

Effect of Fiber Cut in Pakistan

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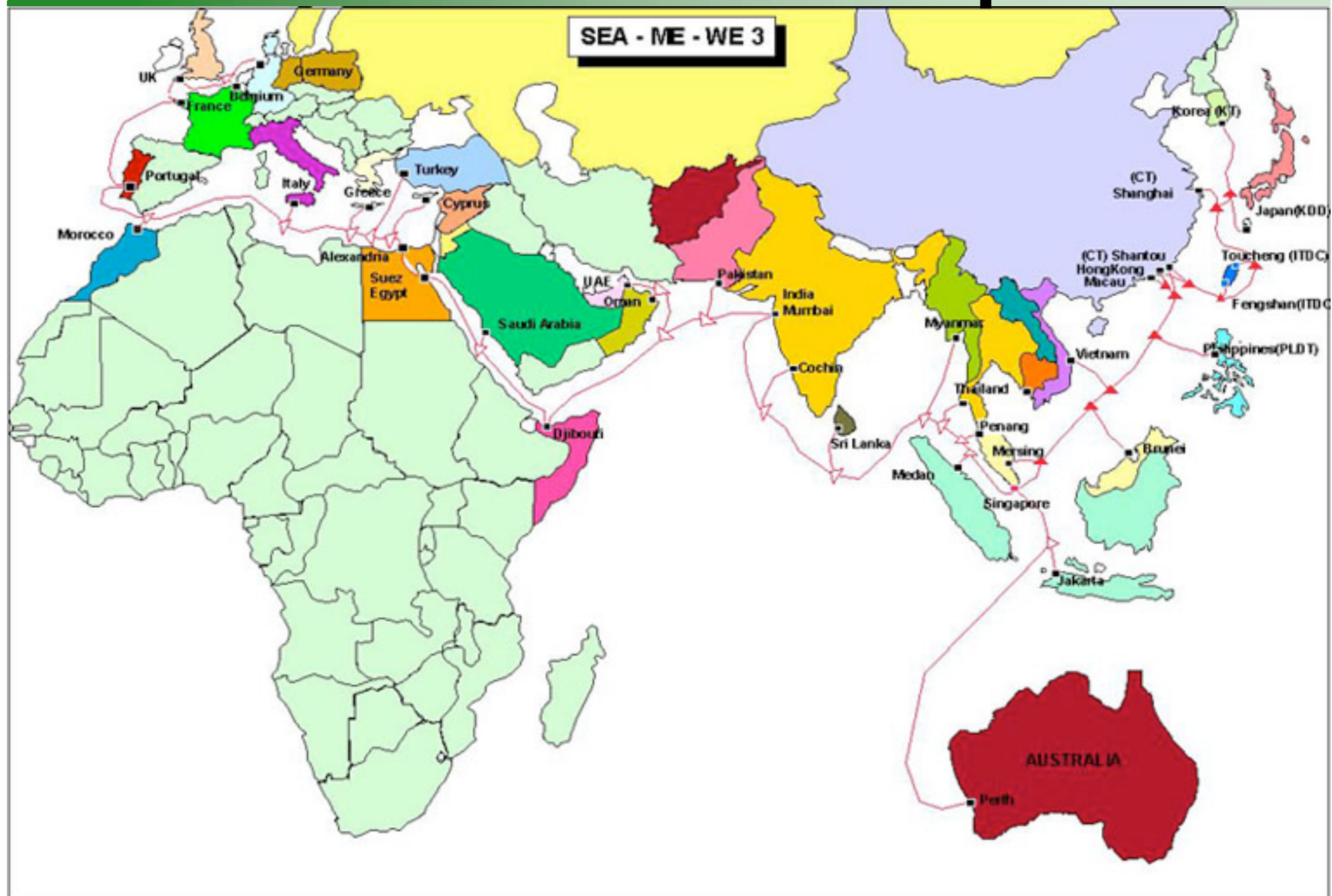
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Facts

- **Sea-Me-We 3 (South East Asia-Middle East-Western Europe)** is 39,000 kilometers long in total
- This cable has 39 landing points in 33 countries in Europe, Asia Pacific and Australia.
- Other countries on the affected segment of the cable are India, the United Arab Emirates (UAE), Oman and Djibouti
- Internet services to those countries were not affected, according to reports due to availability of proper back ups
- Submarine cable installation, maintenance and repair company **E-marine** (Marine Services FZE), has a contract with the SEA-ME-WE-3 consortium for annual storage, repair and maintenance of the cable across the region

