



Fixed Broadband Quality of Service (QoS) Surveys

Network End Surveys

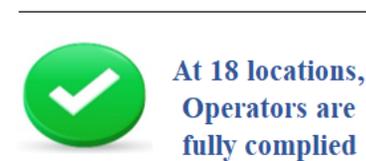
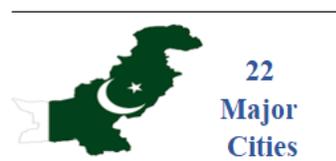
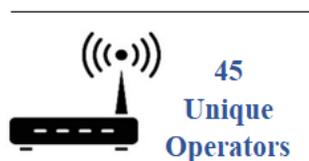
Quarter-02 2025

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1. Executive Summary

Pakistan Telecommunication Authority (PTA) has carried out Quality of Service (QoS) Survey of **45** x unique operators in **22** x major cities of Pakistan during 2nd Quarter 2025. During the survey, the performance of fixedline broadband operators have been assessed in accordance with the Fixedline Broadband Regulation, 2022. Operator wise & Citi wise summary of operators are mentioned below:



Operator Wise – Compliance Status

Sr No.	Company Name	City	Overall Score	Percentage Compliance (%)	Compliance Status
1	Net Gate	Rawalpindi	5	83.33	→
2	Air Communication	Rawalpindi	3	50.00	↓
3	Hajweri Network	Rawalpindi	3	50.00	↓
4	Khan Telcom	Rawalpindi	3	50.00	↓
5	Netpoint IT	Kahuta	5	83.33	→
6	CyberNet	Sahiwal	6	100.00	↑
7	Connect Communication	Sahiwal	6	100.00	↑
8	Get Links	Sahiwal	6	100.00	↑
9	New Pak Cable	Faisalbad	5	83.33	→
10	Sulehira Wireless	Faisalbad	5	83.33	→
11	Cube XS	Karachi	6	100.00	↑
12	PSEB	Karachi	5	83.33	→
13	Nexlinks	Karachi	6	100.00	↑
14	Leo Net	Karachi	3	50.00	↓
15	Fiber Link	Karachi	3	50.00	↓

16	PTCL	Peshawar	5	83.33	→
17	COMSAT	Peshawar	6	100.00	↑
18	FBB	Peshawar	5	83.33	→
19	NBB	Peshawar	6	100.00	↑
20	Nexlinks	Peshawar	6	100.00	↑
21	Skysuper	Peshawar	5	83.33	→
22	NayaTel	Peshawar	5	83.33	→
23	SmartMultimedia	Lahore	6	100.00	↑
24	Akbar Global	Lahore	6	100.00	↑
25	CyberNet	Lahore	6	100.00	↑
26	Tulu-e-subha	Lahore	6	100.00	↑
27	ST Networks	Lahore	6	100.00	↑
28	Multinet	Sukkur	5	83.33	→
29	CMPak	Sukkur	6	100.00	↑
30	Clickset	Sukkur	5	83.33	→
31	CyberNet	Sukkur	5	83.33	→
32	Netsol	Shikarpur	5	83.33	→
33	Global Expert	Abbotabad	5	83.33	→
34	New Millenium	Haripur	5	83.33	→
35	Pace Telecom	Haripur	5	83.33	→
36	PTCL	Havelian	4	66.67	↓
37	5G Wifi Comm	Havelian	4	66.67	↓
38	Air Max	Mansera	5	83.33	→
39	CyberNet	Mansera	5	83.33	→
40	Sani BB	Rawlakot	6	100.00	↑
41	SB Comm	Rawlakot	3	50.00	↓
42	Classic BroadBand	Hajira	3	50.00	↓
43	Way Link	Bhimber	4	66.67	↓
44	Nasttec	Mirpur	3	50.00	↓
45	Brilliant	Quetta	5	83.33	→
46	Connect	Quetta	5	83.33	→
47	CyberNet	Quetta	6	100.00	↑
48	NTC	Quetta	3	50.00	↓
49	Clickset	Quetta	6	100.00	↑
50	Ultra Link	RYK	3	50.00	↓
51	S.B Link	RYK	6	100.00	↑
52	One Click	Multan	3	50.00	↓
53	Javeed Net	Layyah	4	66.67	↓
54	PTCL	Hub	5	83.33	→
55	NTC	Hub	0	0.00	↓

