

The JamNOW Project

Lightspeed Audio Labs created JamNOW to showcase its low-latency audio communication infrastructure. The project goal was to provide a “virtual garage” in which a group of users could gather, jam together and create music. Because of the low-latency architecture, even if one user was in Boston and the other in Baltimore, they would experience a latency of not more than 50 ms from the instant of firing their own guitar lick to hearing the instruments and vocals of the others in the jam mixed together to make the complete sound. With the speed of sound at about 1 ms/foot, that is equivalent to being on opposite ends of the same performance stage!

An intuitive diagram of the JamNOW functional architecture is shown in the Figure 1, below. You and a jam buddy can sing and play guitar together and listen to the mixed result even though you are not next to each other.

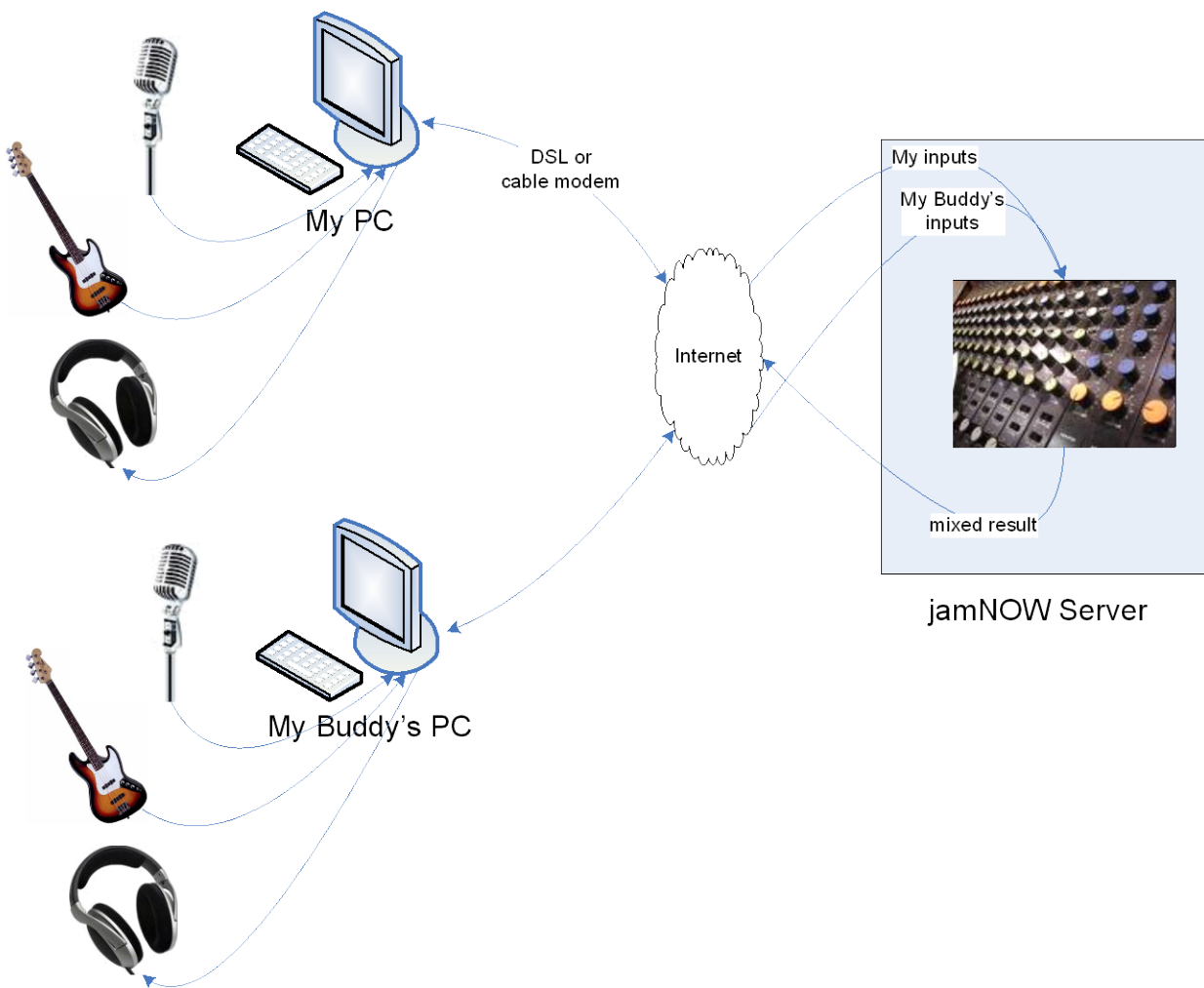


Figure 1 – Intuitive JamNOW System Architecture

A more functional-block oriented JamNOW architecture is shown in Figure 2, below.

