

## Egypt 2.0

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**Abstract:** For decades, Egypt has served as a critical transit corridor in the world’s global communication network, connecting Asia and Africa to Europe and to the US. In the last few years, many new, international undersea cables have landed on Egypt’s Mediterranean and Red Sea shorelines, in anticipation that Egypt would continue to provide this vital connection. Alternate cable routes around the Cape of Good Hope, across Asia, or via Middle East and Arabian Gulf have been explored, with each having their own inherent challenges. A robust, diverse Egypt transit route has historically been the preference of international carriers.

However, circumstances in Egypt precluded Telecom Egypt (TE) from fulfilling its promises to new cables planned by many global carriers. TE completed new cable stations in 2010, a new transit corridor in 2011, and just recently a temporary second (redundant) transit route. There is still some work to do for TE to complete its obligations originally promised for 2009. The challenges TE faced in fulfilling these promises have reminded the industry of the importance of geographical diversity in network design. A lively industry debate has arisen and planning of new routes is underway- not only around Africa, across Asia, and the Middle East- but also over the North Pole.

This paper will focus new initiatives to support a better future. Egypt and TE are committed to policies which not only attract and maintain international business, but also develop domestic communications to advance Egypt’s own economy and regain the confidence of global carriers. This paper will summarize recent Egyptian ICT policy changes made in support of international communications, provide recent performance statistics for cables transiting Egypt, and discuss TE’s plans to enhance their support of existing international cables, as well as new cables already being planned.

### 1. **BACKGROUND:** Foundation for a Brighter Future for International Services in Egypt

Egypt has long been the preferred route for international EurAsia telecommunications, with ten out of eleven of the world’s major EurAsian routes over the last 20+ years traversing Egypt. Egypt’s convenient geographic location relative to the world’s major telecom hubs, which enable communication paths that are both shorter (and, therefore, have lower latency) than alternatives and are easily interconnected to a multiplicity of cables, makes it the number one EurAsia transit corridor.

System	RFS:	Across Egypt?
Circa	1901	Yes
Catanzaro-Alessandria	1970	No
Alexandria – Beirut	1970	No
SMW-1	1986	Yes
SMW-2	1994	Yes
FLAG	1997	Yes
Aletar	1997	No
SMW-3	1999	Yes
SAFE-SAT3	2002	No
SMW-4	2004	Yes
FALCON	2006	Yes
SEACOM / TGN-EA	2009	Yes
IMEWE	2010	Yes
TE-North	2011	No
EIG	2012	Yes
GBI	2012	Yes

**Table 1: Recent EurAsia Cables**

In recent years, global carriers have become increasingly aware of the need to assure that all routes have diverse, restoration options which can be readily interconnected with primary routes—since their customers, and the world’s economy, critically depend upon the availability of services provided over each major route. Whether it is within Asia or the Americas, across the Pacific or Atlantic, or between Africa and the world- carriers have worked in recent years to create a global undersea mesh network. Between Europe and Asia (India and/or South East Asia region), the undersea route options are more limited, with each possible solution having its own set of challenges. Options explored include: the historic route through Red Sea, Egypt and Mediterranean; Saudi to Levant (Jordan, Syria) to Turkey; various routes across Asia (via the Gulf or the continent); routes around South Africa. In addition, as the worlds’ oceans warm - routes via the northern polar region have also been under consideration. Some, but not all, of these have been implemented. In 2007, Telecom Egypt, the primary provider of landing point and transit services in Egypt, began to plan new facilities to enhance the diversity options available to EurAsia and EurAfrica cable owners. Their efforts to build new cable stations on both the Mediterranean and Red Sea coastlines, and new routes across Egypt, each were targeted to support expansion of the global network and the world’s need for diversity.

