The Sources that were used in the Information Gathering process where: YouTube, Google Scholar and Internet research.

*All resources and links will be listed below.*

The research topic will cover: **Dual Uplinks and EtherChannel**

Dual Uplinks connection are two physical network cables connected together one or two different switches.

**The purpose** of this is to ensure that when one link fails then the other link will still be up and running or rather active, to keep the connection alive. This improves reliability in terms of preventing any single point of failure.

Although if you were to plug these links without proper configuration you could create a network loop potentially leading to outages.

While EtherChannel bundles up multiple physical links into one logical link. This will result in an increase in Bandwidth- which increase highspeed connection, Redundancy and Loop prevention.

The research topic will cover: **HSRP/VRRP**

HSRP/VRRP are redundant protocols that are used to ensure network availability.

**The purpose** of this is that it allows two or more routers to work together to present a single virtual IP address to clients.

**How HSRP Work –** A virtual IP address and a Mac address are shared between routers in a group. One router handles traffic while the other is ready to take over (standby).

**How VRRP Work**- Routers share a virtual IP address, one router is considered as a Master and the other is on standby to take over when that router fails (backup).

The research topic will cover: **Dynamic Routing using OSPF and EIGRP**

Dynamic Routing using OSPF and EIGRP exchanges information networks about each other.

**The purpose** of this is that when a link goes down, routers automatically recalculate routes.

**Advantages-** Automatically updates when the network topology changes.

: Reduces administrative work.

: Scales well for large networks.

**How OSPF Work-** It is an open source, it is based on bandwidth. It shares information about the state of their links. Each router builds a map of the entire network.

**How EIGFP Work-** It is Cisco proprietary (but now partly open). It uses bandwidth, delay and reliability.

It shares information about their directly connected networks it also supports fast convergance(quickly adapts to routers change).