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(54) Title of the invention : INTELLIGENT ROUTING SYSTEM FOR MULTI-STAGE DATA NETWORKS USING FLOW-BASED ADAPTIVE ROUTING METHODOLOGY

(51) International classification :H04L0045000000, H04L0047244100, H04L0043100000, H04L0043082900, H04L0047122000	(71)**Name of Applicant :** 1)**Chitkara University** Address of Applicant :Chitkara University, Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India. Patiala ----------- ----------- 2)**Bluest Mettle Solutions Private Limited** **Name of Applicant : NA** **Address of Applicant : NA** (72)**Name of Inventor :** 1)**MISHRA, Rahul** Address of Applicant :ODC-4, Panchshil Tech Park, inside Courtyard by Marriott premises, Hinjewadi Phase - 1, Pune - 411057, Maharashtra, India. Pune ----------- ----------- 2)**PANDEY, Sakshi** Address of Applicant :ODC-4, Panchshil Tech Park, inside Courtyard by Marriott premises, Hinjewadi Phase - 1, Pune - 411057, Maharashtra, India. Pune ----------- ----------- 3)**MANTRI, Archana** Address of Applicant :Chitkara University, Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India. Patiala ----------- -----------
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(57) Abstract :
This subject matter presents a cutting-edge system (100) for adaptive routing in multi-stage data networks, using a flow-based adaptive routing methodology. The system (100) presents a hierarchical network topology (102) with interconnected switches, optimizing data packet routing. Advanced flow-based routing components (104) dynamically adjust paths based on real-time network conditions. Continuous monitoring tools (106) offer immediate performance insights, while predictive analytics tools (108) proactively optimize routing paths. The system's scalability (110) ensures adaptability to diverse network architectures. Flow classification, monitoring, and routing mechanisms (112) enhance data flow efficiency, and Quality-of-Service (QoS) mechanisms (114) prioritize critical traffic. Security mechanisms (116) provide real-time threat detection and mitigation. This subject matter revolutionizes adaptive routing, delivering efficient, reliable, and secure multi-stage data networks.

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