A comparison of study of traffic handling efficiency of STM 16 devices between Huawei OptiX 3500 and Tejas TJ 1400

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Abstract— **The purpose of this paper is to do comparison of study of traffic handling efficiency of STM 16 devices between Huawei OptiX 3500 and Tejas TJ 1400.The present study will compare the efficiency of both the products. The development in transmission systems like MADM and DWDM is going towards higher bandwidth handling capacity of traffic. The development of mobile generation from 1G to 5G, requirement of higher bandwidth for lease-line, internet broadband and NGN, includes the requirement of higher bandwidth/traffic handling capacity of transmission system. All latest development in the field of PSTN, broadband and mobile needs higher bandwidth to meet the purpose of technology**

Index Terms—Transmission Systems, Tejas TJ 1400, OpticX3500, SONET, MADAM, STM16, wireless Transmission.

I. INTRODUCTION

Transmission System

One of the most widely used transmission system technologies in the Internet and the PSTN is SONET.

Also, transmission system is the medium through which data is transmitted from one point to another. Examples of common transmission systems people use every day are: the internet, mobile network, cordless cables, etc.

In telecommunications, **transmission** (abbreviation: **Tx**) is the process of sending and propagating an analogue or digital information signal over a physical point-to-point or point-to-multipoint transmission medium, either wired, optical fibre or wireless.[1][2] One example of transmission is the sending of a signal with limited duration, for example a block or packet of data, a phone call, or an email. Transmission technologies and schemes typically refer to physical layer protocol duties such as modulation, demodulation, line coding, equalization, error control, bit synchronization and multiplexing, but the term may also involve higher-layer protocol duties, for example, digitizing an analog message signal, and source coding (compression).

Transmission of a digital message, or of a digitized analog signal, is known as digital communication

Types of transmission system

A transmission may be simplex, half-duplex, or full-duplex.

In simplex transmission, signals are transmitted in only one direction; one station is a transmitter and the other is the receiver.

In the half-duplex operation, both stations may transmit, but only one at a time.

In full duplex operation, both stations may transmit simultaneously. In the latter case, the medium is carrying signals in both directions at same time.

There are two types of transmission media: guided and unguided[4].

Guided Media - Guided (or bounded)—waves are guided along a solid medium such as a transmission line

- Unshielded Twisted Pair (UTP)
- Shielded Twisted Pair
- Coaxial Cable
- Optical Fibre

Unguided media- Guided (or bounded)—waves are guided along a solid medium such as a transmission line.

II. STUDY DESIGN

Systems Used in Transmission network:

The main systems used to transport the voice signal and data from one point to another point are STM-1 / STM-4 / STM-16 / STM-64/MADM. The media widely used presently is Optical fibre cable(OFC).

1. **STM 1: the** band width carrying capacity of STM-I is 128 Mbps. It is 2 Mbps stream of 64 nos. Each 2 Mbps is known as E1. It also caters FE ports. It works in ring as well as linear network topology.
2. **STM-4** the band width carrying capacity of STM-4 is 512 Mbps. It is 2 Mbps stream of 64X4 nos. Each 2 Mbps is known as E1. It also caters FE ports. It works in ring as well as linear network topology.

3. **STM-16:** the band width carrying capacity of STM-4 is 1024 Mbps. It is 2 Mbps stream of 64X16 nos. Each 2 Mbps is known as E1. It also caters FE ports. It works in ring as well as linear network topology.

4. **STM 64/MADM**: THE band width carrying capacity of MADM is 2,24 Gb. It also caters FE, GE ports. It works in ring as well as linear network topology. It covers double rings path through single system**.**

The present study will compare the traffic handling capacity of STM 16 DEVICES **Huawei OPTIX 3500 (**Huawei technologies co., ltd. Shenzhen, Guangdong, China)[1] and **TJ1400 MC-16X** (Tejas Networks, Inc. 595, Summer Street, Suite 2, Stamford)[2,3].