City Wise – QoS KPIs Compliance Status

City	Operator Name	Network Availability Core Nodes >=99.9%		Network Availability - Access Nodes >=99%		RTT - Local Network Latency <= 40msec		RTT - International Segment - Terrestrial <= 110msec		Bandwidth Utilization<=80%		Jitter<=15msec	
		Obtained %	Compliance (Y/N)	Obtained %	Compliance (Y/N)	Obtained %	Compliance (Y/N)	Obtained %	Compliance (Y/N)	Obtained %	Compliance (Y/N)	Obtained %	Compliance (Y/N)
Rawalpindi	Net Gate	100.00	Y	100.00	Y	3.45	Y	44.20	Y	82.26	N	2.85	Y
Rawalpindi	Air Comm	97.33	N	97.33	N	0.20	Y	38.50	Y	100.00	N	1.71	Y
Rawalpindi	Hajweri	96.67	N	96.67	N	2.25	Y	41.30	Y	100.00	N	0.52	Y
Rawalpindi	KhanTel	98.80	N	98.80	N	0.00	Y	39.80	Y	92.21	N	3.04	Y
Kahuta	Netpoint IT	99.98	Y	99.98	Y	2.80	Y	32.15	Y	100.00	N	3.09	Y
Sahiwal	CyberNet	100.00	Y	100.00	Y	1.40	Y	41.30	Y	80.00	Y	4.17	Y
Sahiwal	Connect	100.00	Y	99.90	Y	14.35	Y	40.45	Y	71.00	Y	0.67	Y
Sahiwal	GetLinks	100.00	Y	100.00	Y	1.00	Y	35.05	Y	63.00	Y	1.34	Y
Faisalabad	NewPakCable	100.00	Y	100.00	Y	2.05	Y	35.05	Y	98.70	N	2.87	Y
Faisalabad	SulehiraWireless	100.00	Y	100.00	Y	3.65	Y	33.95	Y	88.33	N	12.31	Y
Karachi	CubeXS	100.00	Y	100.00	Y	1.00	Y	61.55	Y	2.00	Y	4.25	Y
Karachi	PSEB	99.83	N	99.92	Y	1.00	Y	13.85	Y	45.00	Y	4.71	Y
Karachi	Nexlinks	100.00	Y	100.00	Y	1.15	Y	12.95	Y	57.00	Y	4.31	Y
Karachi	LeoNet	Not Complied	N	Not Complied	N	1.30	Y	13.50	Y	100.00	N	4.14	Y
Karachi	FiberLink	Not Complied	N	Not Complied	N	5.30	Y	13.00	Y	90.00	N	5.14	Y
Peshawar	PTCL	100.00	Y	99.00	Y	2.50	Y	45.70	Y	51.00	Y	16.30	N
Peshawar	COMSAT	100.00	Y	100.00	Y	1.75	Y	13.00	Y	70.00	Y	1.00	Y
Peshawar	FBB	100.00	Y	100.00	Y	1.00	Y	45.10	Y	100.00	N	1.00	Y
Peshawar	NBB	100.00	Y	100.00	Y	2.00	Y	45.90	Y	53.50	Y	1.50	Y
Peshawar	Nexlinks	100.00	Y	100.00	Y	5.65	Y	26.75	Y	60.47	Y	1.00	Y
Peshawar	Sky Super	100.00	Y	99.93	Y	7.50	Y	49.05	Y	90.00	N	15.00	Y
Peshawar	NayaTel	100.00	Y	100.00	Y	2.30	Y	37.10	Y	92.00	N	1.78	Y

Lahore	Smart Multimedia	100.00	Y	100.00	Y	1.10	Y	29.50	Y	3.54	Y	0.77	Y
Lahore	Akbar Global	100.00	Y	100.00	Y	3.75	Y	34.25	Y	3.54	Y	0.39	Y
Lahore	CyberNet	100.00	Y	100.00	Y	3.20	Y	32.90	Y	73.00	Y	0.61	Y
Lahore	Tulu-e-subha	100.00	Y	100.00	Y	2.00	Y	32.05	Y	20.52	Y	10.28	Y
Lahore	ST Networks	100.00	Y	100.00	Y	0.90	Y	28.05	Y	51.56	Y	0.34	Y
Sukkur	Multinet	100.00	Y	97.50	N	7.10	Y	25.10	Y	55.00	Y	14.14	Y
Sukkur	CMPak	100.00	Y	99.99	Y	11.40	Y	37.35	Y	48.00	Y	7.44	Y
Sukkur	Clickset	100.00	Y	100.00	Y	1.00	Y	21.15	Y	97.00	N	8.37	Y
Sukkur	CyberNet	100.00	Y	100.00	Y	7.05	Y	19.40	Y	81.00	N	1.21	Y
Shikarpur	Netsol	100.00	Y	99.76	Y	6.75	Y	17.90	Y	97.50	N	11.53	Y
Abbotabad	Global Expert	100.00	Y	99.94	Y	4.65	Y	52.35	Y	46.40	Y	30.23	N
Haripur	New Millenium	100.00	Y	100.00	Y	0.25	Y	44.10	Y	88.13	N	0.62	Y
Haripur	PaceTel	100.00	Y	100.00	Y	9.30	Y	41.45	Y	91.11	N	3.28	Y
Havelian	PTCL	100.00	Y	97.01	N	1.50	Y	43.65	Y	80.52	N	4.40	Y
Havelian	5G Wifi Comm	100.00	Y	100.00	Y	2.00	Y	129.40	N	83.33	N	2.61	Y
Mansera	AirMax	100.00	Y	100.00	Y	1.45	Y	108.70	Y	100.00	N	4.16	Y
Mansera	CyberNet	100.00	Y	100.00	Y	3.05	Y	36.90	Y	84.21	N	13.19	Y
Rawlakot	Sani BB	99.99	Y	99.00	Y	3.00	Y	56.20	Y	44.00	Y	5.19	Y
Rawlakot	SB Comm	99.99	Y	99.99	Y	197.05	N	49.55	Y	86.00	N	19.52	N
Hajira	Classic BB	94.00	N	94.00	N	0.15	Y	67.10	Y	94.00	N	2.12	Y
Bhimber	Way Link	100.00	Y	100.00	Y	37.00	Y	202.95	N	77.00	Y	48.78	N
Mirpur	Nasttec	100.00	Y	72.00	N	4.70	Y	86.15	Y	100.00	N	19.98	N
Quetta	Brilliant	100.00	Y	100.00	Y	0.00	Y	27.50	Y	95.00	N	0.55	Y
Quetta	Connect	100.00	Y	100.00	Y	27.00	Y	48.35	Y	93.47	N	0.99	Y
Quetta	CyberNet	100.00	Y	100.00	Y	2.40	Y	48.00	Y	45.00	Y	0.36	Y
Quetta	NTC	100.00	Y	80.50	N	12.40	Y	165.05	N	100.00	N	11.33	Y
Quetta	Clickset	100.00	Y	99.96	Y	8.75	Y	62.50	Y	35.00	Y	0.97	Y
RYK	Ultra Link	Not Complied	N	Not Complied	N	14.00	Y	42.00	Y	91.18	N	4.00	Y
RYK	S.B Link	99.92	Y	99.91	Y	5.00	Y	27.00	Y	73.28	Y	9.00	Y
Multan	One Click	99.92	Y	99.68	N	14.00	Y	53.00	Y	87.73	N	16.00	N
Layyah	Javeed Net	99.72	N	Not Complied	N	2.00	Y	44.00	Y	70.22	Y	1.00	Y
Hub	PTCL	100.00	Y	99.89	Y	39.95	Y	57.75	Y	68.00	Y	76.00	N
Hub	NTC	Not Complied	N	Not Complied	N	91.50	N	137.65	N	Not Complied	N	121.00	N

