LAN-Based Communication Project - Daily Highlights & Details

Project Overview

The project aims to create a LAN-based real-time communication system for NIT Silchar students, enabling video calls, audio calls, and text chats without the need for the internet. The system will use WebRTC for peer-to-peer communication and WebSockets for signaling.

Key Concepts Discussed Today

1. WebRTC & Significance of Port 3478

- WebRTC enables **direct peer-to-peer communication** for video, audio, and chat.
- **Port 3478** is used by STUN/TURN servers to help devices establish connections behind NAT/firewalls.
- A firewall rule must allow **UDP traffic on port 3478** to ensure smooth connectivity.

2. Using Institution's Server Instead of a Personal PC

- Instead of running the WebSocket signaling server on a personal PC, an institution's **LAN-based server** can be used.
- This ensures **better stability and availability** since institution servers run continuously.
- A WebSocket server running on the LAN can be accessed via **ws://server-ip:3000**.
- Firewall and network permissions must be configured to allow WebSocket traffic on the institution's LAN.

3. Steps to Deploy WebSocket Server on Institution's LAN Server

1. **Check access permissions** with IT department.
2. **Deploy WebSocket signaling server** using Node.js on the LAN server.
3. **Ensure firewall rules allow WebSocket traffic on port 3000.**
4. **Update WebRTC client code** to use the institution's server IP instead of localhost.

Implementation Roadmap

- ✅ Setup WebSocket signaling server on a local machine for testing.
- ✅ Test WebRTC connectivity within LAN with UDP on port 3478.
- ⬜ Request access to deploy the WebSocket server on the institution's LAN.
- ⬜ Configure security rules and test server performance.
- ⬜ Implement additional chat/file-sharing features.

Next Steps

- Finalize deployment plan for institution’s server.
- Run WebRTC peer-to-peer tests with multiple clients.
- Begin work on a user interface for easier interaction.

This document serves as a summary of today’s discussions and planned actions for the LAN-based communication project.