

# SANOG – 42 : Panel for IXP

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- Moderator – Flex Optix – Ex APNIC

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- IXP Board Member - Cybernet

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- Government - PTA

Naveed ul Haq

- Internet Society (ISOC)

Syed M. Shoaib

- PTCL – DEC-IX





# Panel Discussion on IXPs in Pakistan

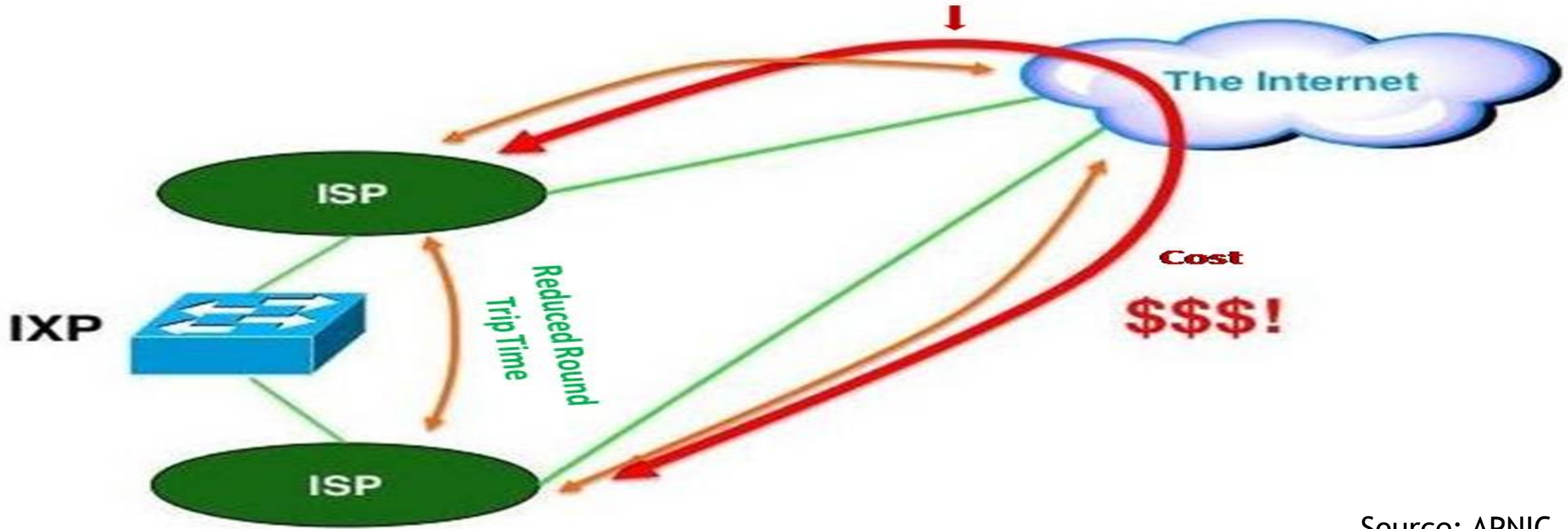
Ahmed Bakht Baloch - Director Cyber Security PTA



# IXP: What it is ?

## Internet Exchange Points

**Delayed Round Trip Time**



Source: APNIC

# Comparison of Traffic Latency

S. No.	Test From	Round Trip time for locally hosted websites								
		International Route	Through IXP							
			Cybernet	Multinet	Nayatel	PERN	PTCL	Telenor	Wateen	Wi-Tribe
1	Cybernet	104 ms	--	20 ms	1 ms		24 ms	1 ms	4 ms	1 ms
2	Multinet	130 ms	2 ms	--	2 ms	1 ms	2 ms	1 ms	6 ms	3 ms
3	Nayatel	102 ms	4 ms	20 ms	--	1 ms	4 ms	2 ms	5 ms	1 ms
4	PERN	107 ms	4 ms	20 ms	1 ms	--	6 ms	1 ms	7 ms	3 ms
5	PTCL	103 ms	4 ms	22 ms	2 ms	3 ms	--	1 ms	5ms	1 ms
6	Telenor	107 ms	4 ms	22 ms	2 ms	3 ms	4 ms	--	9 ms	8 ms
7	Wateen	144 ms	15 ms	25 ms	6 ms	6 ms	7 ms	7 ms	--	31 ms
8	Wi-Tribe	107 ms	4 ms	24 ms	4 ms	29 ms	4 ms	27 ms	29 ms	--



