

Digitization of Analog Cable Television in Bhutan



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November 2021

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Introduction

Ever since the television system started in Bhutan in 1999, the mode of connection was purely on an analog system. While we have come a long way using the analog system for over 16 years, the analog system has become incompatible with the recent up-gradation of the channels to HD in order to provide quality viewings. The transition to digitization of the cable television began in June, 2018 in consultation with local cable operators (LCOs) and other relevant stakeholders with the objective to provide quality services with multiple value added services like internet and data communications. It is also intended to bring about transparency and accountability to establish a real time subscriber base thereby enhancing revenue from the CATV businesses.

The digitization was started in Thimphu and now most parts of the country have already moved towards digital connection. As of now, 60 local cable operators (LCOs) out of 93 have connection to digital signals from the two Multi-Service Operators (MSOs). The digitization of cable TV was aimed to be completed by the end of year 2022.

The digitization of the CATV however is confronted with numerous challenges: Lack of awareness, technical incompetency in LCOs, inadequate supply of Set Top Boxes, non-sharing of National Fiber with the LCOs, remoteness of the areas are some of the challenges besides the ongoing pandemic situation that is hindering the digitization efforts. Despite all these issues, Bhutan has moved towards providing digital TV services because of its several advantages over analog.

Difference in setting up of Digital Cable Television from Analog

Analog Cable TV

Analog signal by nature is continuous and there are different types of modulation (Amplitude, Phase and Frequency modulation) in which the pattern of the carrier signal is varied according to the changing signal level of the message signal. Analog CATV systems use vestigial sideband modulation which is a form of amplitude modulation in which one sideband is partially removed. This reduces the bandwidth of the transmitted signal, enabling narrower channels to be used. In this case, we need a coaxial cable where the signal flows and is connected directly to the TV set, requiring only one remote to control the program.

Digital Cable TV

Digital TV uses quadrature amplitude modulation (QAM) techniques after compression. This gives digital modulation advantages over analog modulation with available bandwidth, high noise immunity and permissible power. This allows a television station to broadcast more channels and more HD channels over the same airwaves, giving a wider variety of programmes with better quality. In this, we require additional devices like HDMI (High Definition Multimedia Interface) cable, set-top-box and remote control of the set-top-box. Coaxial cable is connected to the set-top-box and from the set-top-box, HDMI cable is connected to the TV set. Finally the program is switched using the set-top-box remote control after putting your TV into digital mode by using HDMI as source input.

Set-top-box plays an important role in digital Cable television as it allows users to view video content from specific internet video providers by decoding digital television broadcasts. It is a device that enables a TV set to receive and decode digital television (DTV) broadcasts.