Note: Red Highlighted KPIs are non-complied.

2. Background

The **Fixedline Quality of Service (QoS)** surveys for fixedline operators are conducted to assess the performance, reliability, and user satisfaction of fixed-line broadband services across Pakistan. This survey aims to understand how well service providers meet the regulatory benchmarks and consumer expectations for internet speed, connectivity stability, and customer support. As fixed-line broadband plays a crucial role in both personal and business communication, ensuring high-quality service is critical for the continued growth of digital infrastructure.

These Surveys across Pakistan are governed by the "Fixed Broadband Quality of Service Regulations, 2022." The regulations were enacted to set **Key Performance Indicators (KPIs)** that BSPs must meet to ensure reliable and high-quality fixed broadband services across Pakistan. These KPIs serve as measurable benchmarks to assess the service quality delivered to customers, including aspects such as network uptime, data throughput, latency, jitter, packet loss, and customer service responsiveness.

3. Scope

QoS surveys are crucial tools for measuring the performance of broadband networks in Pakistan, ensuring service providers adhere to high standards, and continually improving the availability and quality of internet services for consumers. These surveys cover all fixed broadband technologies in use, such as xDSL, DSL, copper and fiber optics technologies. The regulations apply to all BSPs operating in Pakistan, requiring them to maintain **minimum service standards** at various levels of their networks—from access nodes to core nodes.

These surveys also provide critical data on network performance, helping identify gaps and inefficiencies in service delivery. This helps regulatory authorities enforce service standards and ensure BSPs meet the requirements for customer satisfaction.

By regularly testing and publishing the results of broadband services, the PTA promotes **transparency**. BSPs are held accountable for their network performance, fostering competition and driving improvements in broadband services.

By gauging factors such as **download/upload speeds**, network latency, and customer service efficiency, the surveys enable BSPs to improve their networks, which directly impacts the **user experience**.

4. Methodology

The **Quarter 02 2025 surveys** started from April 1, 2025 till June 30, 2025. In the surveys, **45 x major BSPs** are inspected, operating in **22 x cities** across Pakistan. These cities are selected based on their high subscriber density, ensuring that the surveys focused on areas where the quality of service would have the most significant impact. The surveyed cities include:

- i. Lahore
- ii. Karachi
- iii. Rawalpindi
- iv. Kahuta
- v. Faisalabad
- vi. Sahiwal
- vii. Peshawar
- viii. Abbottabad
- ix. Multan
- x. Quetta
- xi. Sukkur
- xii. Shikarpur
- xiii. Mirpur
- xiv. Haripur
- xv. Havelian
- xvi. Mansera
- xvii. Rawlakot
- xviii. Hajira
- xix. Bhimber
- xx. Rahim Yar Khan
- xxi. Layyah

xxii. Hub

The surveys are conducted by the **Enforcement Division team** of the PTA at the **Network Operation Centers (NOCs)** of each BSP. This method allowed for real-time assessments of network performance across various parameters, offering a detailed insight into the performance of fixed broadband networks at a deeper, technical level.