However, despite their best efforts, local Egyptian service providers (including Telecom Egypt) were unable to deliver on time to their commitments for landing stations connectivity across Egypt. Delivery of cable stations, permissions for new cable landings and interconnection and new transit corridors were all delayed. As of this writing, Telecom Egypt is on the verge of completing its final obligation, with the imminent delivery of a new route across Egypt. The root cause of the earlier construction delays, which resulted in unexpected increased (and high) costs for both cable owners and local providers, were predominantly rooted in government requirements for both additional construction permits and substantial new terrestrial construction. The majority of these requirements were newly imposed during the course of Telecom Egypt’s construction program, and the previous administration (predating Egypt’s February 2011 Arab Spring). These new government requirements were not anticipated by anyone, including local Egyptian providers. Egyptian local service providers with licenses to land cables had understood that complete government permissions to land new international undersea cables and to transport their capacity across Egypt were in hand in 2007 (at the time landing and transit agreements were mutually signed).

Each of the internationally-licensed Egyptian service providers has worked hard over the last five years with the Egyptian government to overcome impediments to delivering promised new facilities. TE has been successful in completing more work than any other local providers.

- In 2010, TE landed several cables at a new station in Abu Talat on the Mediterranean (near Alexandria).



Figure 1: Egypt Cable Facility Map

- In 2011, TE landed several new cables at a new station in Zafarana on the Red Sea and connected these cables on one new TransEgypt route to Abu Talat.
- In 2012, TE provided an interim second (diverse, protection) route across Egypt between these stations.
- In 2013, TE will complete the full diverse path.

TE has also responded to requests for help from customers of other local Egyptian service providers (who similarly struggled to complete their stations and TransEgypt transport facilities).

Given recent history of events in Egypt, it is logical and reasonable for global operators to question whether they can depend on Egypt as the primary transit corridor for the next wave of new EurAsia cables. Telecom Egypt believes the answer to this is indisputably, "YES". TE offers the following facts to support their confidence.

During the entire period of time since the start of the Arab Spring at the start of 2011, service through or across Egypt was not disrupted even once on a protected TransEgypt route. While the time to obtain final permissions slowed in the immediate aftermath of the Arab Spring, since mid-2012, permissions for TE's construction activities are being approved with increasing speed. This is a direct result of new government personnel, procedures, and commitment to Egypt's economic development - especially through key industries such as ICT.

- In 2012, TE successfully obtained approval to land a new cable in Egypt, and connect it across Egypt to another cable landing in the Red Sea, within a few months (from the time of submission of permit applications to its approval).
- TE anticipates that in April 2013, when their second TransEgypt route is

complete, TE will have restoration paths for cables across Egypt, thereby creating a mesh network across Egypt for cables landing on Egypt's Red Sea and Mediterranean Sea coastlines.

## 2. **TODAY: Egypt and Telecom Egypt Serving Global Network Needs**

### 2.1 The New Egypt Government:

Egypt's new government is firmly committed to, and places high priority on, the economic development of Egypt. The new administration has reaffirmed its commitment to economic development, acknowledged the criticality of Egypt's economy on global ties, and made reference to Egypt's geographic importance in international commerce. Towards, that end, a highly-experienced ICT executive has been appointed as Egypt's new Minister of Communications and Information Technology. The Minister's words reinforce Egypt's commitment to development of communications, and international cooperation. *"The Government of Egypt recognizes the ICT sector as a critical component of the national economy, not only due to its substantial contribution to employment, exports and diversification of the economy, but for its dynamic and innovative potential, and its broader role in providing enabling technologies, products and services that underpin the development of Egypt as a knowledge economy in the global market. Egypt's ICT sector is now a principal component of the national economy, a key driver of development, and a catalyst for greater efficiency and performance across sectors."* The Egyptian Government has also recently undertaken several new initiatives to strengthen the telecommunications sector in Egypt, including issuance/awarding of a new mobile license in Egypt to TE.

