Fixed Broadband Quality of Service (QoS) Surveys

Network End Surveys

Quarter-03 2025

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1. Executive Summary

Pakistan Telecommunication Authority (PTA) has carried out Quality of Service (QoS) Survey of **66** x unique operators in **34** x major cities of Pakistan during 3rd Quarter 2025. During the survey, the performance of fixedline broadband operators have been assessed in accordance with the Fixedline Broadband Regulation, 2022. Operator wise & City wise summary of operators are mentioned below:

84 Locations Tested	66 Unique Operators	34 Major Cities	At 38 locations, Operators are fully complied

Operator Wise – Compliance Status

Sr No.	Company Name	City	Overall Score	Percentage Compliance (%)	Compliance Status
1	Multi City Broadband (Pvt.) Ltd.	Attock	6	100.00	⬆
2	Digital Plus Internet Services	Rawalpindi	6	100.00	⬆
3	The Professional Communications (Pvt.) Ltd.	Rawalpindi	6	100.00	⬆
4	Waylink (Pvt.) Limited	Rawalpindi	6	100.00	⬆
5	Laser Communication (Pvt.) Limited	Multan	6	100.00	⬆
6	Airmax (Pvt.) Ltd.	Haripur	3	50.00	⬇
7	Cyber Internet Services (Pvt.) Ltd	Haripur	5	83.33	➡
8	New Millennium Networks	Haripur	5	83.33	➡
9	Airmax (Pvt.) Ltd.	Abbottabad	4	66.67	⬇
10	Cyber Internet Services (Pvt.) Ltd	Abbottabad	6	100.00	⬆
11	Enigma Fibers	Abbottabad	5	83.33	➡
12	Global Xperts	Abbottabad	6	100.00	⬆
13	New Millennium Networks (Pvt.) Ltd	Abbottabad	4	66.67	⬇
14	Pace Telecom and Broadcasting (Pvt.) Ltd.	Abbottabad	5	83.33	➡

Sr No.	Company Name	City	Overall Score	Percentage Compliance (%)	Compliance Status
15	5GWifi Communication	Havelian	4	66.67	⬇
16	SCO	Gilgit	6	100.00	⬆
17	SCO	Astore	6	100.00	⬆
18	SCO	Chilas	6	100.00	⬆
19	SCO	Ghizer	6	100.00	⬆
20	SCO	Hunza	6	100.00	⬆
21	SCO	Skardu	6	100.00	⬆
22	SCO	Shigar	6	100.00	⬆
23	Dot 99 (Pvt.) Ltd	Karachi	5	83.33	➡
24	Fiber Beam (Pvt.) Ltd	Karachi	5	83.33	➡
25	Galaxy Technology	Karachi	6	100.00	⬆
26	Gemnet Enterprise Solutions (Pvt.) Ltd	Karachi	6	100.00	⬆
27	Logon Broadband Pvt Ltd	Karachi	5	83.33	➡
28	Mynet Broadband Pvt Ltd	Karachi	5	83.33	➡
29	Netsol Connect (Pvt.) Limited	Karachi	6	100.00	⬆
30	Broadband Business Ideas (Pvt.) Limited	Matiari	5	83.33	➡
31	Hyderabad Cable Communication (Pvt.) Limited	Hyderabad	6	100.00	⬆
32	Gull Technologies (Pvt.) Limited	Mirpur	5	83.33	➡
34	SCO	Mirpur	5	83.33	➡
34	Sky Telecom (Pvt.) Ltd.	Mirpur	5	83.33	➡
35	Wi Cloud (Pvt.) Ltd	Mirpur	5	83.33	➡
36	Gorsi Telecom (Pvt.) Limited	Kotli	6	100	⬆
37	Netpoint IT & Communication (Pvt.) Ltd.	Kotli	3	50.00	⬇
38	SCO	Muzaffarabad	5	83.33	➡
39	Kot Jamel Cable Network	Kot Jamel	3	50.00	⬇
40	Ittefaq Cable Network (Pvt.) Limited	Sehnsa	1	16.67	⬇
41	Burak Tech	Sukkur	5	83.33	➡
42	NTC	Sukkur	5	83.33	➡
43	PTCL	Sukkur	6	100.00	⬆
44	Wi-Fi Zone Enterprise (SMC-Pvt.)	Sukkur	6	100.00	⬆
45	Fiber Beam (Pvt.) Ltd	Khairpur	4	66.67	⬇