5. Parameters Monitored and Survey Results

Following key network performance parameters are checked during the surveys:

- i. Bandwidth Utilization
- ii. Network Availability
 - a) Core Nodes
 - b) Access Nodes
- iii. Network Latency / Round Trip Time (RTT)
 - a) Local Network Latency
 - b) International Segment – Terrestrial
- iv. Jitter

Below mentioned are details of Network level parameters measurement details along with survey results:

i. Bandwidth Utilization

This measures how effectively the network's capacity is being used. It is the ratio of peak utilization of bandwidth to the total bandwidth available.

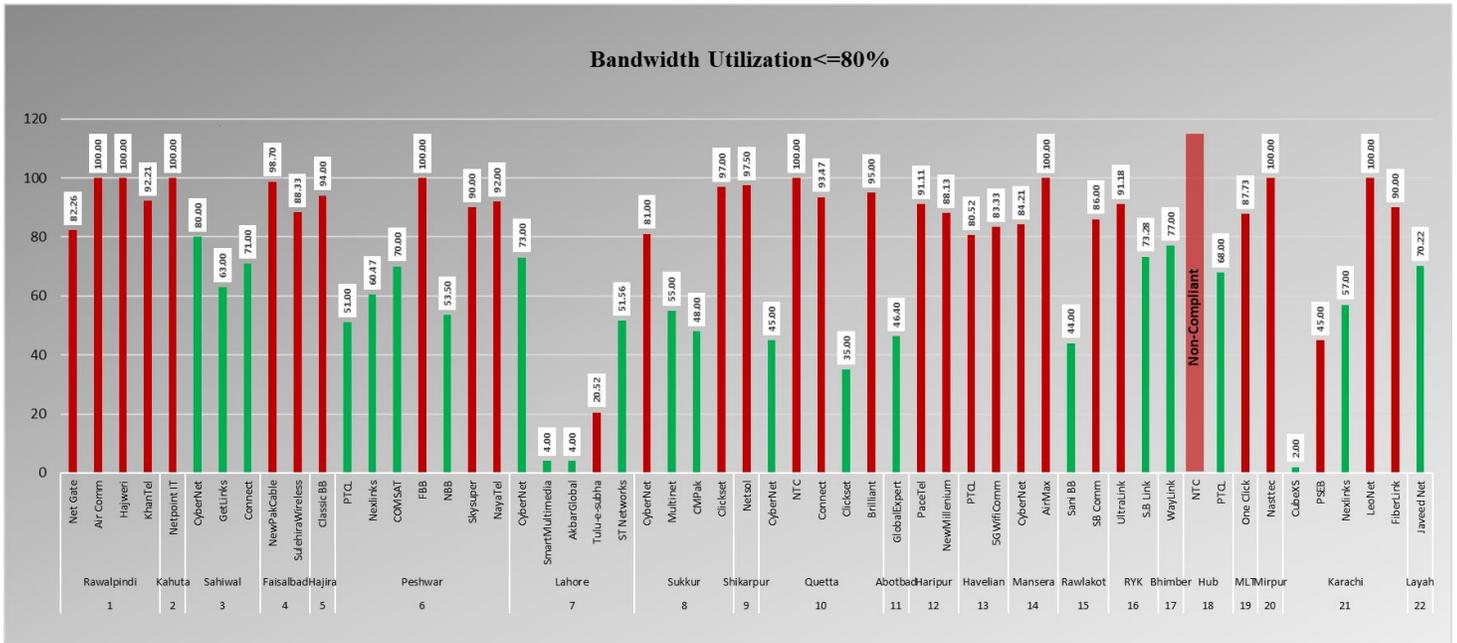
Benchmark:

The bandwidth utilization should be < **80%**

Measurement

BSPs are required to run "Daily" MRTG (Multi Router Traffic Grapher) Graphs at 5-minute average during peak hours. The highest bandwidth utilization is the peak utilization level for each month. BSPs are required to run "Monthly" MRTG Graphs to obtain average bandwidth utilization for each month for their network. BSPs should closely monitor their links and the loading level shall not exceed.

Bandwidth Utilization = (Peak Utilization level of the network / Total bandwidth available) x 100%



Results

Bandwidth utilization is not complied for majority of the operators and is exceeding above 80%.

ii. Network Availability

Network Availability is the measure of the degree to which the network (Access and Core) is operable and not in a state of failure or outage at any point of time.

It measures the total downtime of the network, including the ATM/IP switches, multiplexers, routers, e-mail facilities (if provided) and connection to Internet backbone over a month. All scheduled downtime for the purposes of maintenance and upgrading of the network system will be excluded from the calculation.