SEA-ME-WE 3 Map



The Incident

- **June 27, 2005 at 2055hrs all Internet and Telecom connectivity of whole country was discontinued**
- **All international STM-1 links via SEA-ME-WE-3 optical fiber network went down**
- **The cable was cut 35 nautical miles (69-km) south-west of Hawksbay, Karachi in deep sea.**
- **Traffic was shifted to 3 E3 satellite links but it made no difference**
- **On July 1, 2005 satellite backups were arranged, and things started working to much extent.**
- **The cable was recovered on 1224hrs July 8, 2005**

SEA-ME-WE 3 Cut



Commercial Impact

- **ISPs**
 - Over 10 million Internet surfers suffer from this
 - Over PKR15 million loss to ISPs per day as per ISPAK
- **GPRS**
 - GPRS services remained down along with Internet
- **Call Centers**
 - Estimated loss of US\$ 1million to call centre industry
 - The cable fault raised questions about the future of the country's fledgling call centre industry
- **Medical Subscription**
- **Stock Exchanges**
 - Online trading system of stock exchanges

Commercial Impact

- **E-Commerce**
 - No business on web
- **Online banking**
 - On line transactions were not possible
- **LDI Operators**
 - LDI operators were unable to continue their services
- **ISD Calls**
 - Unable to make calls to and from Pakistan for 2 days
- **Airlines**
 - Online Reservation system of Airlines was badly effected

Interim Measurements

- **Shifting to satellite links**
- **Re-advertisement of IP blocks on new links and traffic re-engineering**
- **Prioritizing the traffic for business applications and providing backups to these on priority basis**
- **Continuous feed back from ISPs and other organizations regarding new situation and reconfigurations / traffic re-engineering**
- **Provisioning of point to point satellite links for critical business applications depending on customer requirement**

Effects of interim measures

- **After 1 day PSTN ISD calls were recovered**
- **After 2 days, a slow internet was provisioned, rather than a dead Internet**
- **After 4 days Internet was recovered with some reasonable speed**
- **After 5 days point to point IPLC 's and LDI operators links were recovered with less capacity as per customer requirements**
- **After 12 days cable was recovered**

Technical Insight

- **When SEA-ME-WE 3 cable was cut, All IP prefixes advertised to other ASN 's, were no longer on Internet.**
- **During shifting to new satellite links, route flapping occurred which resulted in route dampening of different advertised pools.**
- **This was resulted because**
 - new links were added
 - prefix advertisements were made and changed to new satellite links in order to load balance the things
 - This was done on Interim basis keeping in view business priorities

Route flap dampening

- **Route flapping when occurs rapidly and on a large scale. It can get out of control and affect network performance.**
- **During the shifting to multiple satellite links in new emergency situation, resulted in route flapping because**
 - different IP prefixes were advertised on different links
 - These advertisements were changed frequently as per traffic requirement
 - Result was flapping routes of some prefixes
- **The Internet is protected from route flapping using the phenomena of route dampening.**
- **The new situation also resulted in dampened routes for some prefixes, leading to a new more complex situation**

Food for thought

- **Can we afford to loose business and cut off from world for days?**
 - The answer is NO
- **Can a country depend on Single Cable or single communication channel?**
 - The Answer is obviously NO
- **Alternate links must be obtained so that a redundancy can be obtained**
- **Fault detection and correction time must be minimized (MTTR)**

What is being done?

- **SEA-ME-WE 4 cable**
 - An agreement for SEA-ME-WE-4 cable at a cost of \$40 million had already been finalized with consortium and it is expected that it would commence functioning in October-November this year.
- **Fiber Optic Connectivity with India**
 - memorandum of understanding with the Indian company “Reliance” had been inked after removing all security concerns in March under which laying of fiber optic till Wagah border, Lahore would be completed by the end of September
- **Trans world Associates Ltd (TWA),**
 - a joint venture between Orascom Telecom of Egypt and Saif Group of Companies,
 - is in the process of planning of setting up, at a cost of \$36 million, undersea fiber optic cable from Karachi to Fujaria
- **All this will result in four (at least 3) parallel fiber optic connectivity paths for the country till the end of this year**

Thank You