

National Fiber Network Reliability Report **(April to June, 2020)**



Division of Telecom and Space
Department of IT and Telecom

Executive Summary

In order to check and monitor the national network reliability, the DITT/MoIC 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 final/fourth quarter report for the financial year 2019-2020.

Introduction

Department of Information Technology and Telecom (DITT) under MoIC (Ministry of Information and Communications) has implemented 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 remaining two Dzongkhags and 201 Gewogs have been connected with ADSS cables.

DITT is the sole owner of the National Fiber network. DITT 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 is also used by the department to establish connectivity to Community Centers.

BPC manages the Operation and Maintenance of the National Fiber Network. As of now, there are no fiber monitoring system to conduct online detection and rectification of fiber outages. The fiber breakages are manually detected and rectified. According to the agreement signed between DITT and BPC on September 30th, 2011, 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, 2020 are reported below.

Objective of the study

To study the National Fiber Network Reliability in Bhutan

Methodology

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

- Fault Time (Time at which the fault occurred/detected)
- Fault Resolution (Time at which the fault was rectified)
- Outage Time (Duration of outage)
- Availability (Availability= ((Service Uptime/Total time)*100), Service Uptime=Total Time-Outage Time, Total Time=24*No. Of days in a month)
- Fault Type (Fiber breakages, Force Majeure, Equipment Faults, Schedule Maintenance)
- Customer Impact (No. of Dzongkhag affected, No. of sites affected)

This dashboard is shared with the relevant stakeholders (BTL, BPC and TICL) who uses 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 above parameters on a monthly basis. This data collection is an ongoing process.

Key Findings

Based on the data submitted by the stakeholders the average availability for the months of April to June 2020 has been compiled in tables below.

1) Fiber Network Reliability report submitted by TICL

Months	Availability in percent	Fault Type	Outage Duration	Remarks
April	100	NA	NA	NA
May	100	NA	NA	NA
June	100	NA	NA	NA

Average availability was 100%

2) Fiber Network Reliability report submitted by BTL

Months	Availability in percent	Fault Type	Outage Duration(hr:min:sec)	Remarks
April	98.69	Fiber break	19:20:00	-Pling to Denchukha stretch
	99.92	Schedule maintenance	0:51:00	-Zhemgang to Zhemgang Exchange
	99.39	Fiber Break	9:10:00	-Mongar to Gyelposhing stretch
	72.91	Fiber break	195:00:00	Pling to Denchukha
May	76.79	fiber break	173:34:00	-Lhuntse to Dungkar
	99.44	Fiber break	4:12:00	-Jigmeling to Gelephu
	97.16	Fiber break	21:08:00	-Pling to Denchukha
	99.69	Fiber break	2:26:00	Jigmeling&Sarpang to Gelephu
June	99.37	Fiber break	4:48:00	Sarpang to Gelephu
	99.00	Fiber break	7:18:00	Khaling to Wamrong
	91.08	Fiber break	64.2hrs	Pling to Denchukha, DITT found out using FMS that the outage duration was 64.2hrs for June 2020 and the link was resolved on July 5th at 4:19 pm.

Average availability was 93.94%.

3) Fiber Network Reliability report submitted by BPC

Months	Availability in percent	Fault Type	Outage Duration	Remarks
April	100	NA	NA	NA
May	100	NA	NA	NA
June	100	NA	NA	NA

Average availability was 100%

Conclusion

The above analysis was limited to the monthly network reliability reports submitted by the Telcos/ISPs and BPC.

From the reports collected for April to June 2020, BTL average was 93.94% and TICL average was 100% .

From the report submitted by BPC the availability for the month of April to June was 100%. BPC was able to maintain the availability above 98%.

With Fiber Monitoring System (FMS) in place, it is expected that the fiber faults can be detected without BPC officials having to manually visit fault areas. With use of FMS, not only fiber faults can be directly detected but also pin-point the location of the breakages. This will allow the rectification team to proceed and resolve the issue with minimal waste of resources.

Constraints

1. There was a delay in the report submitted by ISPs and BPC for the month of October to December. This creates delay while publishing the quarterly report for DITT.
2. It was observed that the Pling to Denchukha stretch had frequent fiber breakages and the link is still down as per fiber report submitted by Bhutan Telecom(field report submitted by Manager, Samtse).However DITT found that the link was restored on 5 July 2020 (FMS record)
3. It was observed that the fiber outages recorded by ISPs/TSPs were missing in the records maintained by BPC.This could be due to the fibers leased to the respective stakeholders or issues with record maintenance.
4. TashiCell shared the details of the report in different formats. DITT has requested Tashicell to follow the same format via call and email to the concerned officer incharge.