آية كريمة

اللَّهُ نُورُ السَّمَاوَاتِ وَالْأَرْضِ مَثَلُ نُورِهِ كَمِشْكَاةٍ فِيهَا مِصْبَاحٌ الْمِصْبَاحُ فِي زُجَاجَةٍ الزُّجَاجَةُ كَأَنَّهَا كَوْكَبٌ دُرِّيٌّ يُوقَدُ مِن شَجَرَةٍ مُّبَارَكَةٍ زَيْتُونِةٍ لَّا شَرْقِيَّةٍ وَلَا غَرْبِيَّةٍ يَكَادُ زَيْتُهَا يُضِيءُ وَلَوْ لَمْ تَمْسَسْهُ نَارٌ نُّورٌ عَلَى نُورٍ يَهْدِي اللَّهُ لِنُورِهِ مَن يَشَاءُ ويضرب الله الأمثال للناس والله بكل شيء عليم

صدق الله العظيم (النور، الآية ٣٥)

الإهداء

إلى والدي من علمني المحبة والصبر ..

إلى والدتي نبع الحنان ..

إلى زوجي العزيز ..

أبنائي ..

أخواني وأخواتي ..

لكم أهدي بحثي هذا ...

شكر وعرفان

الشكر أولاً لله عز وجل الذي بنعمته تتم الصالحات

وأخص بجزيل الشكر والعرفان إلى كل من أشعل شمعة في دروب علمي وإلى من وقف إلى المنابر وأعطى من حصيلة فكره لينير دربي

إلى الأساتذة الكرام في قسم هندسة الإلكترونيات بجامعة السودان

وأخص بالشكر الدكتور:

محمد حسين

الذي تفضل بالإشراف على هذا البحث فجزاه الله كل الخير فله مني كل تقدير وإحترام

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List of Abbreviations

Abbreviation	Mean
AD	Administrative Distance
ARP	Address Resolution Protocol
AS	Autonomous System
BGP	Border Gateway Protocol
DCE	Data Communication Equipment
DNS	Domain Name System
DTE	Data Terminal Equipment
DV	Distance Vector
DVRP	Distance Vector Routing Protocols
EGP	Exterior Gateway Protocol
EIGRP	Enhanced Interior Gateway Routing Protocol
FTP	File Transfer Protocol
HDLC	High-level Data Link Control
HTTP	Hypertext Transfer Protocol
IANA	Internet Assigned Numbers Authority
ICMP	Internet Control Message Protocol
IDRP	Inter-Domain Routing Protocol
IETF	Internet Engineers Task Force
IGP	Interior Gateway Protocol
IGRP	Interior Gateway Routing Protocol
IP	Internet Protocol
IPX	Internetwork Packet Exchange
IS-IS	Intermediate System-to-Intermediate System
LAN	Local Area Network
LSRP	Link State Routing Protocols
MAC	Media Access Control
NIC	Network Interface Card
OSI	Open System Interconnection
OSPF	Open Shortest Path First
PPP	Point-to-Point Protocol
PSTN	Public Switched Telephone Network
RIP	Routing Information Protocol
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	User Datagram Protocol
VLSM	Variable-length Subnet Mask
WAN	Wide Area Network

Abstract:-

In a computer network, the transmission of data is based on the routing protocol which selects the best routes between any two nodes. Different types of routing protocols are applied to specific network environment. Three typical types of routing protocol are chosen as the simulation samples: RIP, OSPF and EIGRP. RIP (Routing Information Protocol) is one of the oldest routing protocols still in service. Hop count is the metric that RIP uses and the hop limit limits the network size that RIP can support. OSPF (Open Shortest Path First) is the most widely used IGP (Interior Gateway Protocol) large enterprise networks. OSPF is based on the Shortest Path First (SPF) algorithm which is used to calculate the shortest path to each node. EIGRP Enhanced Interior Gateway Routing Protocol) is Cisco's proprietary routing protocol based on Diffusing Update Algorithm. EIGRP has the fastest router convergence among the three protocols we are testing.

More detailed description of these three routing protocols will be included later. We aim to analyze the performance of the three protocols such as their router convergence, convergence duration and end-to-end delay. In our project, we are going to use OPNET to simulate RIP, OSPF and EIGRP in order to compare their attributes and performance. According to the convergence we can find out which protocols are suitable for different sizes and types of network.