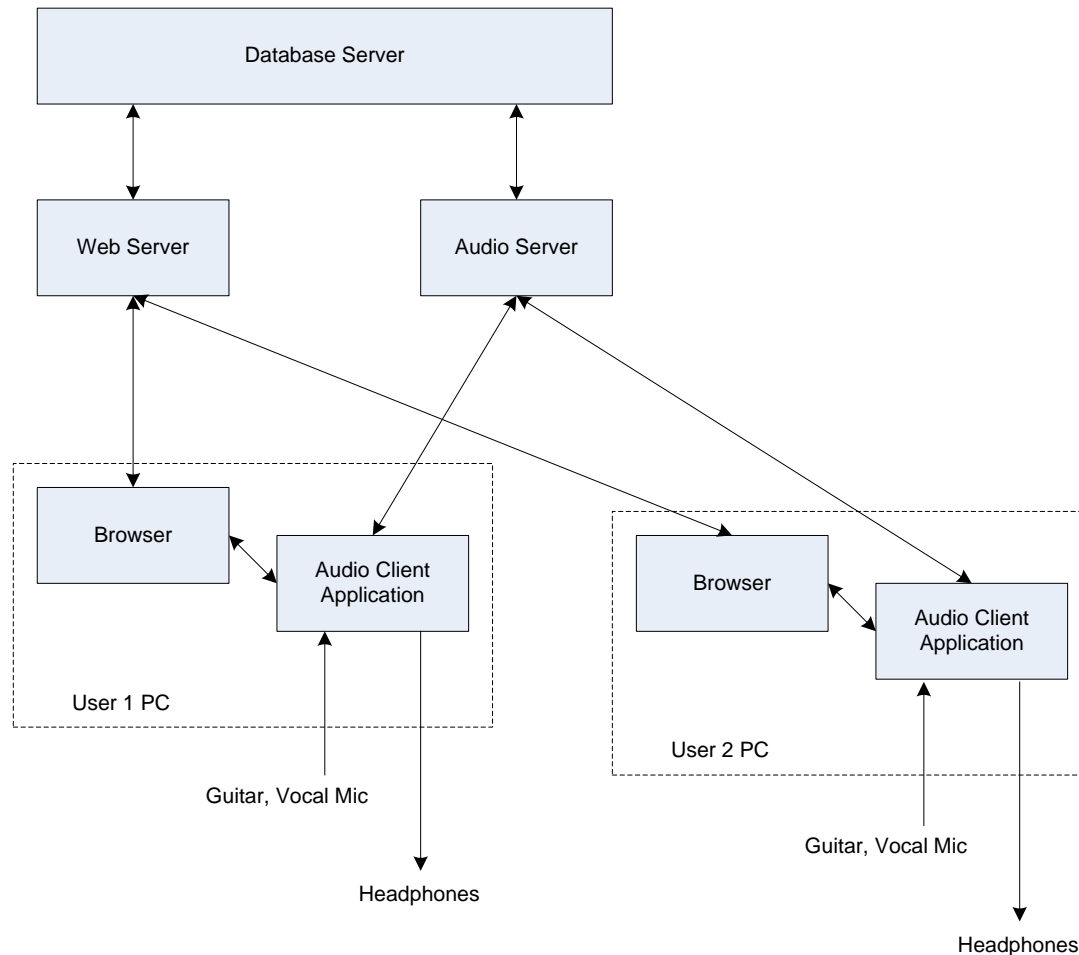


Figure 2 – Functional JamNOW System Architecture

The specific functional elements are:

- Web server – this could be as simple as a portal to register, login, find your jamming partners and launch a jam session. The client browser is aware that the client audio application is running (or advises the user to start the client audio application) and passes jam room connection information to the client application.
- Database server – typically a MySQL data base that contains user information (login, password, screen name) but more importantly information about the system status, such as IP address and ports of “jam rooms”, status of jam sessions and location of songs created from jam “tapes.”
- Audio server – this is the heart of the system: a low-latency audio mixer that supports many jam rooms, each with several jammers. While a jam session is active, all audio is recorded so that jammers can come back after the session and edit one or more songs from the session tapes.
- Audio client – a low-latency client that provides

- Stereo audio input: for example, a guitar and a vocal microphone
- Stereo audio output: to headphones or loudspeakers