

REPORT – The Innovators

Introduction

"Talk-a-Tive" is an innovative application designed for seamless interaction between multiple nodes, similar to IoT devices. The application provides detailed network performance information, ensuring users can monitor and maintain optimal network health.

Features Implemented

Node Interaction:

Nodes communicate to share network health metrics like latency, bandwidth, packet loss, jitter, and throughput.

Authentication and Authorization:

Robust mechanisms ensure only authorized nodes participate, enhancing security.

Organization Creation:

Users can group related nodes into organizations, simplifying management of tightly coupled nodes.

Search Functionality:

Powerful search feature allows quick access to specific datasets within the network.

Future Plans:

Predictive Modeling : Training a model to predict network issues and identify problematic attributes.

Solution Recommendations : Providing actionable solutions to address identified network problems proactively.

Technology Stack:

Node.js: Server-side scripting.

Express.js: Web application framework for building the API.

React.js: Dynamic and responsive user interfaces.

CSS: Styling for a consistent and appealing user interface.

Socket.io: Real-time, bidirectional communication between nodes.

Dataset:

We have created our own dataset. We have randomly generated a dummy dataset with 1000 nodes and 10000 interactions which are being made in the span of a year. We have included the attributes bandwidth_in, bandwidth_out, latency, packet_loss, cpu_uses, memory_uses, disk_io and round_trip_time in our dataset for an interaction between 2 nodes at a certain timestamp. We have also added outliers manually to have peak which can be a case in the scenario of high load.

Data Visualisation (Dashboard):

We have also created data visualisation using Power BI depicting the trends of variation in the values of the attributes with change in load on the nodes.