Review on Enhancement Performance of WDM networks over Diversity Systems

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Abstract: Data applications have different QoS requirements depending on whether they are interactive or batch. Interactive data applications usually have a human user at one end of a flow and the IP packets must flow in both directions for meaningful work to happen. For example the user takes some action sending a packet to a server before the user sees more data on the screen the server must send a packet back. The TCP/IP defines a multiplexing network as a special address in each network. This multiplexing could be used as the destination address in a packet and the routers would forward a copy of that one packet to all hosts in that fiber optics medium. A generic reference defined by Layer 3 protocols that do not have to be concerned with the physical details of the underlying physical media Used mainly to contrast these addresses with data link addresses. In this paper our focus will be on one aspect of this subject to provide reliability on WDM based networks. The use of WDM at both transmitter and receiver clearly provide enhanced performance over diversity systems where either the transmitter or receiver.

Keywords: WDM, QoS, LOS, DSL, MAC.

I. WAVELENGTH DIVISION MULTIPLEXING

The advances over the last several decades in communication and digital signal processing have made digital communication may cheaper, faster, and more power-efficient than analog transceivers. WDM consist of transferring information in the form of bits over a communications channel. These information bits are derived from the information source, which may be a digital source or an analog source that has been passed through an WDM converter device. The application occurs in the context of communication involving multiple transmit and receive antennas, a context known in engineering as Multiplexing. The imposition of time ordering has on a bit stream. Practically, a device will try to use the same speed as another device on the other end of a serial link. However, by examining transitions between voltage states on the link, the device can notice slight variations in the speed on each end and can adjust its speed accordingly.

For Example: if you add a modem device on the network to communicate with external network. This modem is connected to Internet service provider (ISP) so that internet speed get by the internal network too. Together, the DSL equipment at each side of the local telephone line can send data while still supporting the same voice traffic. The left side of Figure 1.1 shows the changes. A new Digital Subscriber Line (DSL) modem now connects to a spare phone outlet. The DSL modem follows the DSL physical and data link layer standards to send data to/from the ISP. The home now has a Local Area Network (LAN), implemented with a internal network router, which often includes an Ethernet switch and possibly a wireless LAN access point.

The internal network router on the left is needed to be send data to/from the Internet. To make that happen, the ISP uses a product called a DSL Access Multiplexer (DSLAM). The DSLAM splits out the data over to the router on the lower right, which completes the connection to the Internet.

The DSLAM also splits out the voice signals over to the voice switch on the upper right. DSL gives ISP (Teleco CO) a useful high-speed Internet service to offer their customers. ISP has had other offerings that happen to use the same telephone line for data, but these options ran much slower than DSL. DSL supports asymmetric speeds, meaning that the transmission speed from the ISP toward the home (downstream) is much faster than the transmissions toward the ISP (upstream). Asymmetric speeds work better for consumer Internet access from the home, because clicking a web page sends only a few hundred bytes upstream into the Internet, but can trigger many megabytes of data to be delivered downstream to the home.

The main considerations in choosing a particular WDM technique are

- High data rate
- High spectral efficiency (minimum bandwidth occupancy)
- High power efficiency (minimum required transmit power)
• Robustness to channel impairments (minimum probability of bit error)
• Low power/cost implementation

Often these are conflicting requirements, and the choice of multiplexing is based on finding the technique that achieves the best trade between these requirements.

II. MOTIVATION

The impact of multiplexing in AdHoc networks on the received signal depends on whether the spread of time delays associated with the Line of Sight (LOS) and different devices is large or small relative to the inverse signal bandwidth. This time variation arises because either the transmitter or the receiver is moving, and therefore the location of reflectors in the transmission path, which give rise to multipath, will change over time. Thus, if we repeatedly transmit pulses from a moving transmitter, we will observe changes in the amplitudes, delays, and the number of multipath components corresponding to each pulse. In this we also look up the backbone networks, as backbone networks that have to shared multiple paths because of low density. So, our aim is to improve the quality and maintain the backbone connectivity using different host on the network. We have to manage the power failures and uncertainty of link failures. This paper is to reviewed the all parameters of QoS when challenge to manage the diversity systems.