Benchmark

Network Availability for:

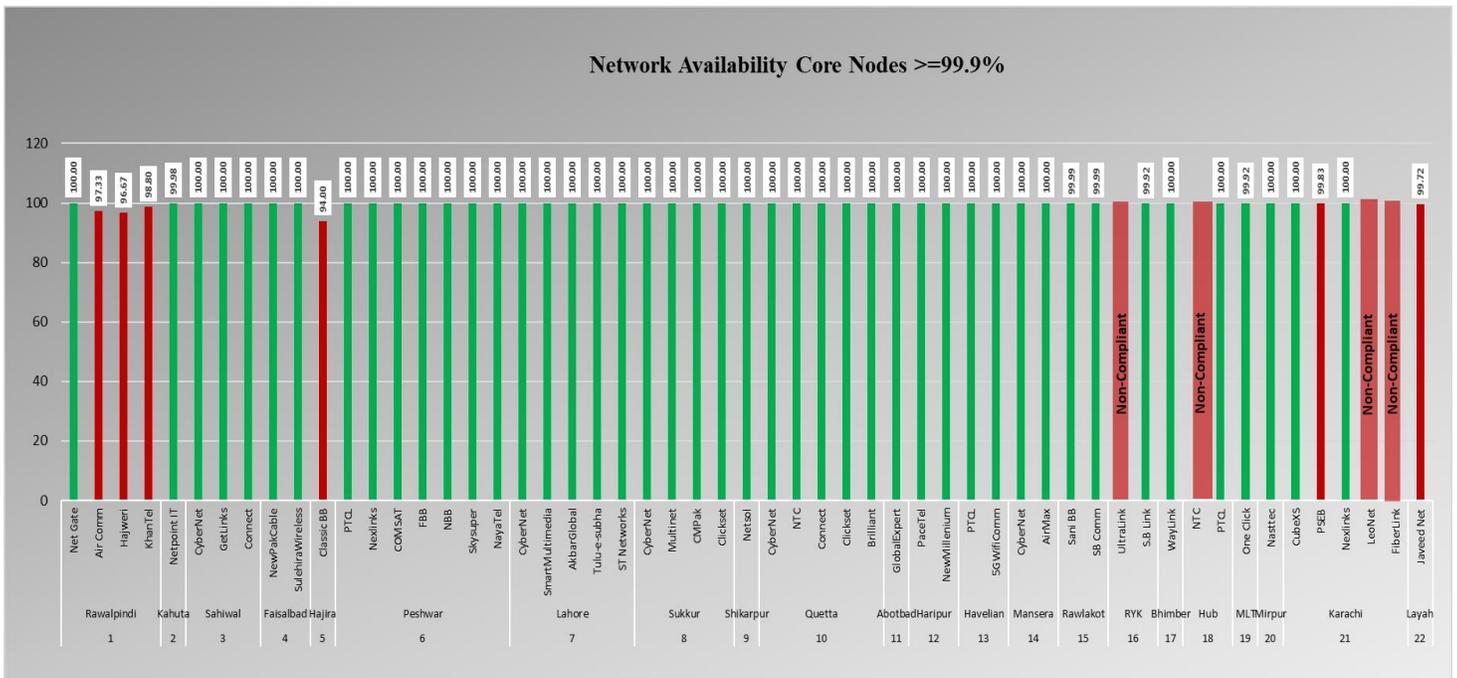
- a) Access Nodes should be > 99% and for;
- b) Core Nodes should be > 99.9%

Measurement

Network Availability = (Total operational minutes - Total minutes of service downtime) / (Total operational minutes) x 100%

a) Network Availability – Core Nodes

Core Nodes include BRAS, Metro Ethernet Switches, routers etc. along with their Operational Minutes and Down Time Minutes.



