OpenSpace WebRTC

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OpenSpace WebRTC – Current Status

Multi-Instance Support

- Seamlessly manage multiple OpenSpace instances simultaneously.

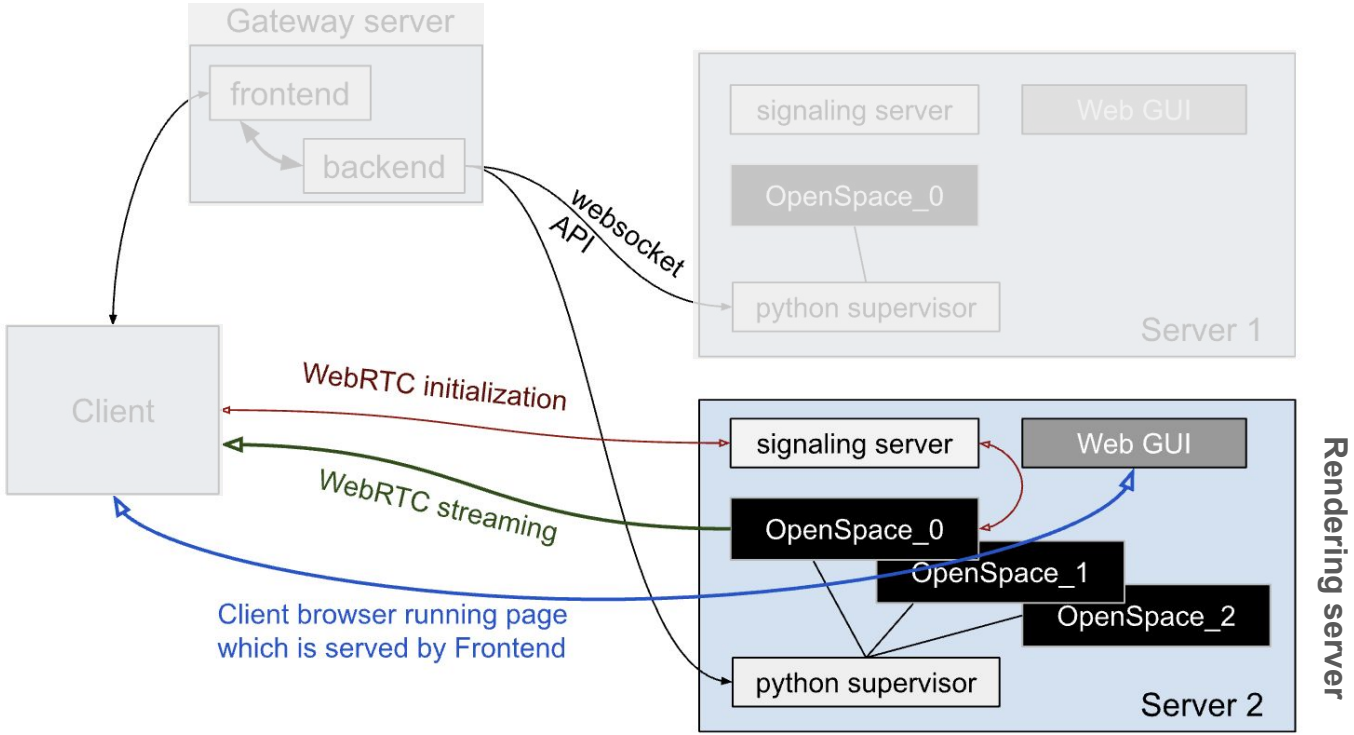
Rejoin Capability

- Effortlessly rejoin previously launched OpenSpace sessions.
- Maintain context and workflow continuity.

