



**Our Ref: CA/IT/060/Vol1**

26<sup>th</sup> August 2015

**Mr. Houlin Zhao**  
Secretary General  
International Telecommunication Union (ITU)  
Place des Nations  
CH-1211 Geneva 20  
**SWITZERLAND**

**Attention:** Mr. Preetam Maloor ([cwg-internet@itu.int](mailto:cwg-internet@itu.int))

Dear *Sir,*

**RE: INVITATION TO ALL STAKEHOLDERS TO PARTICIPATE  
IN THE ONLINE OPEN CONSULTATIONS OF CWG-  
INTERNET: TO ELABORATE AND EXEMPLIFY ON THE  
CHALLENGES FACED AND IDENTIFY WIDELY  
ACCEPTED BEST PRACTICES FOR THE DESIGN,  
INSTALLATION AND OPERATION OF IXPS**

---

---

Reference is made to your letter dated 3<sup>rd</sup> July 2015 and referenced CL-15/31 on the above subject. You had invited contributions to the open consultations discussing the establishment of Internet Exchange Points (IXPs) to advance connectivity, improve service quality and increase network stability and resilience, fostering competition and reducing interconnection costs, as proposed by Opinion 1 of World Telecommunication/ICT Policy Forum 13 (WTPF-13) and consistent with Plenipotentiary Conference 2014 (PP-14) Resolutions 101 and 102.

Annexed please find our responses on the “**challenges faced and widely accepted best practices for the design, installation and operation of IXPs**”.

We thank you for your continued support and look forward to continued collaboration.

Yours *sincerely,*

A handwritten signature in black ink, appearing to read 'Tom M. Olwero', with a long, sweeping horizontal flourish extending to the right.

Tom M. Olwero

**FOR: DIRECTOR-GENERAL**

**C.C. Ambassador/Permanent Representative**

Permanent Mission of the Republic of Kenya to the United Nations  
and other International Organizations

1-3 Avenue de la Paix

1202 Geneva

**SWITZERLAND**

[mission.kenya@ties.itu.int](mailto:mission.kenya@ties.itu.int)

## **ANNEX: CHALLENGES AND BEST PRACTICES FOR THE DESIGN, INSTALLATION AND OPERATION OF INTERNET EXCHANGE POINTS (IXPS)**

---

### **1. PREAMBLE**

The Communications Authority of Kenya (CA) is the regulatory authority for the communications sector in Kenya. Established in 1999 by the Kenya Information and Communications Act, 1998, the Authority is responsible for facilitating the development of the Information and Communications sectors including; broadcasting, multimedia, telecommunications, electronic commerce (e-commerce), postal and courier services.

The mandate of the CA includes facilitating the development of e-commerce, development and implementation of the national cybersecurity framework as well as overseeing the management of critical Internet resources such as Internet Exchange Points (IXPs) and Internet Numbering Resources (IP addresses and domain names), among others.

It is in this regard that we are responding to the open consultations discussing the establishment of Internet Exchange Points (IXPs) to advance connectivity, improve service quality and increase network stability and resilience, fostering competition and reducing interconnection costs, as proposed by Opinion 1 of World Telecommunication/ICT Policy Forum 13 (WTPF-13) and consistent with Plenipotentiary Conference 2014 (PP-14) Resolutions 101 and 102.

Below are our responses on the **“challenges faced and widely accepted best practices for the design, installation and operation of IXPs”**.

### **2. CHALLENGES FACED IN THE ESTABLISHMENT AND OPERATION OF IXPS**

Some of the challenges experienced in the development of IXPs include the following:

#### **i. Lack of trust between service providers**

IXPs rely on their participants to cooperate and coordinate to be effective. Therefore lack of trust between ISPs may hinder the

development of IXPs.

**ii. Limited technical expertise**

The success of an IXP hinges on its ability to route traffic in an efficient, cost effective manner. The availability of and cost of maintaining the required technical experts may be prohibitive, especially at the beginning.

**iii. Cost of network infrastructure**

The absence of reliable and affordable local infrastructure can reduce the incentive and justification for operators to develop and connect to an IXP, especially where the cost of a domestic link is comparable to that of an international link.

**iv. Lack of a standardized topology**

The lack of operations guidelines becomes a hindrance to ensuring security and redundancy of an IXP and interconnection (peering) between IXPs.

**v. Limited sensitization**

Limited awareness on the benefits of IXPs may lead to the slow uptake of IXP services.

**3. BEST PRACTICES FOR THE DESIGN, INSTALLATION AND OPERATION OF IXPS**

Some of the best practices in the design, installation and operations of IXPs include:

**i. Adoption of a virtual IXP model**

This consists of each IXP peering with other IXPs over arranged transit to peering points with each IXP. Some of the advantages of this model include low operational costs, ease of implementation and cost effectiveness, among others. It also eases the implementation of regional IXPs.

**ii. Adoption of a passive-active network mode model**

This consists of each IXP peering with other IXPs and being both a passive and active network. An active network mode eases traffic path modeling.

**iii. Gradual growth**

By starting small, an IXP will steadily build capacity, enhance trust, promote IXP services and gradually refine its operating model.