Sr No.	Company Name	City	Overall Score	Percentage Compliance (%)	Compliance Status
46	Galaxy Technology	Khairpur	4	66.67	⬇
47	Logon Broadband Pvt Ltd	Shikarpur	4	66.67	⬇
48	Tes Media	Shikarpur	6	100.00	⬆
49	Micro Tel (Pvt) Ltd	Sargodha	5	83.33	➡
50	Ultra Sky (Pvt.) Ltd	Sargodha	6	100.00	⬆
51	Gerry's Information Technology (Pvt.) Ltd.	Lahore	6	100.00	⬆
52	Master Communication (Pvt.) Limited	Lahore	6	100.00	⬆
53	Netcomm Networks	Lahore	6	100.00	⬆
54	Samz Broadband Networx (SMC-Pvt.) Ltd	Lahore	6	100.00	⬆
55	Sign In Pvt Ltd	Lahore	6	100.00	⬆
56	Sky Online (Pvt) Ltd	Lahore	6	100.00	⬆
57	Well Networks (Pvt.) Limited	Lahore	6	100.00	⬆
58	Z Com Networks (Pvt.) Limited	Lahore	6	100.00	⬆
59	NTC	Hub	0	0.00	⬇
60	PTCL	Hub	1	16.67	⬇
61	NTC	Peshawar	5	83.33	➡
62	Optix Pakistan (Pvt.) Ltd.	Peshawar	5	83.33	➡
63	Connect Communications (Pvt.) Ltd.	Mardan	5	83.33	➡
64	Pace Telecom and Broadcasting (Pvt.) Ltd.	Mardan	4	66.67	⬇
65	Brilliant Enterprise	Quetta	5	83.33	➡
66	CMPAK	Quetta	2	33.33	⬇
67	Speed Cable Network (Pvt.) Ltd	Quetta	6	100.00	⬆
68	Teznet (Pvt.) Ltd.	Quetta	3	50.00	⬇
69	Zahamit Tech (Pvt.) Limited	Quetta	4	66.67	⬇
70	Connect Communications (Pvt.) Ltd.	Bahawalpur	6	100.00	⬆
71	Comsats Internet Services	Multan	4	66.67	⬇
72	DuosLinks	Multan	5	83.33	➡
73	Getlinks	Multan	5	83.33	➡
74	Instacom	Multan	4	66.67	⬇
75	Laser Communication	Gujjar Khan	3	50.00	⬇
76	MISPL	Multan	5	83.33	➡

Sr No.	Company Name	City	Overall Score	Percentage Compliance (%)	Compliance Status
77	Prime Network	Multan	4	66.67	⬇
78	Telehouse Pvt Ltd	Multan	5	83.33	➡
79	Netpoint IT & Communication (Pvt.) Ltd.	Mian Channu	6	100.00	⬆
80	A.A Networks	Faisalabad	5	83.33	➡
81	City Dot Net	Faisalabad	6	100.00	⬆
82	McSol (Pvt.) Limited	Faisalabad	6	100.00	⬆
83	Orbit Internet Service Provider	Faisalabad	6	100.00	⬆
84	Xtreme Net (Pvt.) Ltd	Faisalabad	6	100.00	⬆

Legends:

- ⬆ --- All KPIs are complied

- ➡ --- Only one KPI is Non-complied

- ⬇ --- More than one KPIs are Non-complied

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)
Attock	Multi City Broadband (Pvt.) Ltd.	100.00	Y	99.97	Y	0.7	Y	44.6	Y	65.00	Y	3.12	Y
Rawalpindi	Digital Plus Internet Services	99.95	Y	99.95	Y	6.8	Y	38.35	Y	71.14	Y	1.18	Y
Rawalpindi	The Professional Communications (Pvt.) Ltd.	100.00	Y	100.00	Y	2.95	Y	36.55	Y	71.14	Y	1.18	Y
Rawalpindi	Waylink (Pvt.) Limited	100.00	Y	100.00	Y	3.75	Y	42.65	Y	50.22	Y	2.97	Y
Multan	Laser Communication (Pvt.) Limited	100.00	Y	100.00	Y	1	Y	34.45	Y	64.83	Y	3.11	Y
Haripur	Airmax (Pvt.) Ltd.	100.00	Y	100.00	Y	45.75	N	90.5	Y	Not Complied	N	130.7	N
Haripur	Cyber Internet Services (Pvt.) Ltd	100.00	Y	100.00	Y	46.2	N	53.75	Y	67.00	Y	0.45	Y
Haripur	New Millennium Networks	100.00	Y	100.00	Y	4.15	Y	44.9	Y	86.00	N	1.65	Y
Abbottabad	Airmax (Pvt.) Ltd.	100.00	Y	100.00	Y	7.25	Y	50.75	Y	89.00	N	21.54	N
Abbottabad	Cyber Internet Services (Pvt.) Ltd	100.00	Y	100.00	Y	37.5	Y	44.4	Y	79.80	Y	3.92	Y
Abbottabad	Enigma Fibers	100.00	Y	99.90	Y	0.45	Y	45.6	Y	87.00	N	5.7	Y
Abbottabad	Global Xperts	100.00	Y	100.00	Y	5.2	Y	54.05	Y	63.00	Y	13.78	Y
Abbottabad	New Millennium Networks (Pvt.) Ltd	100.00	Y	100.00	Y	10.65	Y	162.2	N	75.00	Y	37.17	N
Abbottabad	Pace Telecom and Broadcasting (Pvt.) Ltd.	100.00	Y	100.00	Y	9.45	Y	59.6	Y	49.00	Y	41.39	N
Havelian	5GWifi Communication	100.00	Y	100.00	Y	19.9	Y	57.65	Y	87.00	N	34.72	N
Gilgit	SCO	100.00	Y	100.00	Y	10.16	Y	42.16	Y	62.00	Y	2.15	Y