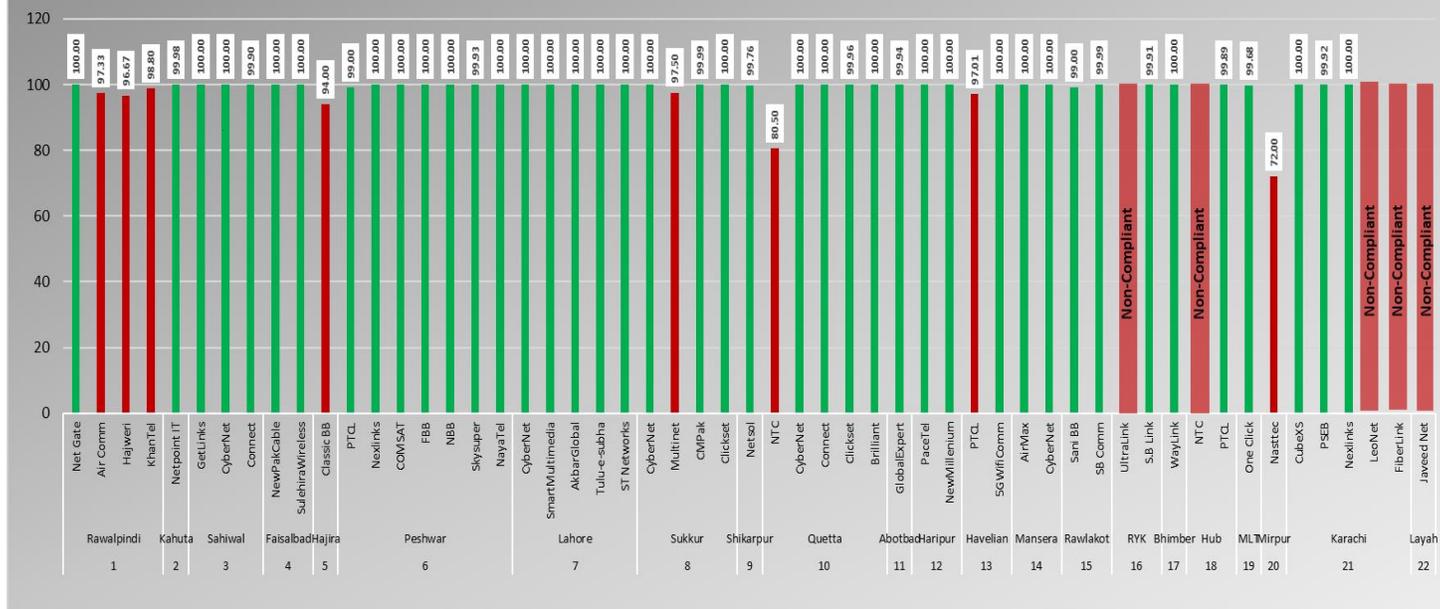
Results

Majority of operators comply with KPI i.e. Network Availability of Core Node. However, Air Communication, Hajwari Network, Khan Telecom (Lahore), Classic broadband (Hajira), Ultra Link (Rahim Yar Khan), NTC (Hub), PSEB, Leo Net, Fiber Link (Karachi), Jawad Net (Layyah), are not complied with KPI's threshold.

b) Network Availability – Access Nodes

Access Nodes include MSAGs/MSANs, DSLAMs, ONUs, etc. along with their Operational Minutes and Down Time Minutes.

Network Availability - Access Nodes $\geq 99.0\%$



Results

Majority of operators comply with KPI i.e. Network Availability of Access Node. However, Air Communication, Hajweri Network, Khan Telecom (Lahore), Classic broadband (Hajira), Multinet (Sukkur), NTC (Quetta), PTCL (Havelian), Ultra Link (Rahim Yar Khan), NTC (Hub), Nasttec (Mirpur), Leo Net, Fiber Link (Karachi), Jawad Net (Layyah), do not comply with the KPI threshold.

iii. Network Latency / Round Trip Time (RTT)

Latency or Round Trip Time (RTT) is the measure of duration of round trip for a data packet between specific source and destination. It is used to measure the delay on a network at a given time. The greater the latency within a network, the longer it takes packets to reach their destination.

Benchmark

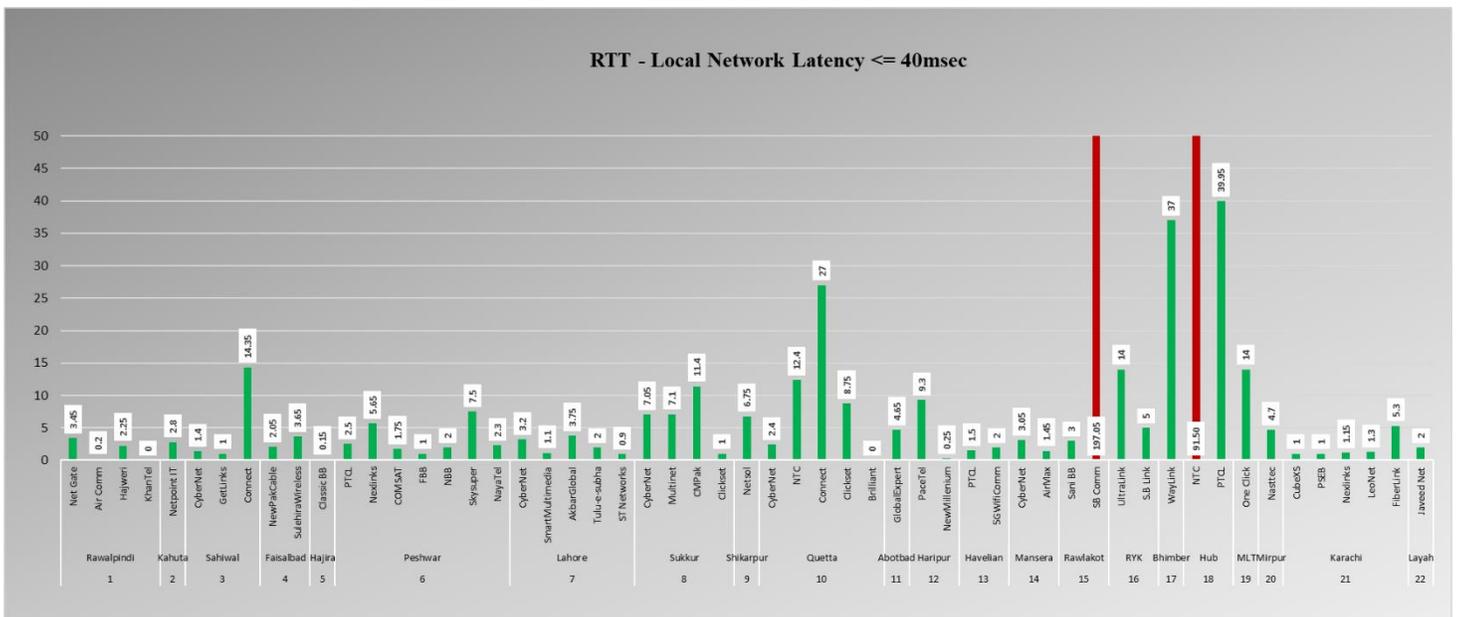
Network Latency in Segment	Threshold
Local Network Latency	=40 msec
International Segment – Terrestrial	=110 msec

Measurement

The RTT test shall be conducted using "**ping**" based on a minimum standard packet size of 32 bytes, and should be measured up to the edge node of the network, connected to the Internet cloud or any other server decided by the Authority.

a) Round Trip Time (RTT) – Local Network

For calculating the Local Network Latency, obtain IP address of BSP’s BRAS and run command “ping xxxx.xxxx.xxxx.xxxx –n 100” in DOS Prompt / mode. (xxxx here refers the IP address of the BRAS).



