**PROJECT SYNOPSIS**

| DEPARTMENT | COMPUTER SCIENCE AND ENGINEERING | | | |
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| TITLE OF THE PROJECT | Designing and Implementing Wide Area Network Using OSPF Protocol | | | |
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| PROJECT TIMELINE  (Tentative Start date- End Date) | Oct 2022 to Jan 2023 | | | |
| PROJECT GUIDE | Dr. Nagaraja J, Associate Professor, Dept. of CSE | | | |
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| PROJECT - DOMAIN | Computer Networks | | | |
| INTRODUCTION | A WAN is a data communication network that operates beyond the geographic scope of a LAN. WAN allows the transmission of data across greater geographic distances. WANs use facilities provided by a service provider by a service provider, or carrier.WANs use serial connections. An enterprise must subscribe to a WAN service provider to use WAN carrier network services.  Dynamic routing protocols play an important role in today’s networks. The following sections describe several important benefits that dynamic routing protocols provide. In many networks, dynamic routing protocols are typically used with static routes.  OSPF typically requires coordinations among many internal routers, area border routers (routers connected to multiple areas), and autonomous system boundary routers.At a minimum, OSPF-based routers or access servers can be configured with all default parameter values, no authentication, and interfaces assigned to areas. If you intend to customize your environment, you must ensure coordinated configurations of all routers | | | |
| APPLICATION/S | Increasingly, enterprises are leveraging multiple WAN links at their branches to **connect their offices to their data centers and headquarters**. Historically one of the options to manage their network routing is through Open Shortest Path First (OSPF), which is an Interior Gateway Protocol (IGP). | | | |
| CHALLENGES IN THE CURRENT WORK | **Challenges :**   * Inflexible OSPF area structure * OSPF’s limitations on filtering prefixes * Consequent pockets of BGP or separate OSPF processes to filter when redistributing — sometimes to the point where it seems BGP is becoming the IGP for the organization * Using VLANs to extend many WAN areas and area 0 between two datacenters | | | |
| PROJECT PROBLEM STATEMENT | Design and Simulate a Wide Area Network. To design a topology which consists of 10 networks. Implement the scenario using OSPF Protocol (multi Area Concept) (Minimum 10 networks with subnet 198.100.1.0) | | | |
| OBJECTIVES OF THE PROJECT | * To Design a Wide Area Network consisting of 10 networks. * To connect networks using the Internet Protocol (IP), and OSPF (Open Shortest Path First). * To find the best path for packets as they pass through a set of connected networks. | | | |
| PROPOSED SOLUTION | * Creating representation LAN topologies * Connecting all the LANs into a WAN through routers. * Configuring the OSPF(Open Shortest Path First) Protocol | | | |
| PLATFORM THAT WILL BE USED FOR IMPLEMENTATION | Cisco Packet Tracer | | | |
| Demonstration Details | Demonstration of packet routing and real time Simulation mode of Cisco’s network simulation tool, Packet Tracer. | | | |
| ARE THERE ANY STANDARD DATASETS AVAILABLE | No | | | |
| REFERENCES | [1] [Ahmed Abo Ghazala](https://www.computer.org/csdl/search/default?type=author&givenName=Ahmed%20Abo&surname=Ghazala), [Ayman El-Sayed](https://www.computer.org/csdl/search/default?type=author&givenName=Ayman&surname=El-Sayed), [Mervat Mousa](https://www.computer.org/csdl/search/default?type=author&givenName=Mervat&surname=Mousa), 2008, Implementation of Open Shortest Path First to Wide Area Networks, IEEE, Retrieved December 05, 2022  {<https://www.computer.org/csdl/proceedings-article/isa/2008/3126a111/12OmNxaNGnF>}  [2] [Kazuya Odagiri](https://www.computer.org/csdl/search/default?type=author&givenName=Kazuya&surname=Odagiri), [Shogo Shimizu](https://www.computer.org/csdl/search/default?type=author&givenName=Shogo&surname=Shimizu), [Makoto Takizawa](https://www.computer.org/csdl/search/default?type=author&givenName=Makoto&surname=Takizawa), [Naohiro Ishii](https://www.computer.org/csdl/search/default?type=author&givenName=Naohiro&surname=Ishii),2012, Concept of Policy-Based Wide Area Network Management System, IEEE, Retrieved December 05, 2022  {<https://www.computer.org/csdl/proceedings-article/icis/2012/06211105/12OmNqHqSoT>} | | | |