

National Fiber Network Reliability Report
(Fourth Quarter, April to June 2024)



Division of Telecom and Space
Government Technology Agency

Table of Contents

Executive Summary	2
Background	2
Objective and Methodology Used	3
Key Findings and reports collected from stakeholders	4
• Fiber Network Reliability report submitted by TICL	4
• Fiber Network Reliability report submitted by BTL	4
• Fiber Network Reliability report submitted by BPC	5
Conclusions	5
Focal Details	5

Executive Summary

In order to check and monitor the national fiber network reliability, the GovTech Agency has prepared the following report.

The data is collected from the stakeholders, Bhutan Power Corporation (BPC), Bhutan Telecom Limited (BTL), and Tashi InfoComm Limited (TICL) on a monthly basis and the report is prepared on a quarterly basis. This is the fourth quarter report for the financial year 2023-2024.

Background

The Government Technology Agency has implemented the National Broadband Master Plan Implementation Project (NBMP) to establish a fiber optic backbone network throughout the country. Under the said project, 18 Dzongkhags have been connected with OPGW cables, and the remaining two Dzongkhags and 204 Gewogs have been connected with ADSS cables.

GovTech is the sole owner of the National Fiber network. GovTech leases the fibers to Telecom operators and Internet Service Providers for free of cost in order to ensure a level playing field for operators and to help improve competition at the service level. In addition, the fibers are also used by the agency to establish connectivity to government offices such as RNR, Schools, BHUs, etc.

BPC manages the Operation and Maintenance of the National Fiber Network. According to the agreement signed between GovTech(erstwhile DITT) and BPC on December 30th, 2011, and amendment agreement signed on 6th January 2022, BPC is mandated to maintain 98% point to point availability of fibers, except where disruptions are caused by force majeure conditions. Therefore, in order to check the consistency and availability of fibers, monthly fiber reliability

reports are collected from the stakeholders (BTL, TICL, BPC). Data collected for the month of April to June 2024 are reported below.

Objective and Methodology Used

Objective: To study the National Fiber Network Reliability in Bhutan

Methodology Used: A dashboard was prepared for maintaining the Fiber network reliability based on different parameters listed as follows:

Service/Fiber Availability% = $((\text{Total Service Uptime} / (\text{Total Time} - (\text{Scheduled Maintenance Time} + \text{Force Majeure Outage}))) * 100)$

Total Service Uptime = $(\text{Total Time} - (\text{Scheduled Maintenance Time} + \text{Force Majeure Outage} + \text{Outage due to clients negligence} + \text{Downtime}))$

- **Scheduled maintenance time:**
 - Scheduled maintenance hours of the service in a month if any.
 - Planned outage in consultation with all the relevant stakeholders.
 - BPC shall ensure to inform the clients at least 14 days before the maintenance activities are carried out.

- **Force Majeure Outage:**
 - “Force Majeure” means an event or situation beyond the control of the Operation and Maintenance team that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the O&M team. Such events may include, but not be limited to, acts of wars or revolutions, fires, floods, incessant rains, damages by third party/parties, epidemics, quarantine restrictions, and freight embargoes.

- **Outage due to client’s negligence:**
 - Shall be an incident of service interruption which arises due to any disruptions caused due to client’s negligence.
 - GovTech shall levy Service Availability Imposition on BPC during outages caused due to client’s negligence, who in turn will/shall transfer the imposition to the client.

- **Downtime:**
 - Refers to a period of time where national fiber fails to perform.

- Time when there are fiber outages which are caused due to reasons other than scheduled maintenance, force majeure outages, due to failure of equipment and outage due to client's negligence.
- In the event that the Service Availability is below 98% at Dzongkhag level, GovTech shall deduct an amount equivalent to service downtime and/or outage on client's behalf from the O&M Fee Payment of Dzongkhag based on Dzongkhag's asset value. The amount to be imposed shall be based on the following payment method:
 - Service failure imposition= $((\text{Downtime} + \text{outage due to clients negligence}) / \text{Total Time}) * \text{Total O\&M Fee Payment of the Dzongkhag}$
 - Imposition due to failure of services shall only be levied if the availability is below 98% due to downtime and/or outage due to client's negligence

This dashboard is shared with the relevant stakeholders (BTL, BPC, and TICL) who use the Fiber network. The stakeholders were instructed and trained on the usage of the dashboard via email, letter, and telephone after which they were asked to maintain records on the above parameters on a monthly basis. This data collection is an ongoing process.

Key Findings and reports collected from stakeholders

- Fiber Network Reliability report submitted by TICL

Months	Availability in percent	Fault Type	Total Outage Duration	Remarks
April	99.532%	Fiber break	88 hrs	Not including schedule maintenance
May	99.86%	Fiber break	258 hrs	
June	99.911%	Fiber break	168 hrs	

Average availability was 99.864%

- Fiber Network Reliability report submitted by BTL

Months	Average Availability in Percent	Fault type	Total Outage Duration	Remarks
April	99.67%	Fiber break	599 hrs	Not including schedule
May	99.424%	Fiber break	260.91 hrs	

June	99.828%	Fiber break	149.5 hrs	maintenance
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Average availability was 99.640%

- Fiber Network Reliability report submitted by BPC

Months	Availability in percent	Fault Type	Total Outage Duration	Remarks
April	99.8115%	Fiber Breakage	11 hrs	Not including schedule maintenance
May	99.644%	Fiber Breakage	6 hrs	
June	99.8015%	Fiber Breakage	10 hrs	

Average availability was 99.752%

Conclusions

The above analysis was limited to the monthly network reliability reports submitted by the two Telcos and BPC. From the reports collected for April to June 2024, The average availability for Bhutan Telecom was 99.640% and for Tashicell, it was 99.864%.

From the report submitted by BPC, the fiber availability for the month of April to June 2024 was 99.752%. BPC was able to maintain the availability above 98%.

Focal Details

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