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)
Astore	SCO	100.00	Y	100.00	Y	11.78	Y	42.83	Y	77.00	Y	5.63	Y
Chilas	SCO	100.00	Y	99.99	Y	10.5	Y	42.56	Y	9.65	Y	6.69	Y
Ghizer	SCO	100.00	Y	99.97	Y	11.83	Y	44	Y	15.00	Y	3.21	Y
Hunza	SCO	100.00	Y	99.89	Y	12.66	Y	43.33	Y	16.85	Y	3.52	Y
Skardu	SCO	100.00	Y	100.00	Y	10.9	Y	42.11	Y	62.20	Y	1.73	Y
Shigar	SCO	100.00	Y	100.00	Y	11.78	Y	42.83	Y	75.00	Y	2.05	Y
Karachi	Dot 99 (Pvt.) Ltd	100.00	Y	100.00	Y	1	Y	24.05	Y	98.00	N	4.46	Y
Karachi	Fiber Beam (Pvt.) Ltd	99.95	Y	100.00	Y	1.76	Y	76.3	Y	99.00	N	4.75	Y
Karachi	Galaxy Technology	100.00	Y	100.00	Y	1	Y	16	Y	78.00	Y	4.18	Y
Karachi	Gemnet Enterprise Solutions (Pvt.) Ltd	100.00	Y	100.00	Y	2.55	Y	25.55	Y	76.00	Y	8.83	Y
Karachi	Logon Broadband Pvt Ltd	100.00	Y	97.00	N	1	Y	16.4	Y	76.00	Y	4.63	Y
Karachi	Mynet Broadband Pvt Ltd	100.00	Y	100.00	Y	1	Y	24	Y	92.00	N	4.46	Y
Karachi	Netsol Connect (Pvt.) Limited	100.00	Y	99.44	Y	1.15	Y	16.65	Y	78.00	Y	5.24	Y
Matiari	Broadband Business Ideas (Pvt.) Limited	100.00	Y	100.00	Y	1.65	Y	23.6	Y	100.00	N	4.82	Y
Hyderabad	Hyderabad Cable Communication (Pvt.) Limited	100.00	Y	100.00	Y	1.05	Y	18.3	Y	74.00	Y	4.77	Y
Mirpur	Gull Technologies (Pvt.) Limited	100.00	Y	100.00	Y	1.5	Y	43.8	Y	100.00	N	5.14	Y
Mirpur	SCO	100.00	Y	100.00	Y	4.95	Y	298.5	N	33.00	Y	0.48	Y
Mirpur	Sky Telecom (Pvt.) Ltd.	99.50	N	100.00	Y	1.1	Y	37.05	Y	75.00	Y	0.05	Y

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)
Mirpur	Wi Cloud (Pvt.) Ltd	99.00	N	99.00	Y	6.1	Y	46.85	Y	68.00	Y	4.75	Y
Kotli	Gorsi Telecom (Pvt.) Limited	100.00	Y	100.00	Y	0.25	Y	55	Y	60.00	Y	15	Y
Kotli	Netpoint IT & Communication (Pvt.) Ltd.	97.00	N	92.00	N	6.25	Y	44.5	Y	77.00	Y	77.49	N
Muzaffarabad	SCO	100.00	Y	100.00	Y	5.85	Y	324.65	N	60.00	Y	3.57	Y
Kot Jamel	Kot Jamel Cable Network	Not Complied	N	Not Complied	N	16.65	Y	62.65	Y	44.00	Y	16.58	N
Sehnsa	Ittefaq Cable Network (Pvt.) Limited	97.00	N	97.00	N	4.6	Y	217.2	N	85.00	N	17.6	N
Sukkur	Burak Tech	99.81	N	99.83	Y	1	Y	21.55	Y	69.00	Y	0.98	Y
Sukkur	NTC	100.00	Y	100.00	Y	14.3	Y	42.05	Y	97.30	N	2.49	Y
Sukkur	PTCL	100.00	Y	99.99	Y	3.85	Y	30.15	Y	15.00	Y	2.01	Y
Sukkur	Wi-Fi Zone Enterprise (SMC-Pvt.)	100.00	Y	99.99	Y	2.25	Y	24.2	Y	75.00	Y	3.9	Y
Khairpur	Fiber Beam (Pvt.) Ltd	100.00	Y	90.00	N	2.55	Y	35.85	Y	100.00	N	5.14	Y
Khairpur	Galaxy Technology	100.00	Y	99.90	Y	1.95	Y	29.25	Y	85.00	N	249	N
Shikarpur	Logon Broadband Pvt Ltd	100.00	Y	92.22	N	1	Y	25.05	Y	83.00	N	5.86	Y
Shikarpur	Tes Media	100.00	Y	99.90	Y	1	Y	23	Y	78.76	Y	0.83	Y
Sargodha	Micro Tel (Pvt) Ltd	100.00	Y	100.00	Y	2.75	Y	45.85	Y	91.00	N	1.38	Y
Sargodha	Ultra Sky (Pvt.) Ltd	100.00	Y	100.00	Y	4.6	Y	36.9	Y	79.00	Y	1.69	Y
Lahore	Gerry's Information Technology (Pvt.) Ltd.	100.00	Y	100.00	Y	1	Y	34.7	Y	53.00	Y	1.04	Y
Lahore	Master Communication (Pvt.) Limited	100.00	Y	100.00	Y	0.8	Y	30.5	Y	6.00	Y	0.53	Y
Lahore	Netcomm Networks	100.00	Y	100.00	Y	3.2	Y	32.9	Y	5.00	Y	2.53	Y