III. Product description

1. **Huawei OptiX 3500 (**Huawei technologies co., ltd. Shenzhen, Guangdong, China)[1] - OptiX 2500 + (Metro3000) STM-16 MADM / MSTP optical transmission system (hereinafter referred to as the OptiX 500 +) device is a multi-service transport platform (MSTP) equipment. The device will SDH / ATM / Ethernet / DWDM technology integration; Not only SDH equipment and flexible networking and service scheduling capability (MADM), and Layer 2 data services, ATM / Ethernet service access, processing, transmission and scheduling in a single device multiple services such as voice, data transmission and processing.it has wide range of flexibility and has customisable FE electrical FE optical and GE ports.

Features

High-capacity, multi-rate, mult-protocol access System can access data services: Ethernet interfaces, ATM interfaces, and support for N * 64k service interface V.24/V.35/X.21 other service access and aggregation business of small particles access and aggregation, provide more solutions for operators of the DDN network optimization and base station monitoring information transfer.

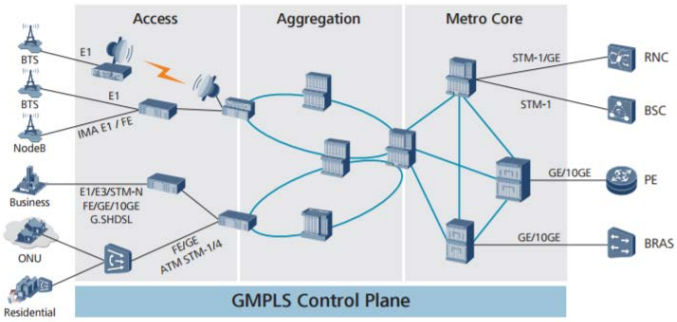

Figure 1 The end to end transport network solution based on OSN series products

Figure 2. Huawei OSN 3500 device

2. **TJ 1400 -12 (Tejas Networks, Inc. 595, Summer Street, Suite 2, Stamford)**[2,3] - The Tejas TJ1400 is a compact POTP platform which is targeted for deployment in the edge and access part of a transport network. It can be configured as a TDM MSPP, Packet Switch, OTN DXC or a DWDM sytem. It supports both TDM and Ethernet as Line Interfaces. It offers full redundancy and comes with an expansion chassis for deployment in high drop locations. It has 16 FE electrical ports,16 FE optical ports and 4 GE ports

Features

Advanced Packet Transport
High Capacity: 64 Gbps Packet Switch
MPLS-TP: Traffic Engineered Pseudowires
Carrier Ethernet: VLAN and Q-in-Q
50ms Protection: ERPS and 1:1
Packet Synchronization: SyncE,1588v2
Optional TDM Circuit Emulation
Flexible configurations

Figure 3. Tejas TJ-1400 device

IV. PROTOCOL

The study will collect data regarding the quantity of traffic handling between the devices and compare it.it will be analysed by applying suitable statistical tests to see if there is any actual superiority of one device over other.

V. DISCUSSION

The development in transmission systems like MADM and DWDM is going towards higher bandwidth handling capacity of traffic. The development of mobile generation from 1G to 5G, requirement of higher bandwidth for lease-line, internet broadband and NGN, includes the requirement of higher bandwidth/traffic handling capacity of transmission system. All latest development in the field of PSTN, broadband and mobile needs higher bandwidth to meet the purpose of technology.

VI. CONCLUSION

The both the product have been compared in terms of traffic handling efficiency. The advantages 7 disadvantages of both the product have been discussed..

ACKNOWLEDGMENT

I would like to take this opportunity to express my profound gratitude and deep regard to my project guides Mr L.D Singla, BSNL & Dr K K Sharma, Professor, Lingayas University. My both the guides have provided their exemplary guidance, valuable feedback and constant encouragement throughout the duration of project. Their valuable suggestions were of immense help in completing this project.

I would also like to give my sincere gratitude to all my friends and colleagues who filled in the survey, without whom this research work would be incomplete.

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