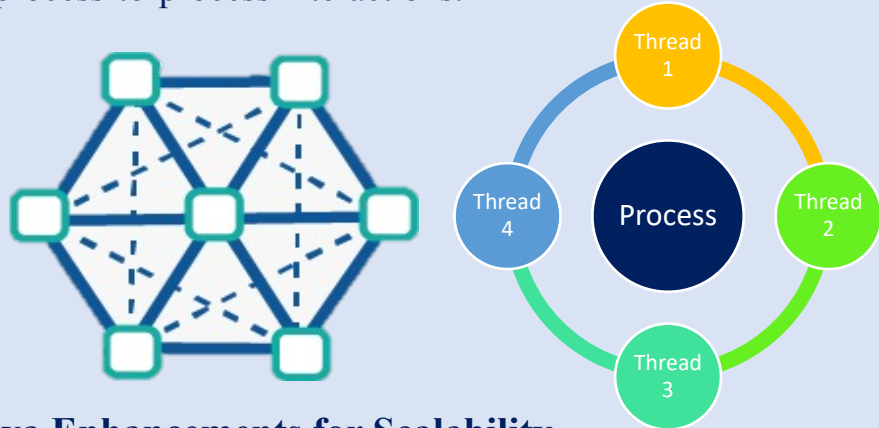




High-Performance Server-Client Communication in JAVA

Overview

- This project explores the integration of C++, Python, and Java to achieve high-efficiency, cross-language communication using socket programming.
- Focused on distributed computing, it leverages the unique capabilities of each language to ensure seamless process-to-process interactions.



Java Enhancements for Scalability

- Significant updates were made to the Java component, utilizing advanced threading techniques to handle numerous client connections simultaneously.
- Which allowed a responsive and reliable communication across a broad network, catering to a high volume of concurrent requests.

Non-blocking I/O with java.nio

- A key advancement in the Java code was the adoption of the java.nio package, introducing non-blocking I/O operations.
- This development marks a pivotal enhancement, offering scalable server-client exchanges and markedly boosting performance in environments with high concurrency demands.

Performance Insights

- Extensive testing revealed critical insights into the application's scalability and operational efficiency.
- By adjusting the number of threads and message loads, a comprehensive understanding of the system's responsiveness and throughput under varied conditions was obtained.