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)
Lahore	Samz Broadband Networx (SMC-Pvt.) Ltd	100.00	Y	100.00	Y	1	Y	29.55	Y	15.00	Y	0.66	Y
Lahore	Sign In Pvt Ltd	100.00	Y	100.00	Y	2.8	Y	38.45	Y	1.00	Y	1.06	Y
Lahore	Sky Online (Pvt) Ltd	100.00	Y	100.00	Y	2	Y	33.55	Y	5.00	Y	3.13	Y
Lahore	Well Networks (Pvt.) Limited	100.00	Y	100.00	Y	2.85	Y	38.5	Y	6.00	Y	0.95	Y
Lahore	Z Com Networks (Pvt.) Limited	100.00	Y	100.00	Y	2.1	Y	34	Y	4.00	Y	1.3	Y
Hub	NTC	Not Complied	N	Not Complied	N	90.8	N	138.9	N	Not Complied	N	115	N
Hub	PTCL	Not Complied	N	Not Complied	N	41.2	N	51.3	Y	Not Complied	N	43	N
Peshawar	NTC	Not Complied	N	100.00	Y	3.4	Y	49.8	Y	40.00	Y	1.62	Y
Peshawar	Optix Pakistan (Pvt.) Ltd.	Not Complied	N	99.99	Y	8.35	Y	38.7	Y	60.00	Y	0.5	Y
Mardan	Connect Communications (Pvt.) Ltd.	Not Complied	N	100.00	Y	10	Y	44.45	Y	72.60	Y	0.25	Y
Mardan	Pace Telecom and Broadcasting (Pvt.) Ltd.	Not Complied	N	99.07	Y	3.05	Y	38	Y	94.00	N	0.5	Y
Quetta	Brilliant Enterprise	100.00	Y	100.00	Y	1	Y	30.1	Y	95.00	N	0.78	Y
Quetta	CMPAK	98.29	N	98.29	N	36.95	Y	47.95	Y	96.15	N	39.59	N
Quetta	Speed Cable Network (Pvt) Ltd	99.99	Y	99.99	Y	1	Y	29	Y	80.00	Y	0.9	Y

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)
Quetta	Teznet (Pvt.) Ltd.	99.70	N	Not Complied	N	1	Y	33.8	Y	Not Complied	N	0.98	Y
Quetta	Zahamit Tech (Pvt.) Limited	99.70	N	99.70	Y	1	Y	32.25	Y	82.90	N	0.82	Y
Bahawalpur	Connect Communications (Pvt.) Ltd.	100.00	Y	99.99	Y	14	Y	35	Y	62.80	Y	1	Y
Multan	Comsats Internet Services	Not Complied	N	Not Complied	N	14	Y	13	Y	62.00	Y	14	Y
Multan	DuosLinks	99.94	Y	99.90	Y	5.95	Y	44.6	Y	85.09	N	1.16	Y
Multan	Getlinks	99.99	Y	99.99	Y	2.4	Y	36.2	Y	96.14	N	0.66	Y
Multan	Instacom	100.00	Y	99.08	Y	2.35	Y	159.65	N	86.61	N	0.94	Y
Gujjar Khan	Laser Communication	99.99	Y	100.00	Y	83	N	105	Y	95.90	N	91	N
Multan	MISPL	100.00	Y	99.79	Y	7.5	Y	49.2	Y	86.06	N	1.49	Y
Multan	Prime Network	100.00	Y	100.00	Y	2.95	Y	229.9	N	98.68	N	0.64	Y
Multan	Telehouse Pvt Ltd	100.00	Y	99.99	Y	4	Y	46	Y	95.31	N	3.1	Y
Mian Channu	Netpoint IT & Communication (Pvt.) Ltd.	99.99	Y	99.99	Y	4	Y	67	Y	80.00	Y	10	Y
Faisalabad	A.A Networks	100.00	Y	97.70	N	4.65	Y	95.55	Y	78.00	Y	1.86	Y
Faisalabad	City Dot Net	100.00	Y	100.00	Y	36.8	Y	56	Y	76.00	Y	7.34	Y
Faisalabad	McSol (Pvt.) Limited	100.00	Y	100.00	Y	14.6	Y	43.85	Y	78.00	Y	3.28	Y
Faisalabad	Orbit Internet Service Provider	100.00	Y	99.90	Y	15.75	Y	41	Y	79.00	Y	13.85	Y
Faisalabad	Xtreme Net (Pvt.) Ltd	100.00	Y	100.00	Y	8.25	Y	54	Y	76.00	Y	1.28	Y