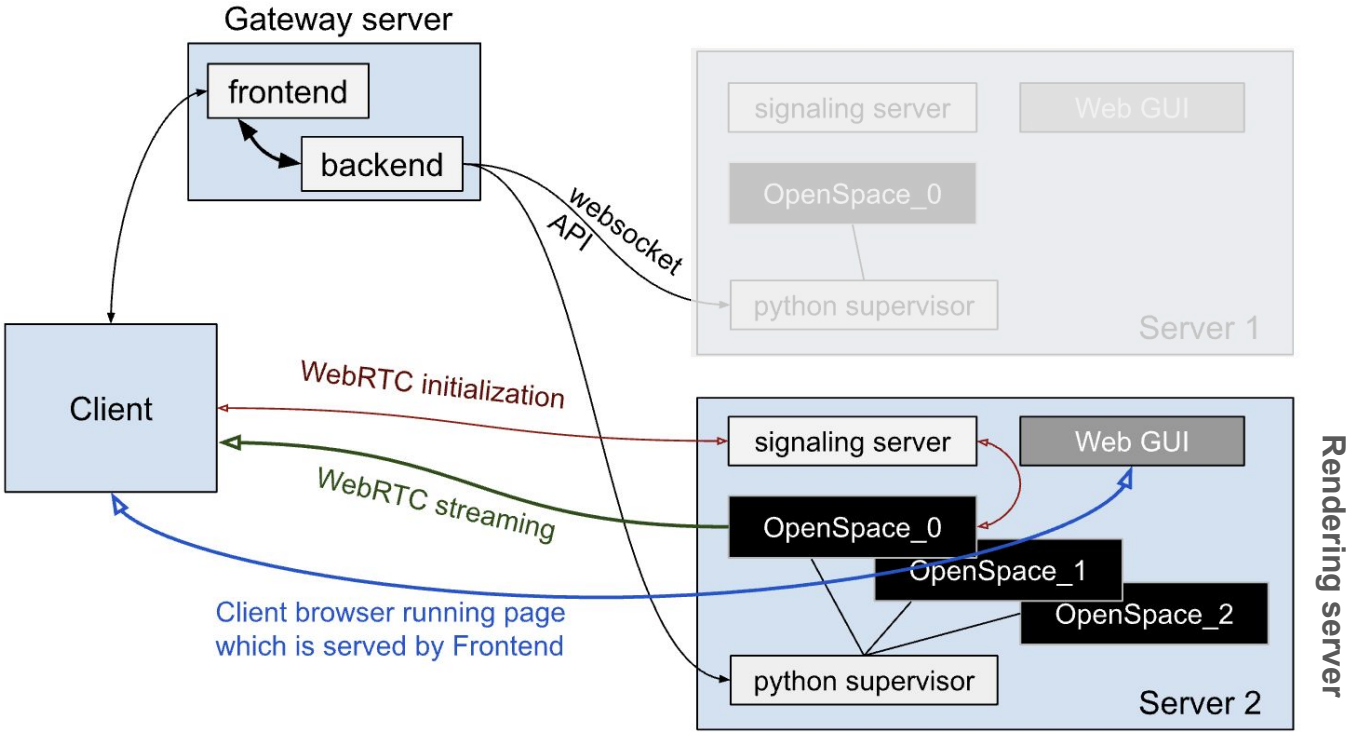
Improved Deployment

- **Automated Database Setup**: Streamlined installation with deployment scripts.
- **Cloud Deployment**: Deployment on AWS cloud computing services.
    - **Pending Fix:** Secure connection setup for signaling server.