# Volunteer Working Groups

Working Group	Title	Headed by
WG-1	<b>Assessment of establishing IXP and way forward for establishing IXP</b>	Dr. Amir Qayyum (MAJU)
WG-2	<b>Identifying the benefits of IXP, and making recommendations for the respective public/private organizations to achieve these benefits</b>	Dr. Ihsan Qazi (LUMS)
WG-3	<b>Analyze commercial aspects of small and large ISPs</b>	Dr. Saad Qaiser (NUST)
WG-4	<b>Selection of acceptable venue</b>	Mr. Wasi Ullah Khan DG, PTA
WG-5	<b>Relevant data collection through concerned organizations</b>	Dr. Zartash Uzmi (LUMS)





# Recommendations from Working Groups

**Independent  
Board of  
Governors**

**Neutral Venue like  
HEC and PITB**

**IXPs at  
Islamabad,  
Karachi and  
Lahore**

**Fee charging  
mechanism  
Encourage local  
hosting**

# Benefits of IXP Identified by Working Groups

**Lower Latency and Better User Experience**

**Improved Security**

**Cost Savings**

**Local Content Hosting and Content Generation**

**Availability of services in case of disruption of International bandwidth**

# Board Of Governors

Regulator	-	Mr. Wasi Ullah Khan	-	PTA
Bandwidth Providers-		Mr. Amer Tufail	-	TWA
ISPs	-	Mr. Maroof Shahani	-	Cybernet
Academia	-	Dr. Zartash Uzmi	-	LUMS
Hosting Site	-	Vacant	-	HEC
Cellular Mobile Operators -		Farhan Haider	-	Telenor
ISOC Islamabad Chapter-		Dr. Amir Qayyum	-	CUST/ MAJU
Secretariat		Ahmed Bakht	-	PTA





# Current IXPs in Pakistan (Non Commercial)

Islamabad (HEC)	Karachi (HEC)	Lahore (PITB)
Cybernet	Connect	Brain Net
HEC	Cybernet	Cybernet
Multinet	GCS	KK Networks
Nayatel	Multinet	Multinet
PTCL / Ufone	PERN	Nexlinx
Telenor	Satcom	PITB
Transworld	Telenor	SIGN IN
Virtury	TWA	TWA
Wateen	Connect	Wateen
Wi-Tribe		Web concepts
Worldcall		WIDE Project Japan
		Ylinx



# PTCL – DEC-IX

DE-CIX and PTCL partner to establish Internet Exchange in Pakistan

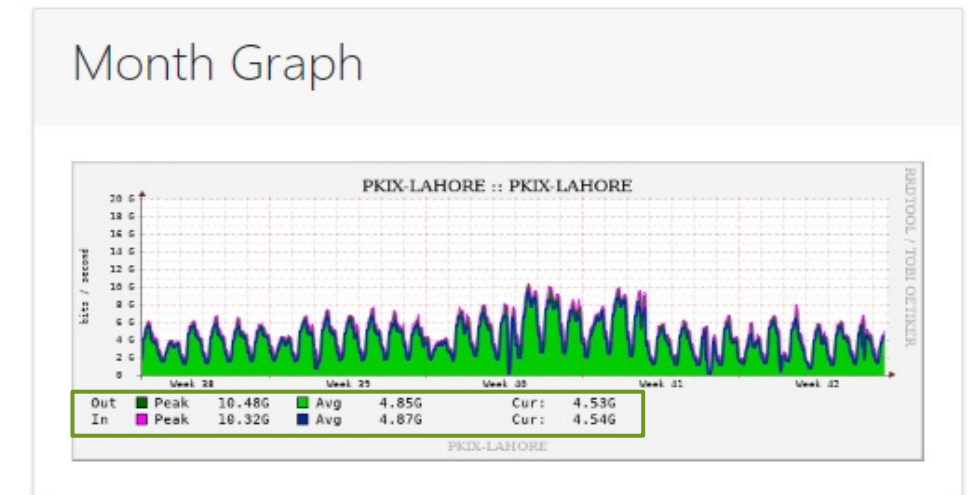
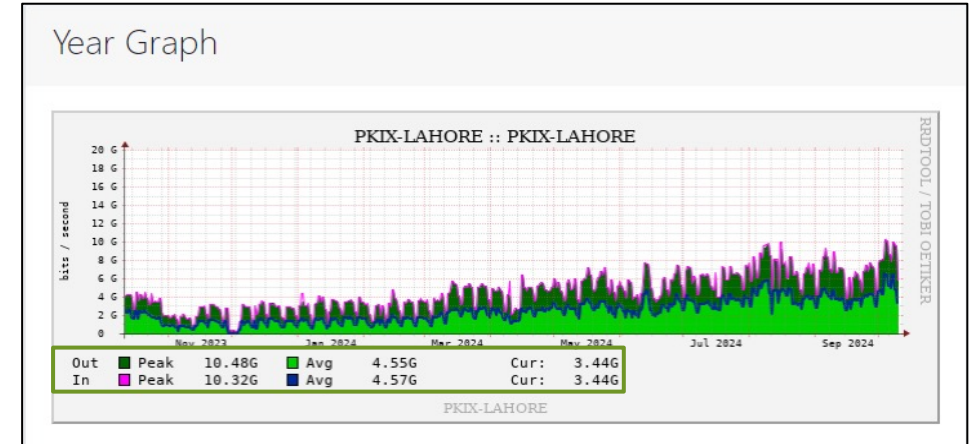