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 03 2025 surveys** started from July 1, 2025 till September 30, 2025. In the surveys, **66 x major BSPs** are inspected, operating in **34 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.	Abbottabad	xiii.	Hunza	xxv.	Muzaffarabad
ii.	Astore	xiv.	Hyderabad	xxvi.	Peshawar
iii.	Attock	xv.	Karachi	xxvii.	Quetta
iv.	Bahawalpur	xvi.	Khairpur	xxviii.	Rawalpindi
v.	Chilas	xvii.	Kot Jamel	xxix.	Sargodha
vi.	Faisalabad	xviii.	Kotli	xxx.	Sehnsa
vii.	Ghizer	xix.	Lahore	xxxi.	Shigar
viii.	Gilgit	xx.	Mardan	xxxii.	Shikarpur
ix.	Gujjar Khan	xxi.	Matiari	xxxiii.	Skardu
x.	Haripur	xxii.	Mian Channu	xxxiv.	Sukkur
xi.	Havelian	xxiii.	Mirpur		
xii.	Hub	xxiv.	Multan		

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. BASPs 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%

Bandwidth Utilization<=80%
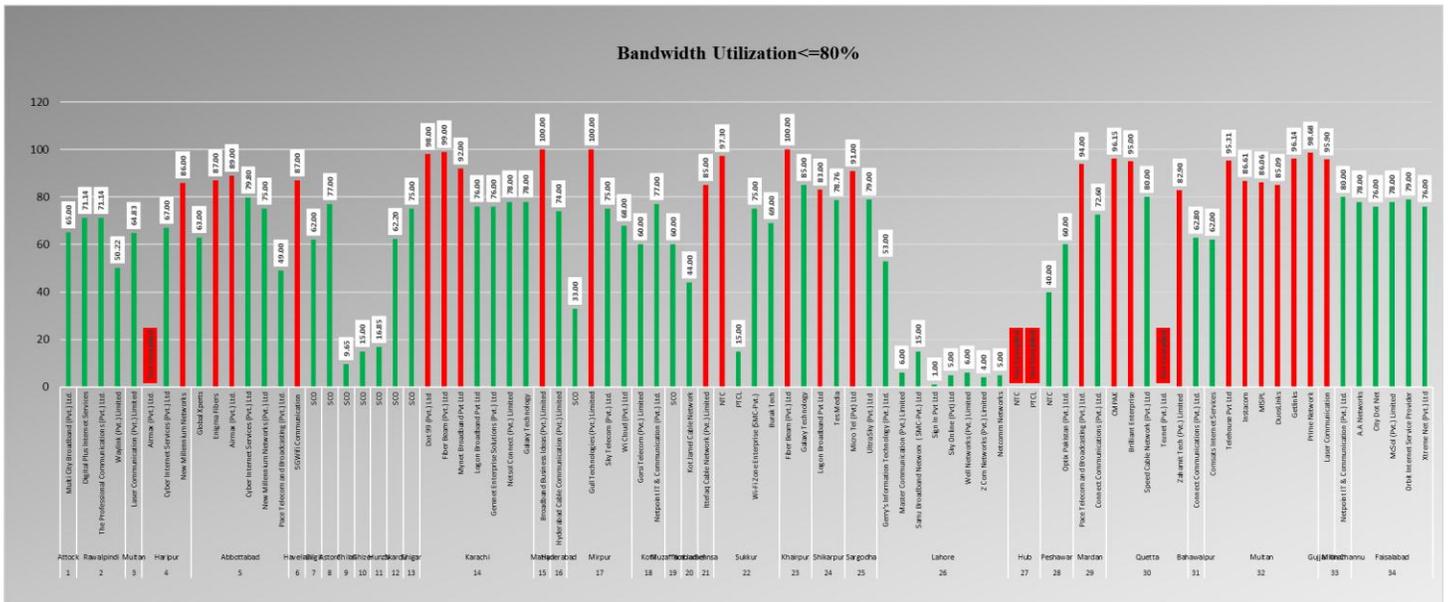
Results

Bandwidth utilization for most of the operators is compiled and is below 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.
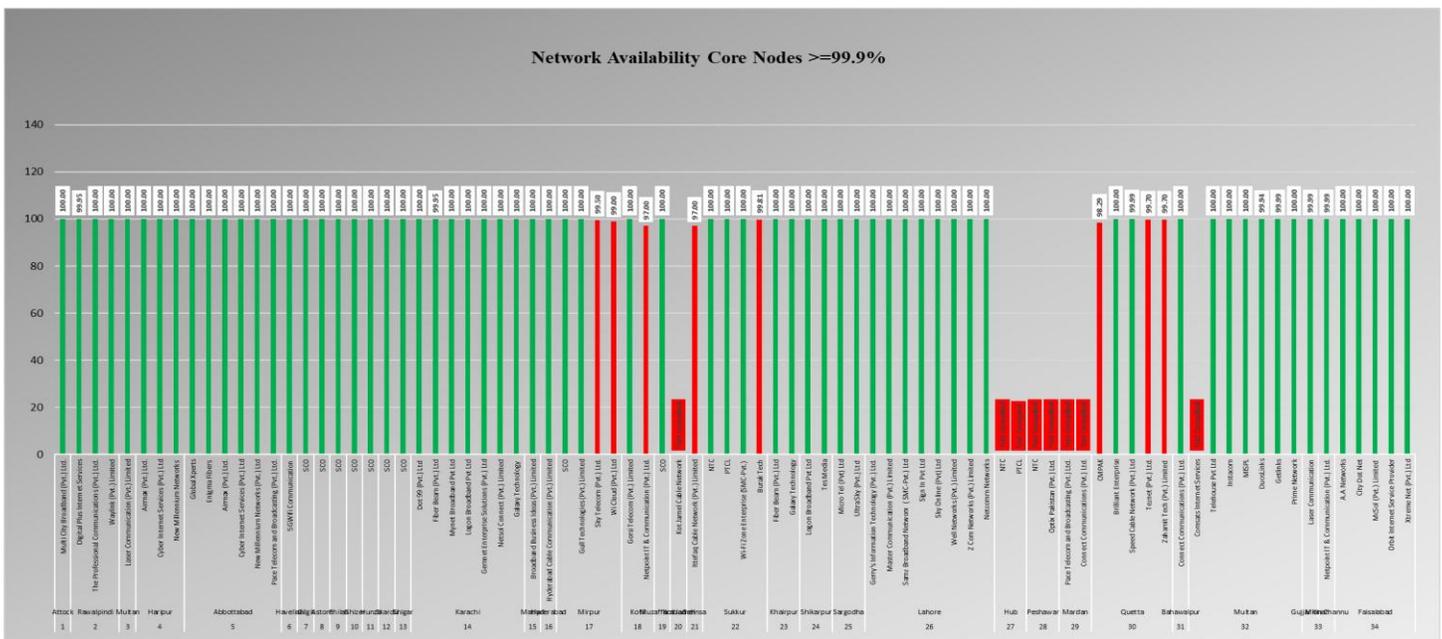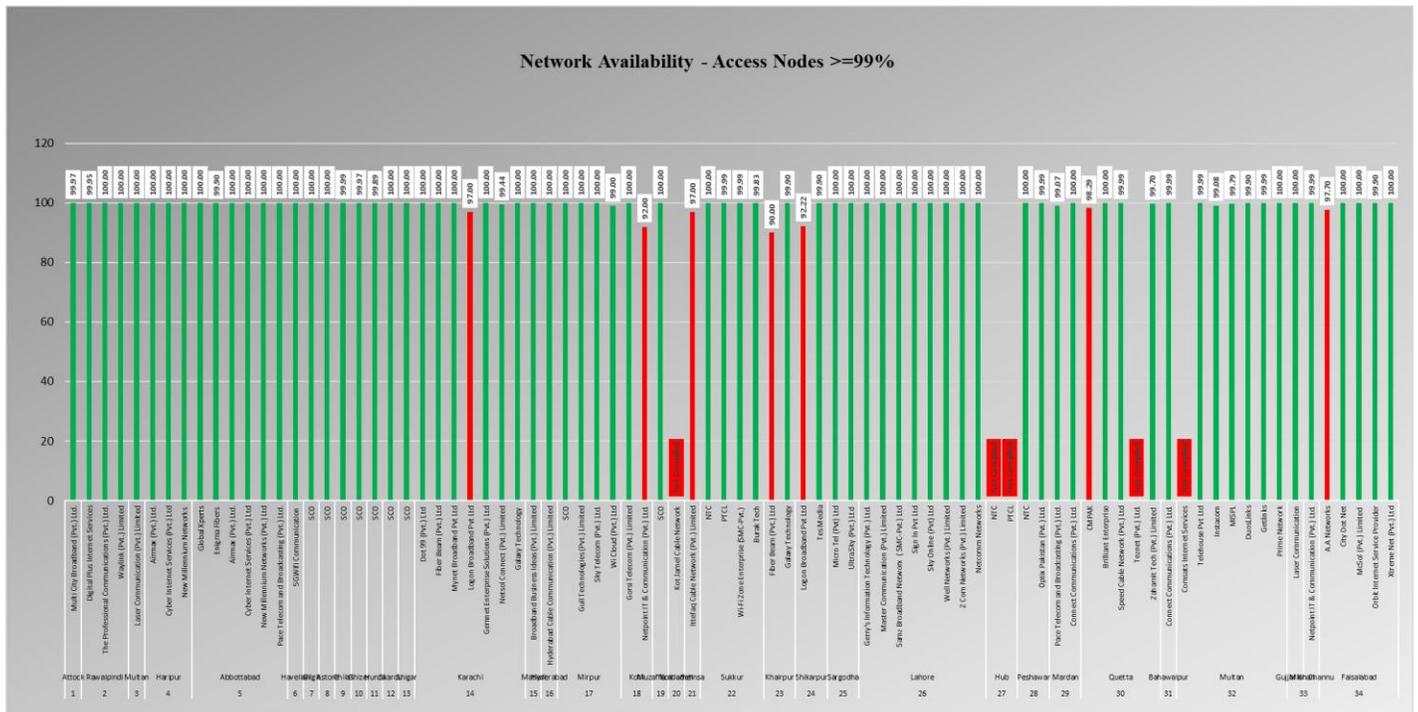
Results

Majority of operators comply with KPI i.e. Network Availability of Core Node. However, Sky Telecom, Wi Cloud, Net Point, Kot Jamel, Ittefaq Cable, Burak Tech, NTC (Hub Peshawar), PTCL(Hub), Optix, Pace telecom, Connect Communication, CMPak, Teznet, Zahmit Tech, and Comsats 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 >=99%