Architecture

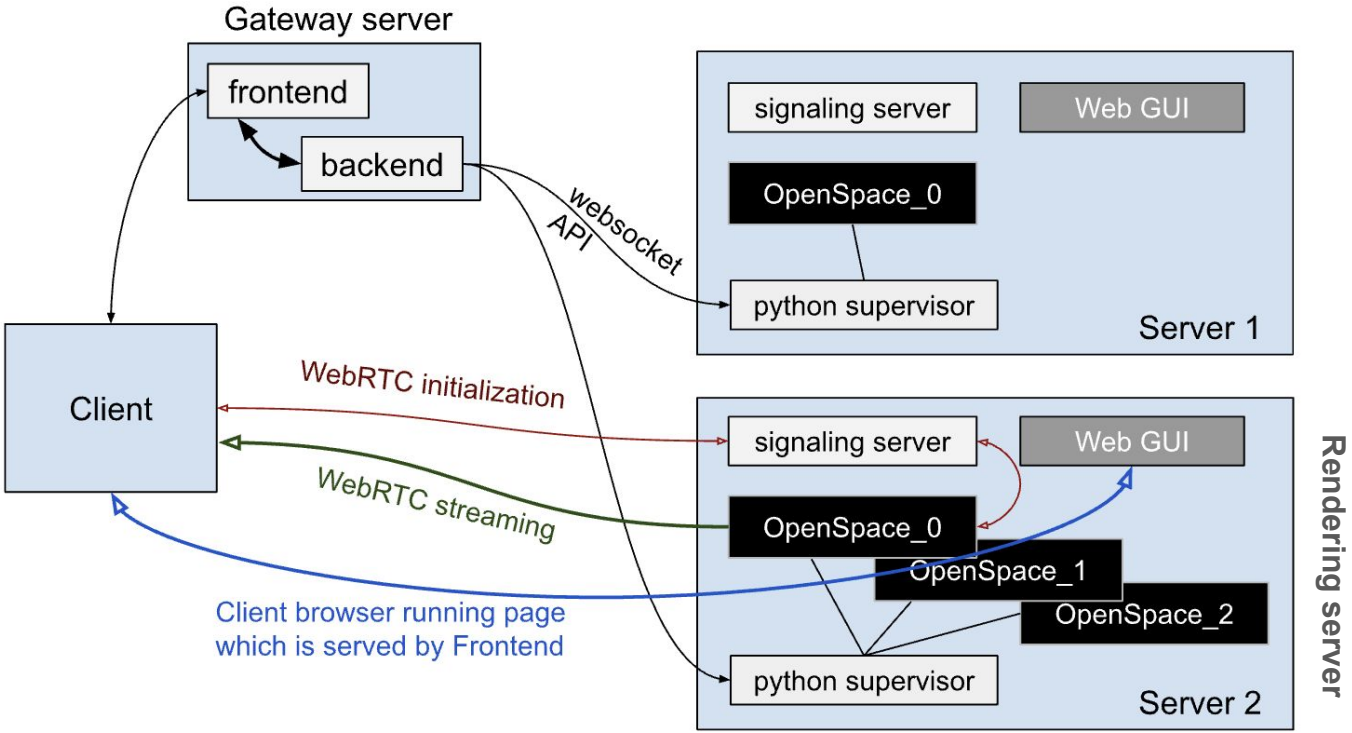


Architecture - User initiates an OpenSpace Streaming Session



More detailed information can be found here.

Architecture - User initiates an OpenSpace Streaming Session