## 2.2 The New TE:

Telecom Egypt has also undergone significant changes in the last two years. For many years, TE and its executive team have been committed to development of quality telecommunications services domestically and internationally. Within the last year, an officer who previously held positions responsible for Strategy, Regulatory Affairs, and International Business has now been appointed as TE's new CEO. This type of appointee experience brings even more focus to TE's goals of expanding and strengthening international business and relationships abroad. Towards this end, TE:

- is working towards providing new and better Egypt landing, transit and interconnect options to international service providers who are planning new cables, such as SEA-ME-WE 5

- is initiating new cable projects with global partners such as AAE-1 which, once in service, will complement the existing global network's EurAsia routes with even more capacity and diversity.

- has re-organized its own teams who are responsible for supporting international business, regulatory and government affairs, in a manner to help drive towards successful completion of its future promises to global customers.

## 2.3 Egypt's Network Solutions for The Global Service Community

Critical parameters, apart from diversity, that global operators use to measure the attractiveness of any prospective new international cable route include: commercial terms, (including price); connectivity; interconnect options; performance and reliability; and latency. Telecom Egypt believes that its solutions are measurably better, broadly speaking, than any of the alternatives (via Levant, across Asia, South Africa, the North Pole

or through the Pacific, US and Atlantic) as described below. To make comparisons between route options for several of these metrics, one must consider the length of the connection and their route's potential for jurisdictional concerns (e.g. permit issues). For many EurAsia point-to-point routes (e.g. HK-London or Singapore-Paris), the following is true:

Routes	Distance	Territorial Concerns
<b>Northern:</b>		
Via N. Pole	Shortest (for North Asia, but not necessarily S. Asia or S.E. Asia)	Much of route in unchartered waters (territory)
TransAsia	Short	Many jurisdictions
<b>MidEast:</b>		
Via Egypt	Shortest for South Asia; Somewhat longer than northern routes for N.Asia	Many jurisdictions, except via Egypt
Via Levant		
Via Gulf		
<b>Alternate:</b>		
Via S. Africa	Long	Few territorial concerns
Trans- Pac, US, and Atlantic	Longest	Few territorial concerns

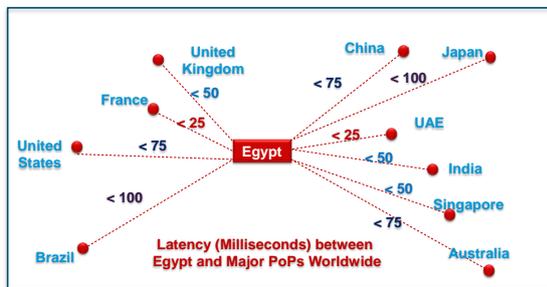
**Table 2: EurAsia Route Comparison**

Using the insights above, one can then extrapolate to compare other important parameters between routes.

- Cost: To a reasonable degree, the cost of new cable route is driven by cable length. As shown above, middle-east routes are shorter than routes via South Africa or the USA, by thousands of kilometres. Each thousand kilometres of new undersea cable construction potential saves tens of millions of dollars, which as an alternative might be invested in any requisite terrestrial crossing. Thus, inclusive of the price of dark fiber pairs across Egypt, a route via this path is likely

less expensive than alternate, longer undersea routes.

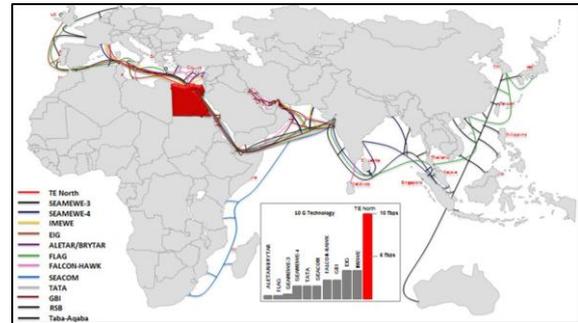
▪ **Latency:** As with cost, latency (which is an increasingly critical performance parameter) is critically linked to end-to-end path (route) length. Thus, while north polar routes may offer lower latency for some Eurasia connections, as will potentially a terrestrial Asian route, an Egyptian route offers lower latency compared to some of the other alternatives. Figure 1, below, illustrates the latency of routes from Egypt to various destinations across the globe.