DE-CIX and PTCL partner to establish Internet Exchange in Pakistan



# IXP Traffic – Lahore

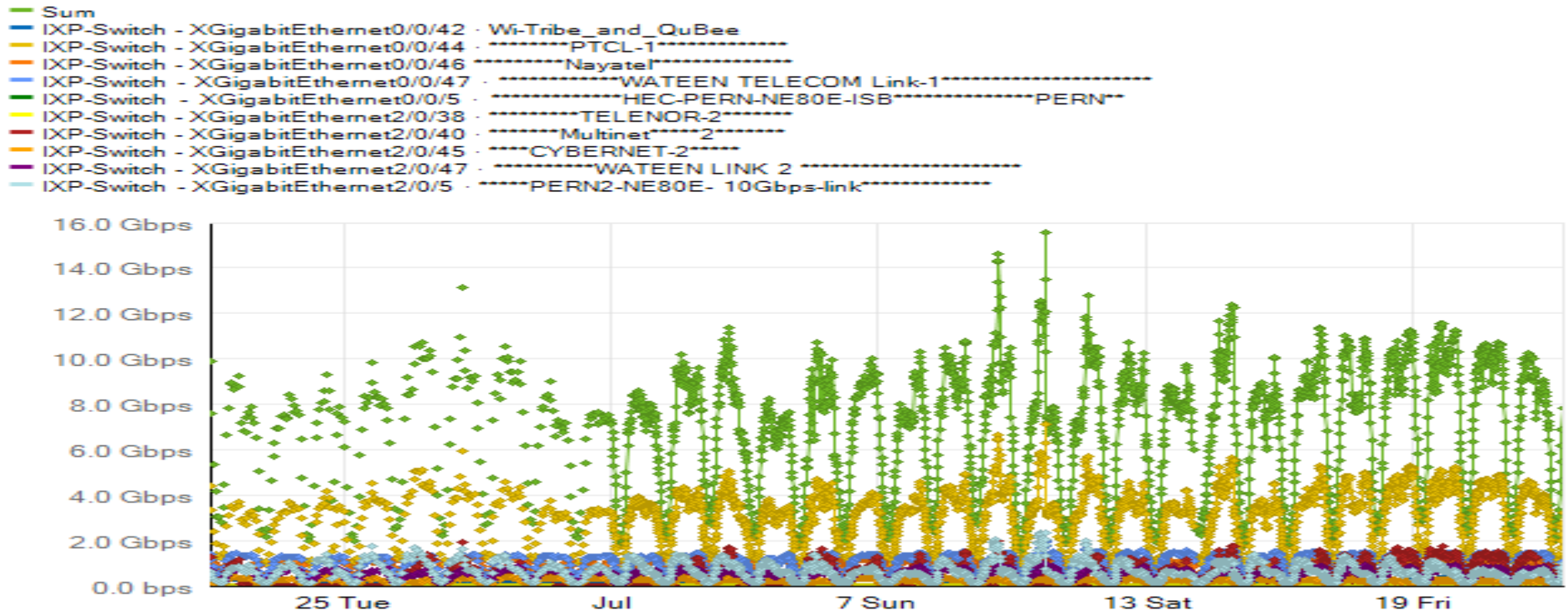
Sr.no	IXP	Transmit	Receive
1	Nexlinx	<p><b>5 popular CDNs shared by KK Networks</b></p>	
2	Web Concepts		
3	KKNETWORK		
4	Wateen Telecom		
5	Multinet Pakistan Pvt. Ltd.		
6	Ylinx	437 M	38 M
7	Punjab Information Technology Board	<p><b>M Root Server APNIC – Japan Root Server</b></p>	
8	WIDE Project Japan		
9	Transworld Enterprise Services		
10	Sign In Pvt Ltd		
11	Brain Telecommunication	0 M	0 M