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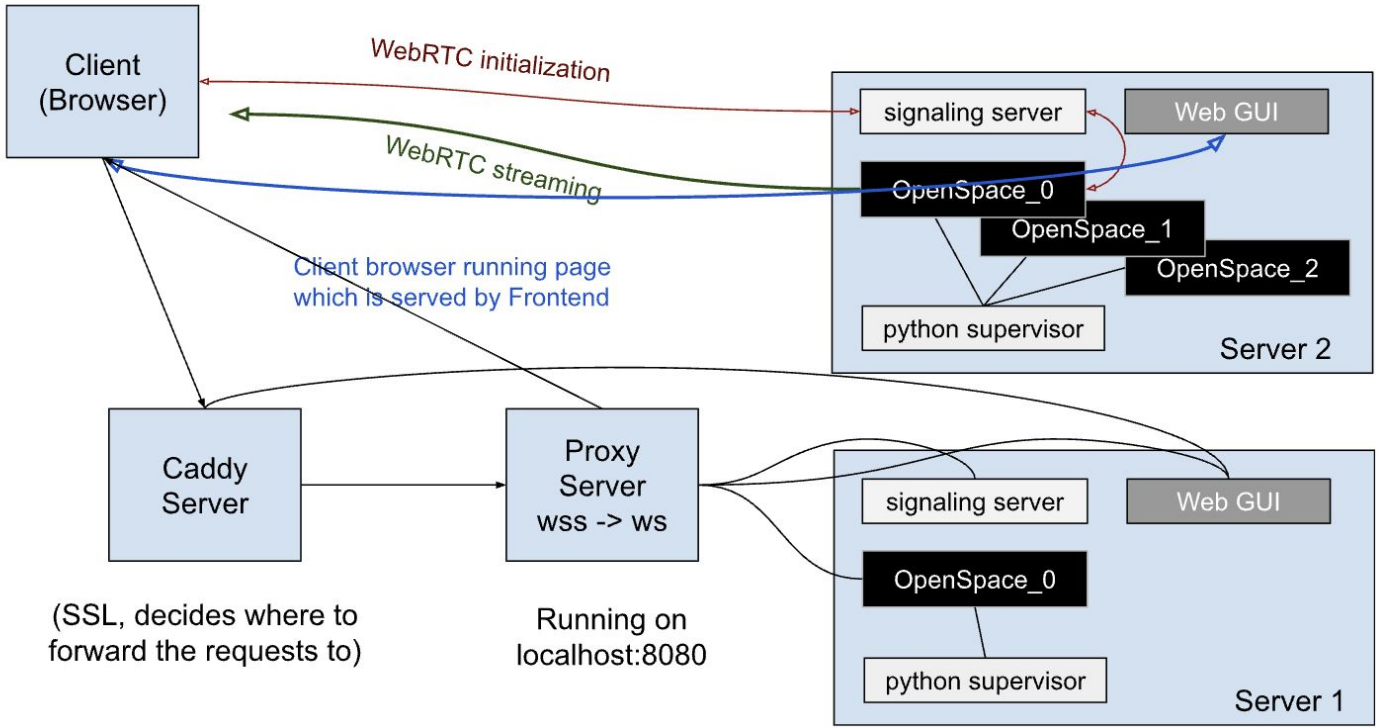
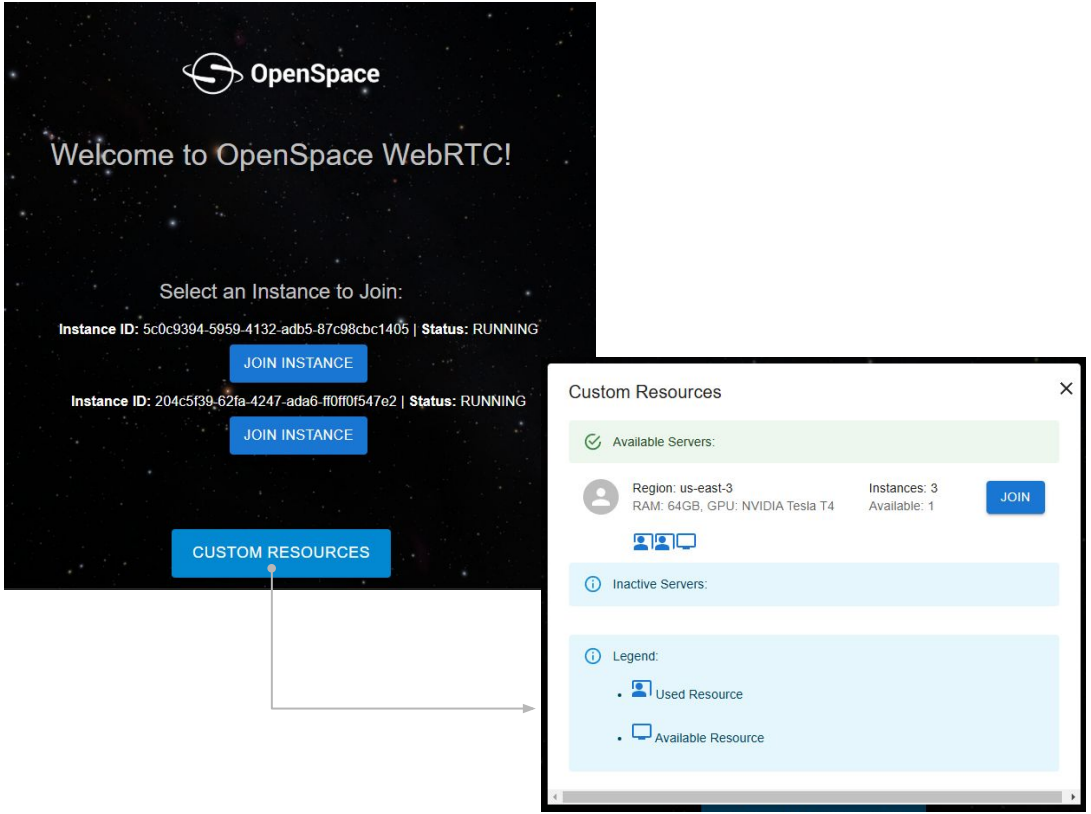
Architecture - Using a secure connection



