

Practice and Case Study on Cross-border Cable Project

Yongwang Liu

August 2018





Content |

1 Case Study

2 Possible Solution

3 Standardization

Case 1: China-Pakistan Fiber Optic Cable

- The China-Pakistan Cross-border Fiber Optic Cable is the first cross-border terrestrial cable directly connecting China and Pakistan. It stretches from Urumqi to Rawalpindi through the Khunjerab Pass at the China-Pakistan border. The total length is 2,950 km, of which the Chinese side is 2,130 km and the Pakistani Side is 820 km.
- The project MOU was signed in 2007. The cable officially went into service in July 2018.



Case 2: Great Mekong Sub-region Information Superhighway

- GMS including Thailand, Vietnam, Laos, Myanmar, Cambodia and Yunnan Province of China, GMS IS aims to build a backbone network connecting the six countries.
- GMS IS contains two phases. Phase I :Building a backbone transmission network (shown as figure 1). Phase II: building a new layer with three SDH rings (shown as figure 2). This network makes full use of the existing backbone optical fiber resources in each country and the domestic backbone construction planning. Phase I has completed about 10 years, but phase II has not started yet because of lacking a reasonable trans-multi-country solution.

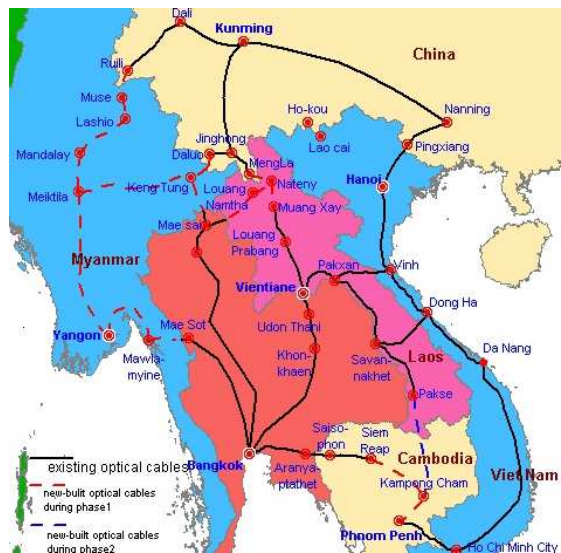


Figure 1

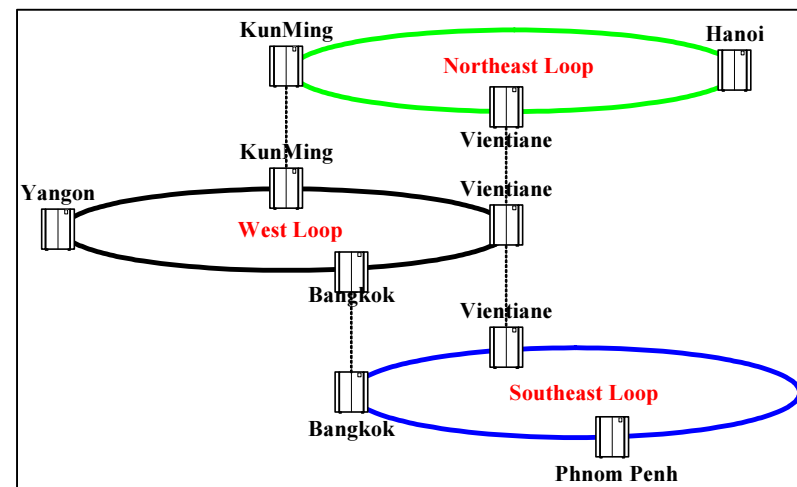
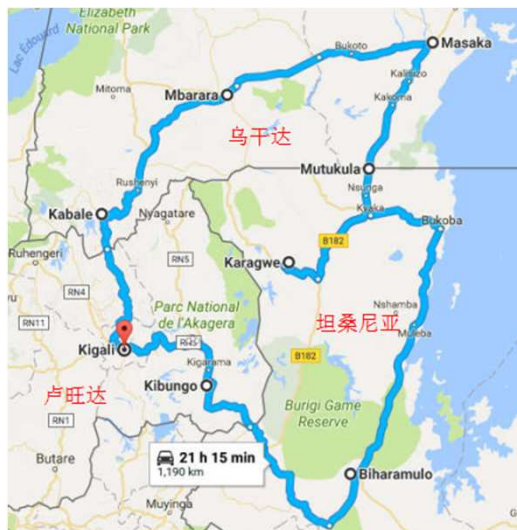


