

# Data link layer analysis essay



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## **What is the data link layer**

The data link layer is the second layer of the seven layer of the Open System Interconnection (OSI) model of the computer networking. The layer is fundamentally a convention layer which transmits information between two system clients in a system fragment. The layer has a few parts in a system which are mistake recognition, offer physical address of a hub in the system, permitting a gadget get to the system to send and get messages and working with a device`s networking software when sending and receiving messages. This study aims to expound on the protocols that aid in the file transfer in the data link layer, types of errors the layer may face and the steps NDAS should employ in preventing, detecting and correcting errors in the network.

## **Data link layer protocols**

For NDAS, I highly recommend them to use Point-To-Point (PPP) and High-Data Level Control (HDLC) protocols. This is because, for PPP, it is majorly an encapsulation program for transporting IP traffic over PPP links. It`s also the <https://assignbuster.com/data-link-layer-analysis-essay/>

perfect protocol used in allocating and managing IP addresses. PPP is good in link configuring, testing and error detection. High-Data Level control protocol on the other hand is as good as PPP. This is because it is used to transmit data packets between network nodes at the same frequency. In this protocol, data is set to well-addressed frames that can be well delivered to the intended recipient.

NDAS can be vulnerable to network errors. One of them is single bit errors, which means that a single bit can be mistakenly changed from 1 to 0 or vice versa. The other error is a multi-bits error, where a data frame is received with more than a single bit interchanged. NDAS network can also fail due to burst errors. This is a type of an error that is evident when a frame received has more than one consecutive bits changed.

### **Data link layer functions**

There are ways to detect the errors. These techniques are parity check and cyclic redundancy check. Parity check is where an extra bit is included alongside the original bit frame to make number of ones in case of either even in even parity or odd for odd parity. Cyclic redundancy check works with the received data frame and checks if it has valid data. This type of mechanism deals with binary division of the sent data where the divisor is met using polynomials. It operates and deals with the remainder whereby it is added at the end of actual data by the sender.

Errors can be corrected using two techniques which are forward and backward error correction. Forward error correction is when the recipient detects of an error, they run an error-correcting code which assist in auto-

recovering and correct some errors. Backward error correction is when the receiver detects of an error, they forward them back to the sender and resent the data unit.

Errors can be prevented by maintaining a close monitor to it all the time it is on use. This will ensure there will be an immediate correction in case of one. The experts that created the network should also leave a room for errors during the creation and creating an action plan in case of one.