Results

Majority of operators comply with KPI i.e. Network Availability of Access Node. However, Logon (Karachi & Shikarpur), Net Point, Kot Jameel Net, Ittefaq Cable, Fiber Beam, NTC (Hub), PTCL (Hub), CMPak, Teznet, Comsats and A.A Networks 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.
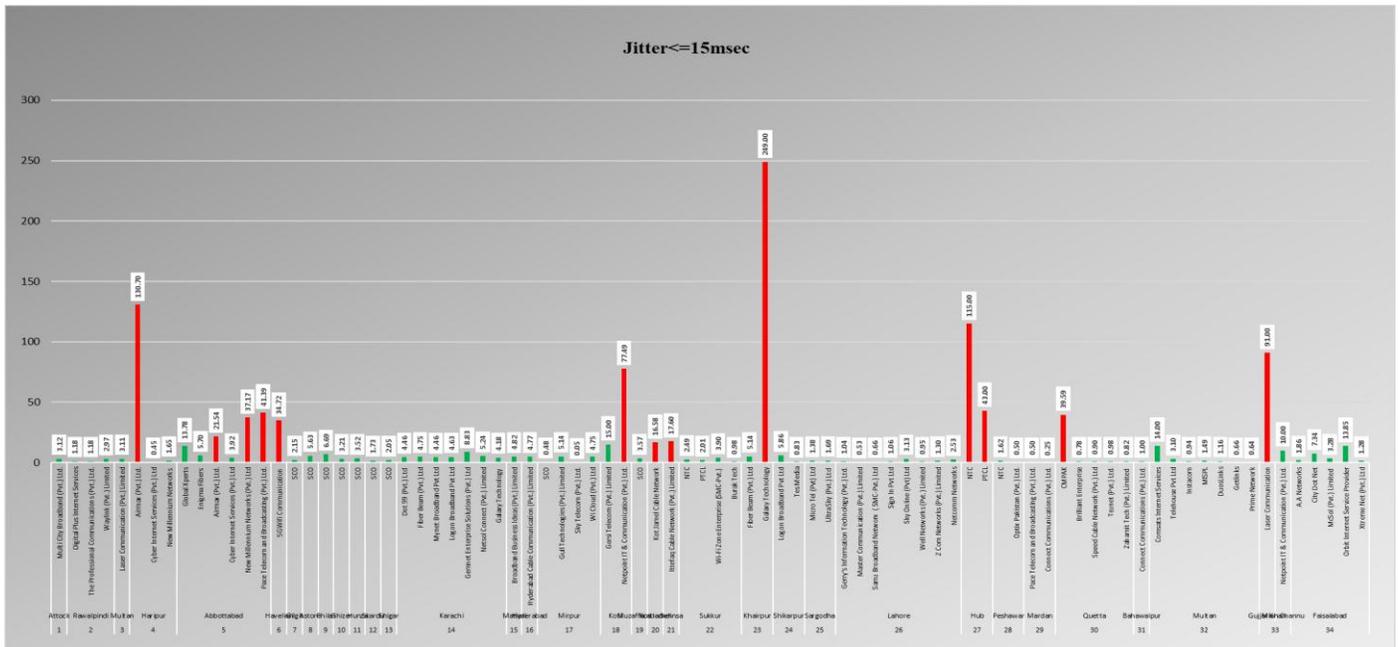
a) Round Trip Time (RTT) – Local Network

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).

RTT - Local Network Latency <= 40msec
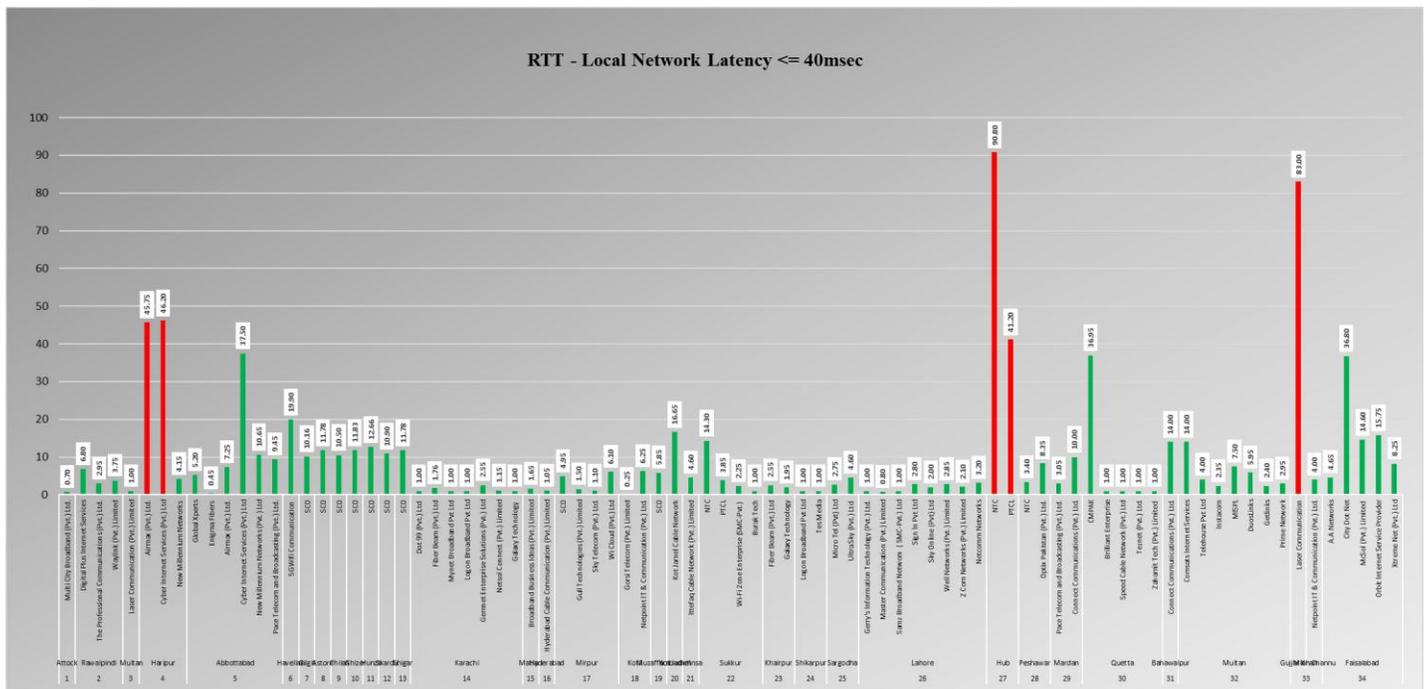
Results