III. RELATED WORK

Carsten Behrens, Ralf Hulsermann, [1] described to assess the sensitivity of the network structure in feeder, metro and core domain with respect to capital expenditures (CAPEX). The traffic is distributed towards the traffic sinks in the access network by employing realistic traffic matrices. These traffic matrices take into account the number of customers, their regional distribution and the service penetration as well as realistic peering point and data center ratings. The optimal metro node distribution strongly depends on the ratio of the assignment cost (the fiber cost) and the cost for the metro node. Once access nodes are assigned to metro nodes and metro nodes are assigned to core nodes, this is by solving the core dimensioning problem, taking into account the traffic matrix depending on the traffic scenario.

Payman Samadi et. al. [2] propose a converged inter/intra data center architecture to 1) increase application reliability by operation distribution over multiple data centers, 2) scale out data center in distance to surpass scalability limits, 3) improve utilization of optical transport network links by an application driven-approach and finer granularity in managing the wavelength usage, 4) improve utilization of optical links in hybrid data center networks by routing the north-south traffic.

Refat Kibria and Md. Aminul Haque Chowdhury [3], worked on Multi-layer optical networks. It survives the data by using layers like physical, MAC and Network Layer. The Link Layer protection methods have also been discussed in this paper. The WDM protection methods was explained in this paper and these methods are: Path based protection, Link based protection and WDM Layer protection. Each methods has been compared and analysed that Link protection methods is best because it uses channelization technique to back-up the data.

Saraswati Bhakare et. al. [10] explained the Mobile AdHoc network (MANETs) and estimates the failure of link if accidentally occurs. The backup process has been formulating and if single failure occurred then the data is safe by employing dual link failures.

IV. QOS NEEDS AND THE IMPACT OF TCP/IP APPLICATIONS

Applications need to send data over a TCP/IP internetwork. However, they need more than the ability to move the data from one application on one device to another application on another device. That communication has different characteristics, or qualities, and the networking world refers to these qualities as quality of service (QoS). QoS in general defines the quality of the data transfer between two applications and in the network as a whole. QoS often breaks down these qualities into four competing characteristics:

- **Bandwidth**: The volume of bits per second needed for the application to work well; it can be biased with more volume in one direction, or balanced.
- **Delay**: The amount of time it takes one IP packet to flow from sender to receiver. Jitter: The variation in delay.
- **Loss**: The percentage of packets discarded by the network before they reach the destination, which when using TCP, requires a retransmission.

For any power failures or disaster system, backbone networks are important and it is also important in the account of QoS improvement. A backbone network connects traditional systems, such as PDAs, PCs, and in-network databases, to the emplaced sensor network. It also connects sensor nodes by a high-speed relay for efficient routing. The backbone may communicate wirelessly or may overlay onto an existing wired infrastructure.

V. CONCLUSION

Recently, there has been new work on supporting WDM networks. In these networks, it is necessary to extend MAC protocols. This paper assumes that routing is highly reliable wired connections so packet errors are rare. Since messages travel multiple hops in WDM, it is important to have a high reliability on each link, otherwise the probability of a message transiting the entire network would be unacceptably low. We find that some Solution include continuously updating local neighbour tables or identifying proxy nodes which are responsible for keeping track of where nodes are. Proxy nodes for a given node may also change as a node moves further and further away from its original location. However, congestion is a problem for more demanding in other networks and is expected to be a more prominent issue with larger systems that might process audio, video and have multiple base stations (creating more cross traffic). Even in systems with a single base station, congestion near the base station is a serious problem since traffic converges at the base station. WDM Solutions use backpressure, reducing source node transmission rates, throwing out less important
messages, and using scheduling to avoid as many collisions as possible which only exacerbate the congestion problem.

REFERENCES


