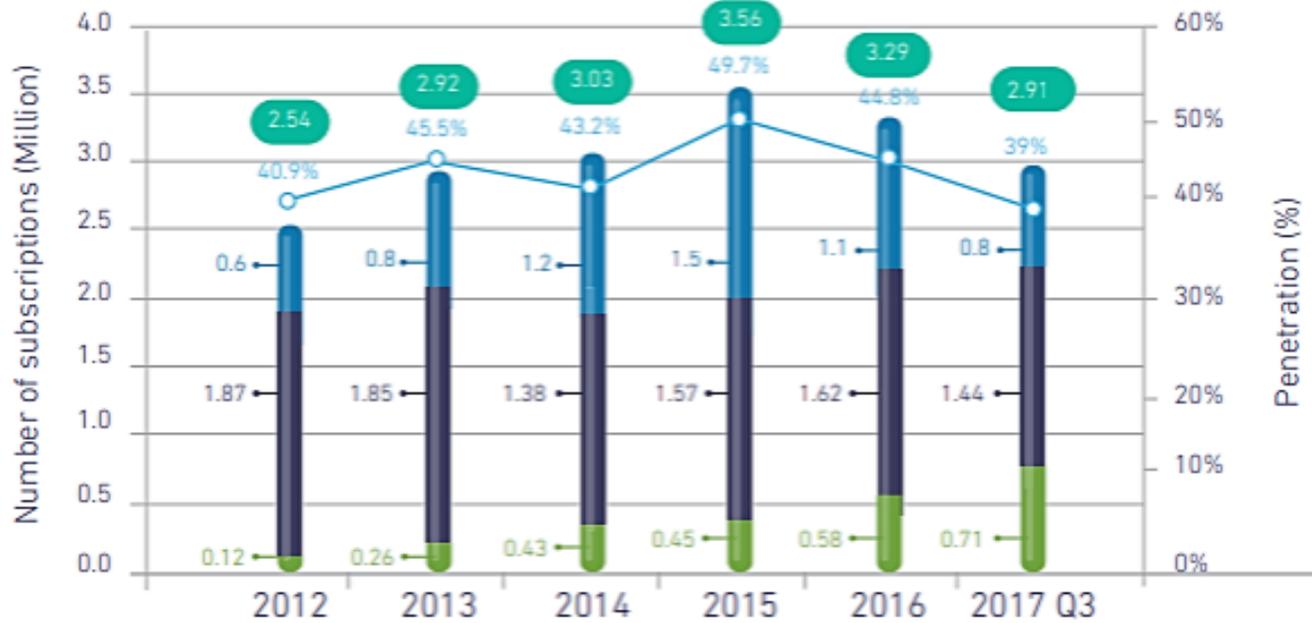
Country statistics



- Just briefly I want us to look at the chart for growth of FTTH in Saudi the green areas show the increase of FTTH and the light blue areas show the drop in wireless broadband.

During CITC’s most recent Sept-17 report, **FTTH is the fastest growing connectivity in KSA**, of which:

- FTTH almost doubled since 2015
- Now represents 10% of connected households in KSA
- But 10% needs to go to 30% and the CITC’s policy intends to drive growth



Fixed Wireless ■ Total Fixed Broadband Subscriptions ● Households Penetration (%) ○ ADSL subscriptions ■ leased Circuits + FTTx ■



Moro Data Centre - Dubai

DEWA goes digital

- Dawiyat is not alone. DEWA is also dipping into providing telecom services. They recently launched the MORO data centre
- MORO will be the hub for DEWA's smart energy services and offer traditional data centre services
- While a data centre is not FTTH, but it is a good example of how important it is for utility providers to reach homes. DEWA's smart energy strategy can only work if they can deliver services to end users.

Oman Broadband creates a clearing house model

OB resells assets of utilities on a revenue sharing basis

- In addition to the subsidy example in Saudi Arabia, Oman has developed a creative way of encouraging the use of spare utility fibre.
 - Oman Broadband has created a 'clearing house' through partnership agreements with asset owners
 - Essentially, OB is using their telecom license to offer passive services to licensed telecom companies over utility company networks. OB has signed agreements with asset owners and is creating products and services on a revenue sharing basis. This resolves the issue of telecom licensing as the utility asset is being sold over OBs license
 - OB is also about to launch a DWDM network in partnership with utility asset owners. This will provide active data services to licensed operators and be a critical to enabling the planned 3rd mobile license.
 - This purely commercial (non-subsidised) model is yet to be fully proven, but could also enable access to rural communities with the right pricing structure

Review of financial models

Saudi Electric creates access network company

Oman Broadband

- Created a “sell-through” model to act as a clearing house for existing assets
- Signed partnership agreements with asset owners to work on a revenue sharing basis
- Is relying on a demand-side model to deliver a set of products, both passive and active to licensed operators

Dawiyat

- Direct investment by Saudi Electric
- Enabled by proactive supply-side policy changes driven by CITC
- Business case based on competing for government subsidy

MORO

- Used direct investment to build a state of the art data centre in Dubai
- Business case driven by the intention to provide smart energy solutions
- is capable of providing communication services using the OPGW backbone

Implication for rural connectivity

- Utilisation of electricity grid fibres could be a good way of connecting rural communities
- Without subsidy, operators have been very reluctant to spend CAPEX connecting rural communities. There is simply no return on investment.
- Saudi Arabia may be taking the lead however in connecting rural communities. With the CITCs 3.7 Billion SAR subsidy Dawiyat could be well positioned to compete for this subsidy by leveraging existing OPGW and rural electrical substations to provide high speed connections
- So utility fibre could be the answer to connecting rural communities

Conclusions

- So to summarise, utility companies are already moving into telecommunications, more aggressively in some markets than others, but this is happening and it is successfully driving FTTH build-outs
- Expect to hear a lot more in coming years about utility companies providing both passive and active telecommunications services
- The impact on the industry could be enormous, given that most telecom providers in MENA have failed to re-invent themselves as services companies (with a few exceptions).

Conclusions

- And finally: The move by utility providers to create vertically integrated businesses based on telecom services represents a tremendous threat to existing operators
- Operators can no longer rely on regulation to protect them from competition, as regulators want to see greater connectivity and lower consumer pricing
- The future? I think the future will see much more competition and higher rates of FTTH rollout by exploiting the assets of utility companies.

Thank You

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