Policy-Based Routing (PBR) Implementation for Enhanced Network *Traffic Control*

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Abstract—This report presents the implementation of Policy-Based Routing (PBR) to achieve enhanced control over network traffic in a computer network environment. PBR allows routing decisions to be made based on defined policies, such as source IP addresses or destination ports, thereby optimizing network performance and meeting specific business requirements. The report outlines the problem statement, proposed model, implementation details, and the results obtained from the PBR implementation.

I. INTRODUCTION

In modern computer network environments, efficient traffic control mechanisms are essential to optimize network performance and ensure the delivery of critical services. Traditional routing protocols, such as static routing or dynamic routing, provide limited flexibility in routing decisions. Policy-Based Routing (PBR) offers a more granular approach by enabling routing decisions based on predefined policies. This report introduces the implementation of PBR to address the need for enhanced network traffic control.

II. PROBLEM STATEMENT

The existing network infrastructure lacks the flexibility to route traffic based on specific criteria, such as source IP addresses or destination ports. This limitation hinders the optimization of network resources and may lead to suboptimal performance, particularly in environments with diverse traffic patterns and requirements. The problem statement entails the need for a solution that allows dynamic routing decisions based on defined policies to achieve better traffic management and control.

III. IDEA

The proposed solution involves the implementation of Policy-Based Routing (PBR) to address the limitations of traditional routing mechanisms. PBR enables routing decisions to be made based on various criteria, such as source IP addresses, destination ports, or protocol types. By defining routing policies tailored to specific traffic characteristics and requirements, PBR offers greater flexibility and control over network traffic.

IV. PROPOSED MODEL

The proposed model consists of the following components:

1) IP Forwarding: Enable IP forwarding to allow the system to forward packets between network interfaces.
2) Routing Tables: Define multiple routing tables to route traffic based on source IP addresses or other criteria.
3) NAT Configuration: Configure Network Address Translation (NAT) to allow traffic to flow between interfaces.
4) Firewall Rules: Prioritize traffic based on destination ports or protocol types using firewall rules.
5) Implementation: Implement the proposed model using appropriate tools and techniques.

V. RESULTS/OUTPUT

- The implementation of Policy-Based Routing (PBR) yielded the following results:

- Enhanced Traffic Control: PBR allowed dynamic routing decisions based on defined policies, resulting in improved traffic management and optimization.

- Flexible Routing Policies: The ability to define routing policies based on various criteria provided greater flexibility in controlling network traffic.

- Improved Performance: By routing traffic through optimized paths, PBR contributed to improved network performance and resource utilization.

VI. CONCLUSION

THE IMPLEMENTATION OF POLICY-BASED ROUTING (PBR) DEMONSTRATED ITS EFFECTIVENESS IN ENHANCING NETWORK TRAFFIC CONTROL AND MANAGEMENT. BY ENABLING DYNAMIC ROUTING DECISIONS BASED ON PREDEFINED POLICIES, PBR OFFERS GREATER FLEXIBILITY, EFFICIENCY, AND CONTROL OVER NETWORK RESOURCES. THE PROJECT SUCCESSFULLY

ADDRESSED THE PROBLEM STATEMENT AND PROVIDED VALUABLE INSIGHTS INTO THE BENEFITS OF ADOPTING PBR IN COMPUTER NETWORK ENVIRONMENTS.

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