Figure 2

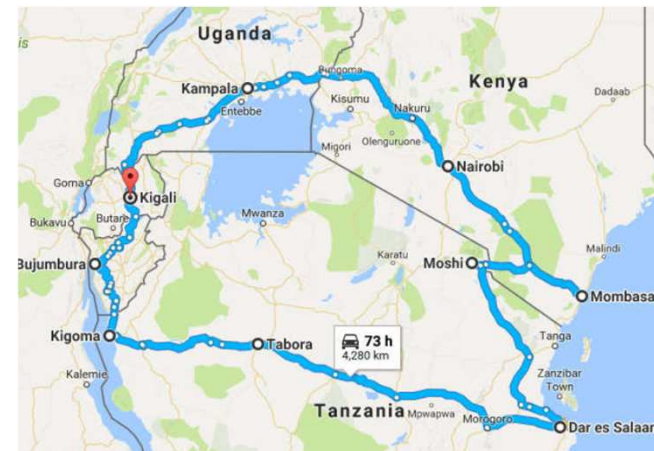
Case 3: Eastern Africa Information Superhighway

- EA IS covers Tanzania , Uganda, Rwanda, Kenya and Burundi.
- EA IS intends to conduct in two phases, small ring and big ring, as shown below. Small ring: a network route among including Tanzania , Uganda, Rwanda; Big ring: a network routine among the five countries.
- At present, it only fulfill the connectivity between two countries in small ring. When it comes to three countries and more, it cannot fulfill because there is no a regulation to solve the multi-country network operation and charging.

EA IS Phase Plan (small ring-three countries)



EA IS Phase Plan (big ring-five countries)



Finding

Based on these three cases, we can find :

- Cross-border connectivity between two countries is common and easily achieved
- There are some difficulties in pushing ahead regional or sub-regional connection projects, especially for those multiple countries projects, due to the differences in policies, regulations and financial issues, as well as lack of feasible charging and operation models.



Content |

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Concept of “Capacity Bank”

This Recommendation proposes a “Capacity Bank” solution to the issues of settlement agreement about trans-multi-country terrestrial cable, including its application context, cooperation mechanism, and the contributions made and rights and interests obtained by all parties involved.

Capacity Bank

- I. A solution to the issue of settlement agreement of trans-multi-country terrestrial cable.
- II. Each party contributes a certain amount of fibre-optic cable resources and obtains some transmission capacity of the terrestrial cable network in proportion to their contribution.

The formula is as follows:

$$\frac{\text{The number of channels occupied by a single shareholder}}{\text{Total number of channels}} = \frac{\text{The length of cable contributed by a single shareholder}}{\text{Total cable length}}$$

Example of “Capacity Bank”

Take four countries(country A,B,C and D) for example, the capacity allocation proportion is shown below:

Country A		Country B		Country C		Country D	
Country	Cable Length (Km)	End-to-end channel length (A-D)		A	B	C	D
		Proportion (%)	Channel allocated				
A	1,600	40%	32		32 end-to-end channels		
B	600	15%	12		12 end-to-end channels		
C	1,000	25%	20		20 end-to-end channels		
D	800	20%	16		16 end-to-end channels		
Total	4,000	100%	80				

Allocate End to End Wavelength Channels According to Proportion of Length of Fiber Contributed from Each Party



Content |

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Establishment of Q.13

Q.13 was Newly Established at ITU-T SG3 in April 2017, lasting 4 years to 2020.

Name of Q.13

- Study of Tariff, Charging Issues of Settlements Agreement of Trans-multi-country Terrestrial Cable (TTC).

Task of Q.13

- To study and develop Recommendations and guidelines, regarding the policy, tariffs, charging and economic aspects of trans-multi-country terrestrial cable.

Scope of Q.13

- Study the difficulties facing the deployment of trans-multi-country terrestrial cable and the demands of all concerned parties.
- Study the issues of the policy, tariffs, charging and economic related to trans-multi-country terrestrial cable
- Study and develop recommendations and guidelines on settlement of trans-multi-country terrestrial cable

Progress in Rapporteur Group Meeting of ITU-T SG3

Establishment of Two work items about Q.13: Two work items under Q.13 were proposed at The Rapporteur Group Meeting in November 2017, and agreed in the plenary meeting of SG3 in April 2018.

Work item 1

- **Name:** Study on charging and accounting settlements in Trans-multi-country terrestrial cable circuit.
- **Scope:** Study, analyse and find solution to charging and accounting settlement challenges facing trans-multi-country transmission circuit.
Besides, it will also study how to combine terrestrial and submarine cables to improve international connectivity.

Work item 2

- **Name:** Recommendation on the model of trans-multi-country Terrestrial Cable Resource sharing.
- **Scope:** Study and develop a “model of trans-multi-country terrestrial cable resource sharing” to provide a solution to the problem faced by landlocked countries.
The model aims to enhance the international Internet connectivity by sharing cable resources.

Thank you !