Analog Cable TV Setup

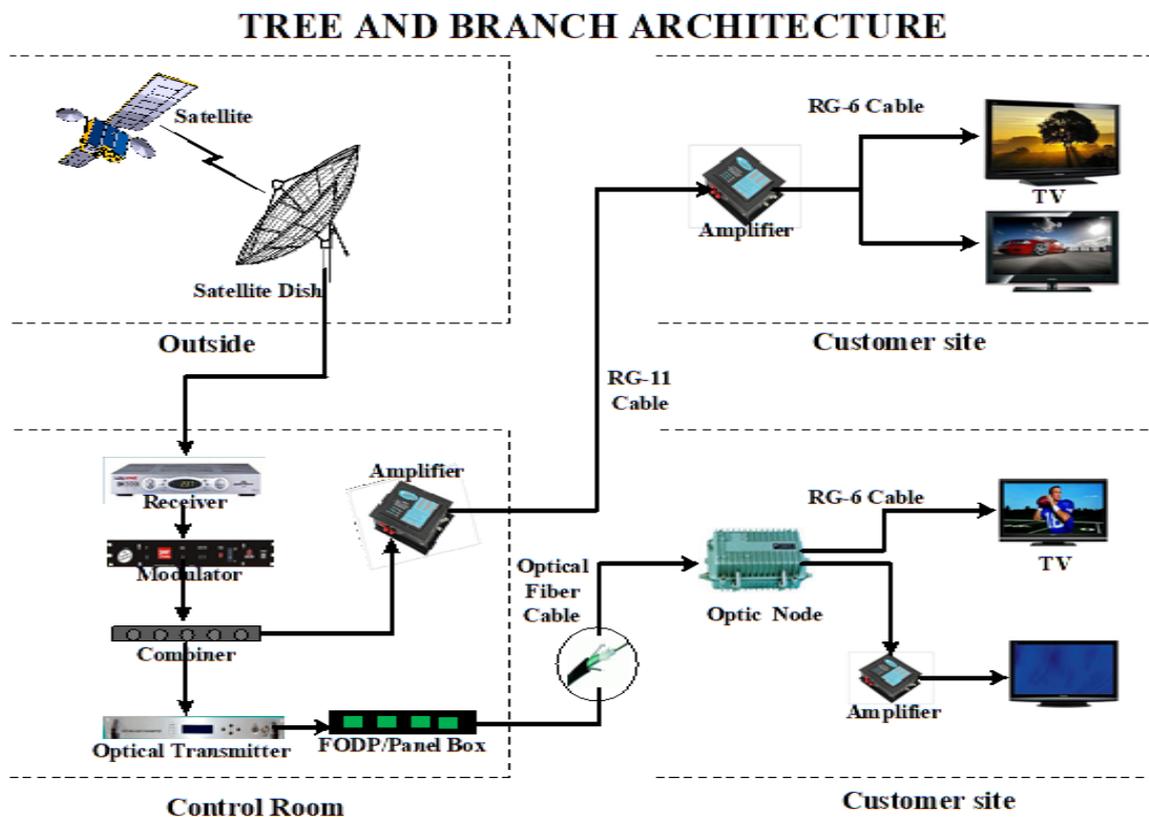


Fig 1: Analog cable TV set up

In analog television, the signal is directly received by the satellite dish which is connected to the receiver through coaxial cable. The received signal is modulated using amplitude modulation techniques which is then multiplexed and distributed to an optical transmitter where the signal is transmitted in the form of light to the receiver. On the other hand, it is also amplified and transmitted as an analog signal directly to the receiver. Modulation allows us to transmit a signal over a long distance where a high-frequency carrier wave is used to transmit the low-frequency message signal and the transmitted signal continues to have all the information contained in the original message signal.

Challenges with Analog Cable TV system

Despite its popularity and reliability for decades, analog TV's had a number of issues of which some of the major were:

1. No innovation and has no technological up-gradation in terms of offering diverse services like internet and data communications.
2. Analog cable TV systems have no services like video on demand and interactive TV and games.
3. Because analog continues, signals experience interference, or signal losses and hence results in poor video quality
4. Analog cable TV systems have challenges in regulating and determining the exact number of subscribers. Thereby, losing revenue to the government in terms of tax and license fees.

Hence, digitization of the CATV has become necessary to provide better quality of services to every consumer and to both the MSOs and LCOs as well.