**Figure 2: Latency**

▪ **Connectivity:** Cables are funded by investors interested in connecting communication hubs. Quite often, the more investors who participate in a network, the lower the investment required by most individual investors; more investors are attracted when they can have direct landings on the cable. Hence, cables that pass country shorelines and offer the opportunity for landings can attract more investors than similar routes more distant from shorelines. Eurasia routes via Egypt offer the option of branches to (and attract potential investment from) many countries along the cable route in South Asia, the Red Sea, North Africa and southern Europe. Routes via other countries may offer fewer additional connectivity options, meaning service to fewer countries and fewer options for co-investment (cost-sharing) amongst landing parties. The SEA-ME-WE, FLAG, EIG and IMEWE cables each illustrate this principle perfectly, with their large number of cable landings and owners.

▪ **Interconnect Options:** Mesh networks, with IP nodes interconnecting multiple transport routes, are generally accepted as the preferred global network architecture by the global telecommunications industry. Major IP nodes, by definition, interconnect with international cable routes which are physically diverse to provide alternate routing in the case of single or multiple path failures. Egypt, because of the large number of cables currently operating there, provides an ideal location for a major global IP node. Cable disruptions between Europe and Asia are often restored, even if the fault is not nearby Egypt, via interconnection in Egypt. While node diversity is critical, “once a hub, always a hub”- in other words, the ability of users of the multitude of existing cables to interconnect to new cables in Egypt will continue to be important in future years.



**Figure 3: Map of Regional and International Cables Landing in Egypt**

▪ **Performance and Reliability:** Cable systems using TE’s diverse transit routes terrestrially across Egypt now have amongst the best network availability provided within the region. There have been no recent outages on cables with diverse routes across Egypt. When TE’s new terrestrial transit route across Egypt is completed soon, even more cables will benefit from the availability and quality TE provides its customers. In terms of the undersea routes itself, Mediterranean and Red Sea approaches to Egypt have performed better than some global hubs which are famous for cuts due to unavoidable external threats, but certainly

not as well as others which offer more sheltered approaches.

Certainly, there are other global routes that routinely face more or less natural and/or man-made threats of external aggression than undersea routes in the vicinity of Egypt, and unavoidably face more or less periodically such threats. But, on average, routes via Egypt perform better. Moreover, Egypt's proximity to a spectrum of repair vessels and Egypt's ability to secure repair permits in a relatively short time, has enabled repair times to be reasonably short in comparison to some other regional statistics. Mean Time To Repairs (MTTRs) on extreme northern routes (which may be inaccessible for much of the cold winter) and in the southern hemisphere (where fewer repair vessels are able to quickly mobilize) or where repair permit process for cables in services can take months, provide Egypt's route with an inherent MTTR advantage.

Despite the comparative view above, it is understood that global operators must explore and implement alternative routes around Egypt, if for no other reason, than political diversity- even though, during the most turbulent times in Egypt's recent political history, international transit services remained unaffected and continue to serve the global community. TE hopes, and will work to assure that Egypt remains the world's preferred route. Towards that end, TE intends to continue to work to improve its facilities (and facility options), the performance of those facilities, and its ability to provide rapid response to new cable owners' needs for new connectivity, restoration and interconnect.

### **3. A NEW TOMORROW: Exceeding Global Expectations**

Now that TE is operating three cable stations on each of its coastlines, and has 7

operational routes across Egypt, is this enough? TE recognizes that its customers want (and deserve) high quality service in Egypt. In that regard, TE has instituted (or is exploring the possibilities of) the following programs:

- TransEgypt Facility Refurbishment: TE, starting in 2013, began replacement of fiber on some of the original routes deployed for cables in the mid-90's with new, larger-effective area fiber. The initial focus was on replacing fiber segments which had experienced multiple repairs over the last 15-20 years. TE is now concentrating on Cairo-Alex-Suez highways. TE has also instituted various measures of providing additional security along each and every transit corridor, e.g. security services, alert systems, locking manhole covers, etc. Each of these has already resulted in improved route availability. Independently, but in addition, TE is working towards implementing an offshore AIS system to monitor ship traffic near Egyptian cable routes, as a means of aiding in the prevention (and deterring) of anchor/fishing damage to cables.