# IXP Traffic – Islamabad Pre-Covid

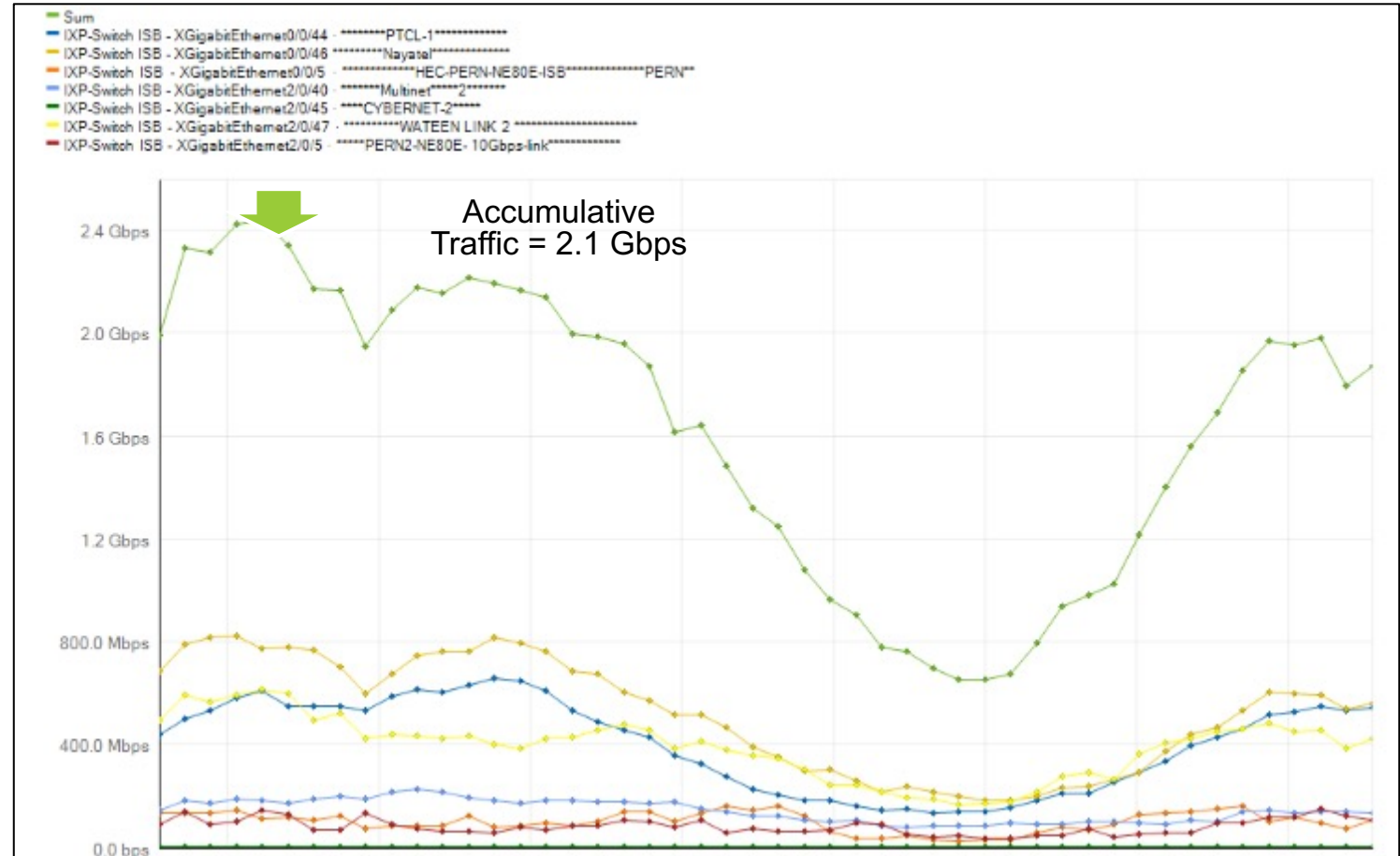
**Interface Aggregate Chart - Average bps InOut**  
Last 30 Days