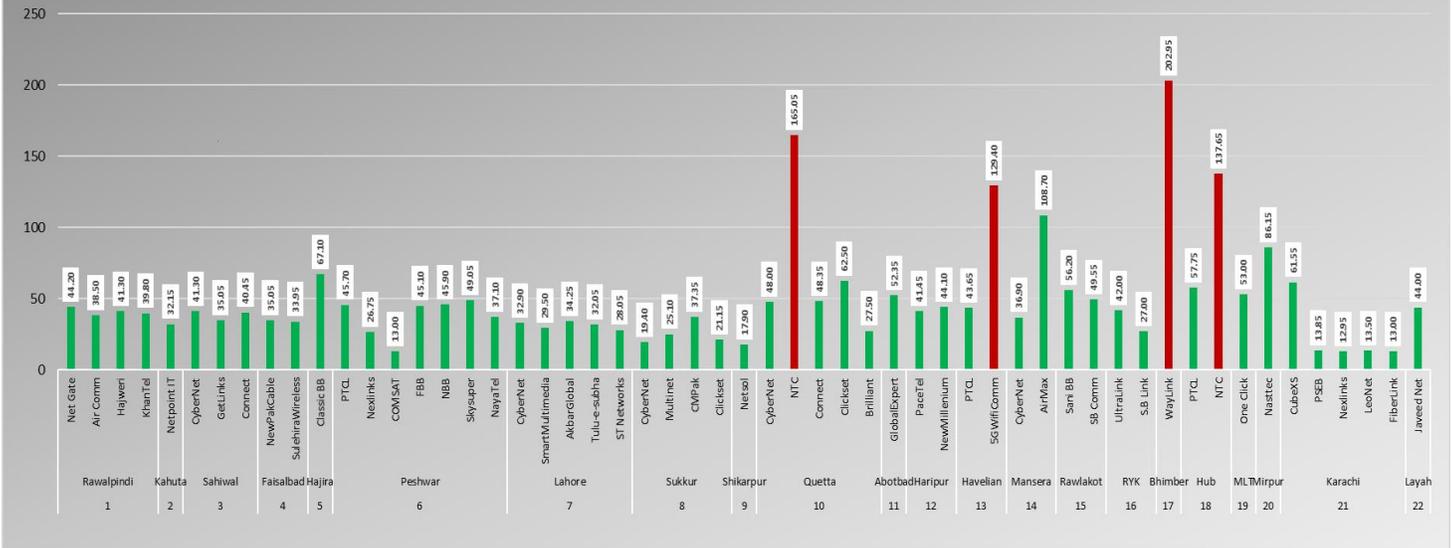
Results

Majority of operators comply with KPI i.e. Round Trip Time for Local Network. S.b Communication (Rawlakot), and NTC (Hub) do not comply with KPI threshold value.

b) Round Trip Time (RTT) – International Segment (Terrestrial)

For Calculating the International Segment – Terrestrial Segment: Run the following command “ping www.google.com –n 100” or any international known server as decided by the PTA team.

RTT - International Segment (Terrestrial) ≤ 110msec



Results

Majority of operators comply with KPI i.e. Round Trip Time for International Segment (Terrestrial Network). However, NTC (Quetta), 5G Wifi Communication (Havelian), Way Link (Bhimber), and NTC (Hub), do not comply and are exceeding their KPI threshold value.

iv. Jitter (msec)

A jitter is a variation in latency. High amounts of jitter cause packets to be delivered out of sequence. In a specific time window, jitter refers to the variation between the maximum delay and minimum delay.