Digital TV Setup

DIAGRAM OF NATIONAL CABLE NETWORK

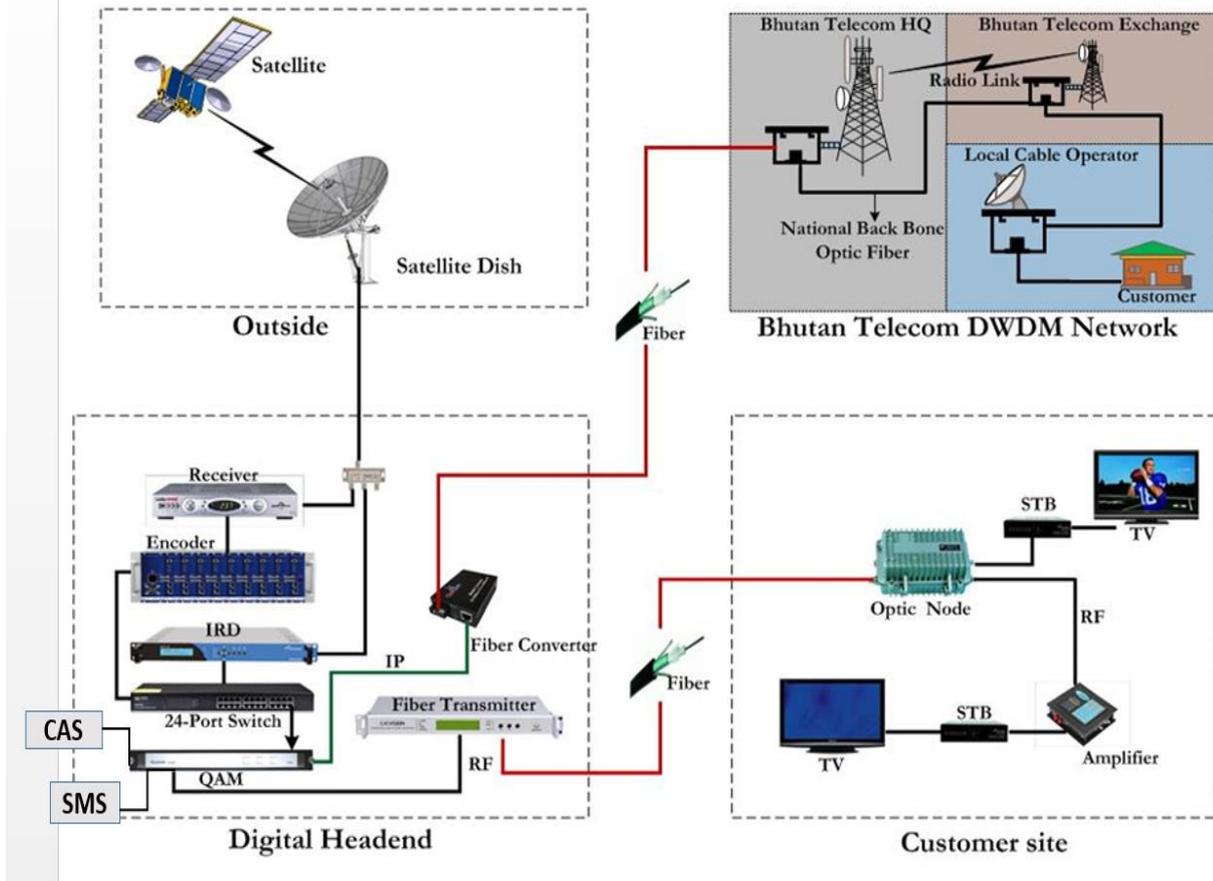


Fig 2: Digital television set up

In digital television set up, unlike analog, it uses QAM as a modulation technique where the signal gets digitized resulting in more compressed signal and better quality at the consumer side. Also with the establishment of MSOs, the requirement of head end to process television channels has been reduced. Multiple System Operator (MSO), also known as a multi-system operator, is an acronym often used for cable companies that offer services beyond television broadcast. Many MSOs offer multiple services of internet and telephone service alongside their cable television offerings. Both the MSOs are equipped with the conditional access system (CAS) and subscriber management system (SMS) in which we can determine the actual number of subscribers at any given point of time as well as customizing the type and number of channels distributed to individual subscribers. Through this digital system, there will also be transparency in the government revenue collection.

Advantages of Digital over Analog Cable TV System

With the deployment of digital cable television in the country, it has provided several advantages over traditional analog television as follows;

Analog CATV	Digital CATV
Low quality Standard Definition (SD)	Good quality sound and pictures with HD (high definition) standard using STBs (set-top-boxes)
The number of channels provided by each LCOs varied from 10 to 70 Channels	MSOs (multi-service operators) distribute digital TV signals across the country offering a uniform number of TV channels.
No flexibility of disconnecting and reconnecting.	Consumer rights can be enhanced as subscribers can temporarily disconnect and reconnect their services as per their interest by informing the operators. Thus paying the money only for the services availed.
The subscribers will be able to access only the prescribed channels.	The subscribers can also opt for various television packages once the MSO makes such services available.
Analog TV has no system to address complaints.	Digital television (DTV) has the capability to run a complaint redressal system looked at by operators where you can address any complaint issues if there be and clear your doubt.
No value added services such as video on demand, interactive TV and other services can be provided.	The digital cable TV system can also provide value added services such as high-speed broadband Internet, Video on Demand, Interactive TV, and Time shifted TV and Interactive gaming through which they can increase their revenue.
Analog TV doesn't use a set-top-box because of which the number of subscribers cannot be determined. Hence, there is no transparency.	It can determine the actual number of subscribers at any given point of time as well as can see the packages that the cable operators are distributing. Through this kind of transparency, the government

	also will be benefited with tax revenue and statistical data.
Analog TV doesn't provide the flexibility of accessing various channels as analog TV doesn't have EGP features.	Digital Cable TV provides an Electronic Program Guide (EPG facility which is an on screen menu that allows the viewer to be able to navigate the available channels.
Analog TV doesn't have a payment platform and so individuals should go physically for the payment.	DTV has a convenient payment platform provided by the operators where you can pay subscription payment from anywhere. Moreover, subscribers will be notified about their subscription dues on the TV screen.