# IXP Traffic – Islamabad Current

Sr.no	Top Interfaces by Traffic	RECEIVE	TRANSMIT
1	Virtury	369.018 Mbps	251.824 Mbps
2	Nayatel	324.744 Mbps	267.876 Mbps
3	WATEEN	243.807 Mbps	145.857 Mbps
4	TELENOR	103.734 Mbps	198.917 Mbps
5	PERN	109.025 Mbps	132.915 Mbps
6	Multinet	96.773 Mbps	107.025 Mbps
7	PTCL	27.187 Mbps	247.548 Mbps

Sr.no	Top NetFlow Sources % Utilization	RECEIVE	TRANSMIT
1	Virtury	4%	2%
2	Nayatel	3%	2%
3	WATEEN	3%	1%
4	TELENOR	1%	2%
5	PERN	1%	1%
6	Multinet	1%	1%
7	PTCL	1%	1%
8	Transworld	1%	0%



# Supporting International Organizations

## **ISOC**

Capacity Building, Logistics and Technical Support

## **APNIC**

Capacity Building, Logistics and Technical Support

## **JPRS**

Deployment of M-Root Server

## **NSRC**

Capacity Building





# Supporting Local Organizations

**Higher Education Commission (HEC)**

**Punjab IT Board (PITB)**

**Cybernet**

**Nexlinx**

**KK Networks**

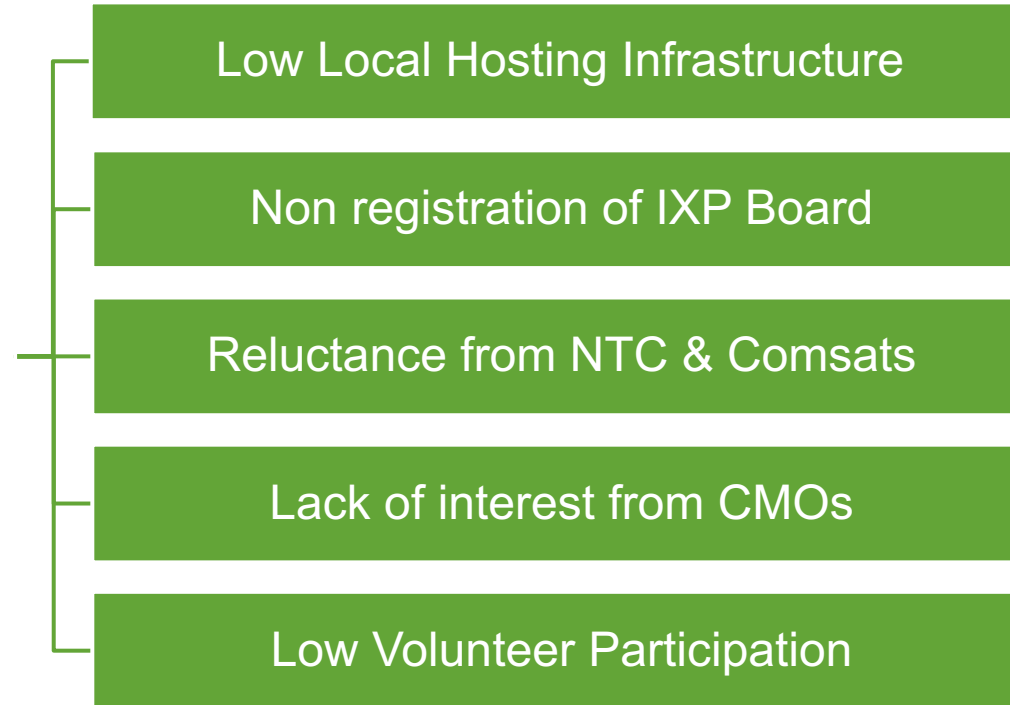
**Nayatel**



# IXPs in the Region

S. No.	Country	Year of 1st IXP	No. of IXPs	Largest IXP details	
				No. of Participants	Peak Traffic
1	India	2014	33	341	2.87 T
2	Iran	2016	4	44	2.88 T
3	Russia	1995	43	455	4.99 T
4	Bangladesh	2004	6	79	65 G
5	Nepal	2002	2	50	15.5 G
6	UAE	2012	2	70	265 G
7	Sri Lanka	2001	1	3	Not Active
8	Afghanistan	2018	1	20	920 M
9	Pakistan	2017	3	11	10 G

# Challenges



# Way Forward

Compulsory  
Participation  
through  
Regulation

Integration of  
CDNs through  
IXPs

Campaign for  
IXP  
Participation

Deployment  
of Root Mirror  
Servers at  
each IXP

Integration  
with  
PeeringDB

Encourage  
Local Hosting





THIS IS JUST THE BEGINNING