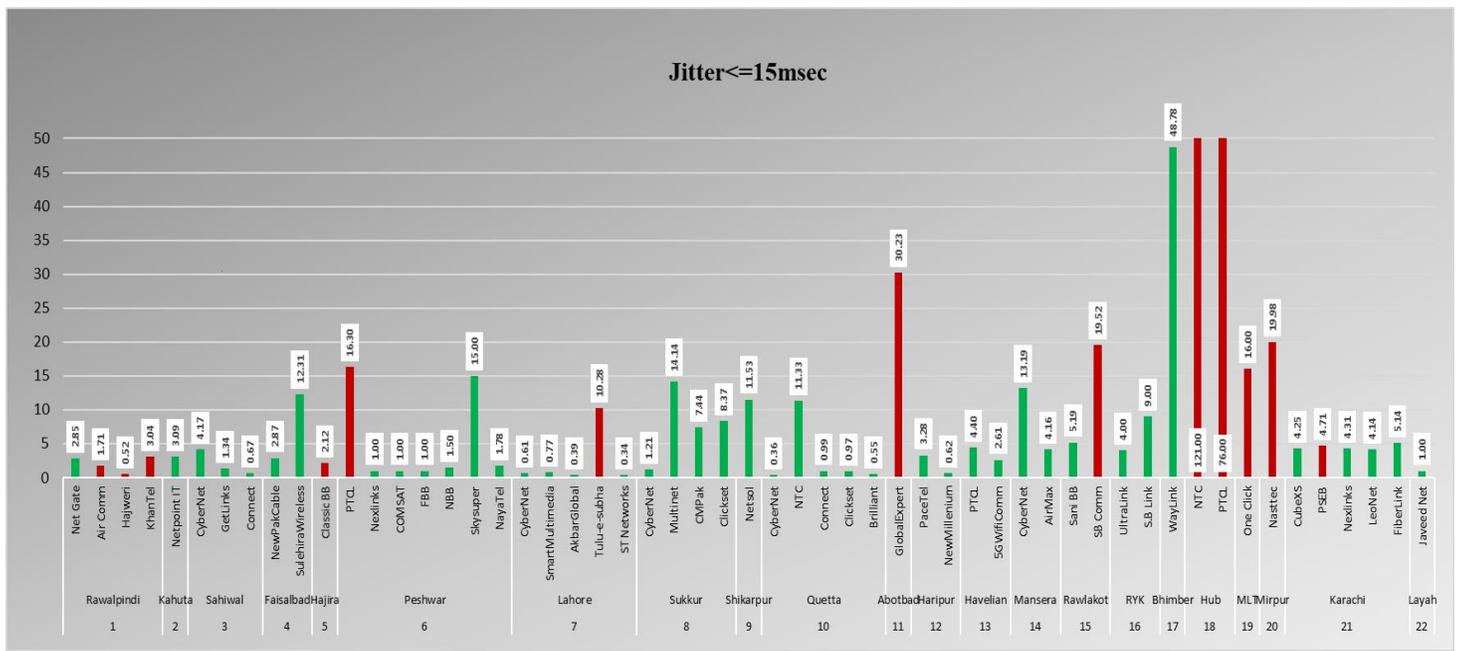
Benchmark

The Jitter should be < 15 msec

Measurement

The Jitter shall be calculated using 'ping'. The minimum samples shall be 100. If RTT avg is the average RTT, derived out of 100 samples, and RTT 1, RTT 2....RTT 100 are the RTT for individual packets then jitter shall be calculated as follows:

$$\text{Jitter (msec)} = X (\text{RTTavg} - \text{RTT}_k) / 100 \text{ (magnitude shall be used without *+/-' signs)}$$



Results

Majority of operators comply with KPI i.e. Jitter. However, Air Communication and Khan Telecom (Lahore), Classic broadband (Hajira), PTCL (Peshawar), Tulu-e-Subha (Lahore), Global Expert (Abbottabad), S.B Communication (Rawlakot), NTC & PTCL (Hub), Onr Click (Multan), Nasttec (Mirpur), PSEB (Karachi), do not comply and are exceeding their KPI threshold value.

6. KPIs Analysis

- [Bandwidth Utilization](#)

Network of majority of BSPs is found to be congested due to high bandwidth utilization especially during peak hours, which results in lower internet speeds for subscribers, affecting overall service quality and user experience.

- [Latency](#)

- On the **local segment**, high latency was observed in the networks of S.B Communication and NTC.
- On the **international segment**, latency was found to be significantly high for NTC, 5G Wifi Communication, and Way Link, indicating inefficiencies in international routing and network performance.

- **Jitter**

High for PTCL, Tulu-e-Subha, Global Expert, S.B Communication, NTC, One Click, and Nasttec, impacting real-time services such as video conferencing and online gaming.

- **Network Availability**

- For **Access Nodes**, network availability is below the threshold for Air Communication, Hajweri Network, Khan Telecom, Classic broadband, Multinet, NTC, PTCL, Ultra Link, Nasttec, Leo Net, Fiber Link, and Jawad Net (Layyah).
- For **Core Nodes**, network availability is below the threshold for Air Communication, Hajweri Network, Khan Telecom, Classic broadband, Ultra Link, NTC, PSEB, Leo Net, Fiber Link, Jawad Net (Layyah).

7. Conclusion

Most Broadband Service Providers (BSPs) failed to meet a critical Key Performance Indicator (KPI)—**Bandwidth Utilization**. High bandwidth utilization, particularly during peak traffic hours, frequently leads to reduced download and upload speeds, significantly degrading user experience and overall service quality. This issue highlights a pressing need for BSPs to optimize their network resources to ensure consistent and reliable performance for customers.

To address these concerns, non-compliant BSPs were formally notified and provided with detailed performance metrics, outlining their shortcomings in these KPIs. These metrics serve as a baseline for BSPs to identify gaps and implement targeted improvements. By optimizing bandwidth allocation, upgrading infrastructure, and refining traffic management strategies, providers can enhance compliance with performance standards, ultimately delivering a better user experience and upholding higher service quality benchmarks.