- Enhanced TransEgypt Restoration Options: TE is making plans to provide options, with government support, to both new and existing international cables to extend their existing diverse TransEgypt routes to additional routes, and thereby benefit from mesh architectures. Soon after TE's new, 8<sup>th</sup> TransEgypt route is complete this year; TE intends to pursue this option. TE is also exploring more service-oriented options from the Red Sea stations, which will rely on TE's diversified national route and are expected to be of interest to some cable owners.

- Regional Restoration Programs: Alternate routes through the middle east, such as JADI, have been launched. International global service providers who utilize JADI (or other networks) may wish to interconnect their capacity on this

network with their capacity on their investments across Egypt. TE is open to providing such options for interconnection of the networks to ease restoration for global providers.

- Bulk Interconnect Rates to Other Cables Landing In Egypt: Interconnection rates have historically been one of the most protected sources of revenue by incumbent providers across the globe, or put differently, often an issue for new service providers who wish to access an incumbent's facilities at very attractive investment levels, comparatively speaking. In the last 5 years, Telecom Egypt has made substantial progress in offering reduced rates to its partners, where reciprocity offered TE similar opportunities. TE plans to continue seeking new partners and relationships, which we hope will provide mutually rewarding opportunities for easing interconnect options in the Middle East and elsewhere.

- Pre-Approval of New Cables: As mentioned earlier, TE is committed to extending its participation in and leadership of new international cables. Over the last many months, many global service providers are aware that TE has worked diligently to launch the Asia Africa Europe 1 (AAE-1) project, from Asia to Europe. In addition, TE has also continued its efforts to develop smaller regional systems. On each of these projects, Telecom Egypt is working closely with Egypt's new government, including all of the ministries whose approvals will be required. The government is universally supportive of TE continuing to expand the landings at Zafarana and Abu Talat-landing more cables in Egypt, transiting and interconnecting more and more cables across Egypt. Two cables (one a TE cable, one a third party cable) have recently secured the requisite approvals from the Egyptian government. As these projects are pursued, TE is seeking to clarify and restate the rights to land more cables, with

minimal incremental new permissions- and fully expect that the process of landing future cables, such as, for example, SEA ME WE 5 will be far simpler than many cables experienced in previous regime.

#### 4. SUMMARY

In keeping with the ICT roots, Mr. Wael Ghonim, an executive of Google who was widely quoted by international press and experts during Egypt's Arab Spring in early 2011, called the new Egypt, "**Egypt 2.0**". Telecom Egypt embraces that view. The new Egypt and the new TE are committed to economic development, which can only be achieved with the support of enabling, state-of-the-art, robust communications and information technology, which includes global communications services and partnerships with providers across the globe. TE understands that Egypt's challenges over the last five years became their partners' crises. In the face of such significant dilemmas, there was understandably little patience for explanations or excuses. At this point in time, TE's best way of supporting its partners who continue to rely on them, is not to dwell on the past, but to focus on doing better in the future.

TE and Egypt will remain committed to assuring that Egypt's routes not only remain competitive, but remain the preferred EurAsian route. Through their collective initiatives, they anticipate that alternate routes serving EurAsia will no longer be measured solely by whether they are or they are not diverse from Egypt, but whether they compete from a cost, performance, latency, and interconnect perspective near par with an Egyptian route. TE also intends to work with regional carriers to assure diverse connectivity solutions are available to interconnect alternate routes to international routes via Egypt.