Majority of operators comply with KPI i.e. Round Trip Time for Local Network. Air Max Cyber Net, NTC (Hub), PTCL (Hub) and Laser Communication 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.

Results

Majority of operators comply with KPI i.e. Round Trip Time for International Segment (Terrestrial Network). However, New Millennium, SCO, Ittefaq Cable, and NTC (Hub), Instacom and Prime Networks 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:

$$\text{Jitter (msec)} = X \ (RTT_{avg} - RTT_k)/100 \quad \text{(magnitude shall be used without '+/-' signs)}$$

Results

Majority of operators comply with KPI i.e. Jitter. However, Air Max (Haripur & Abbottabad), New Millenium, Pace Telecom, 5G Wifi, Netpoint, Kot Jameel Net, Ittefaq cable, Galaxy Technology NTC (Hub), PTCL (Hub), CMPAK and Laser Communication do not comply and are exceeding their KPI threshold value.

6. KPIs Analysis

- ### Bandwidth Utilization

  Network of some 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 Air Max Cyber Net, NTC (Hub), PTCL (Hub) and Laser Communication.

  - On the **international segment**, latency was found to be significantly high for New Millennium, SCO, Ittefaq Cable, and NTC (Hub), Instacom and Prime Networks indicating inefficiencies in international routing and network performance.

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- **Jitter**

  High for Air Max (Haripur Abbottabad), New Millenium, Pace Telecom, 5G Wifi, Netpoint, Kot Jameel Net, Ittefaq cable, Galaxy Technology NTC (Hub), PTCL (Hub), CMPAK and Laser Communication, impacting real-time services such as video conferencing and online gaming.

- **Network Availability**
  - For **Access Nodes**, network availability is below the threshold for Logon (Karachi & Shikarpur), Net Point, Kot Jameel Net, Ittefaq Cable, Fiber Beam, NTC (Hub), PTCL (Hub), CMPak, Teznet, Comsats and A.A Networks.
  - For **Core Nodes**, network availability is below the threshold for Sky Telecom, Wi Cloud, Net Point, Kot Jamel, Ittefaq Cable, Burak Tech, NTC (Hub Peshawar), PTCL(Hub), Optix, Pace telecom, Connect Communication, CMPak, Teznet, Zahmit Tech, and Comsats.

7. Conclusion

The KPI analysis indicates that some Broadband Service Providers (BSPs) are facing performance challenges across multiple network parameters. **High bandwidth utilization**, especially during peak hours, has led to network congestion and slower internet speeds, significantly degrading user experience. Additionally, **high latency** was observed in both **local** (Air Max Cyber Net, NTC (Hub), PTCL (Hub) and Laser Communication) and **international segments** (New Millennium, SCO, Ittefaq Cable, and NTC (Hub), Instacom and Prime Networks), pointing to inefficiencies in routing and backbone performance. **Jitter levels** were also found to be elevated for several BSPs—including Air Max, New Millennium, 5G Wifi, PTCL, and others—negatively affecting real-time applications such as video conferencing and gaming. Furthermore, **network availability** for both access and core nodes fell below acceptable thresholds for multiple providers, including Net Point, Kot Jameel Net, Ittefaq Cable, NTC, PTCL, CMPak, and others, indicating service reliability issues.

In response, non-compliant BSPs were formally notified and provided with detailed KPI performance data to highlight deficiencies. These insights are intended to guide network optimization efforts, including bandwidth management, infrastructure upgrades, and routing improvements. By addressing these performance gaps, BSPs can enhance network stability, meet regulatory standards, and deliver a higher quality of service to end users.