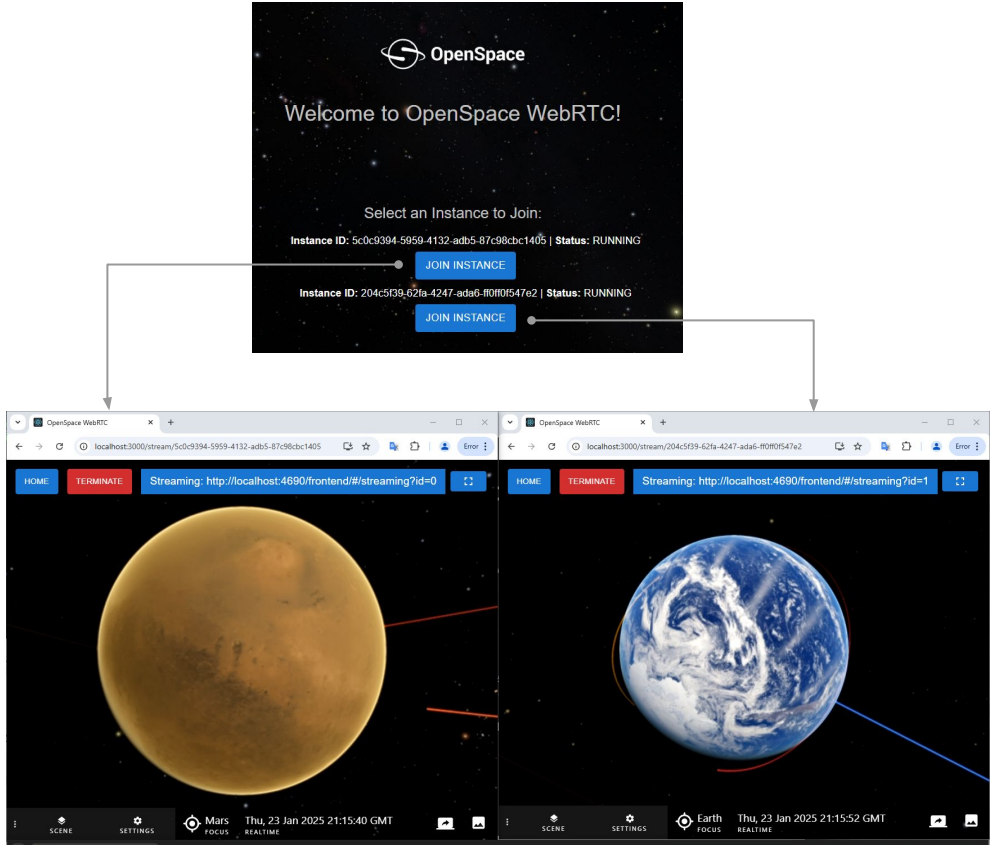
Support multiple OpenSpace instances

- Users can launch multiple instances from the browser.
- Users can manage multiple sessions simultaneously.
- Each instance gets a unique URL, for example: http://localhost:3000/stream/<instance_id>
  - Instance id is UUID



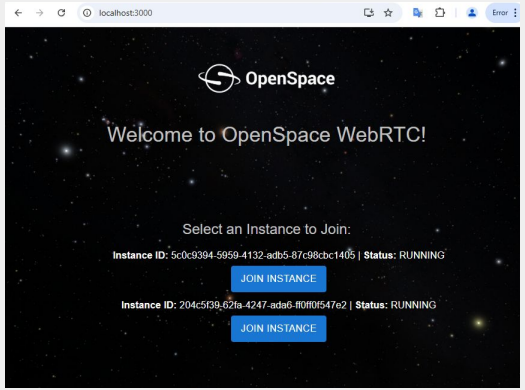
Rejoin a Previously Launched Instance

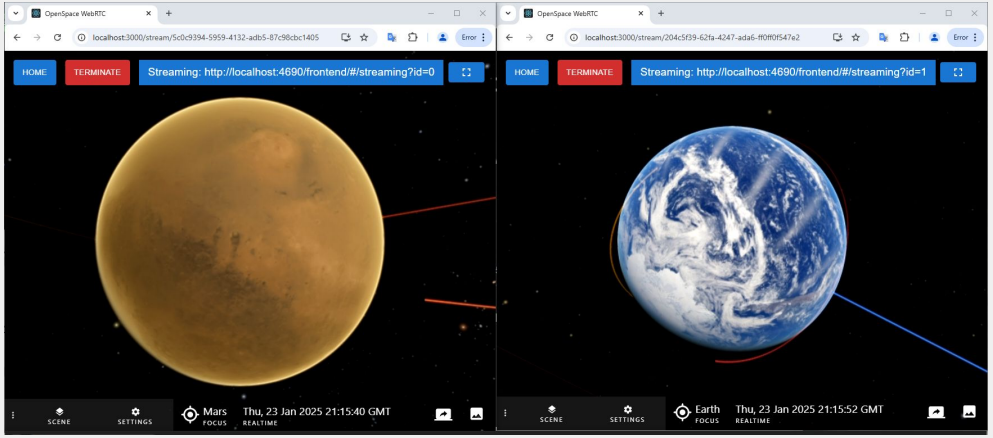
- Users can rejoin running instances directly from the home page.
- Session continuity: Instances resume from where the user left off.
- Local session binding: session_id is stored in localStorage to keep instances tied to the user.



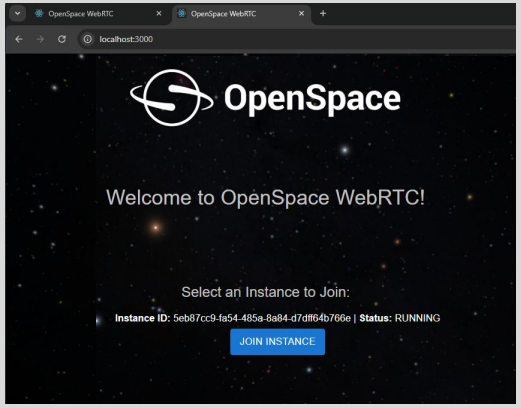
Multiple Machines

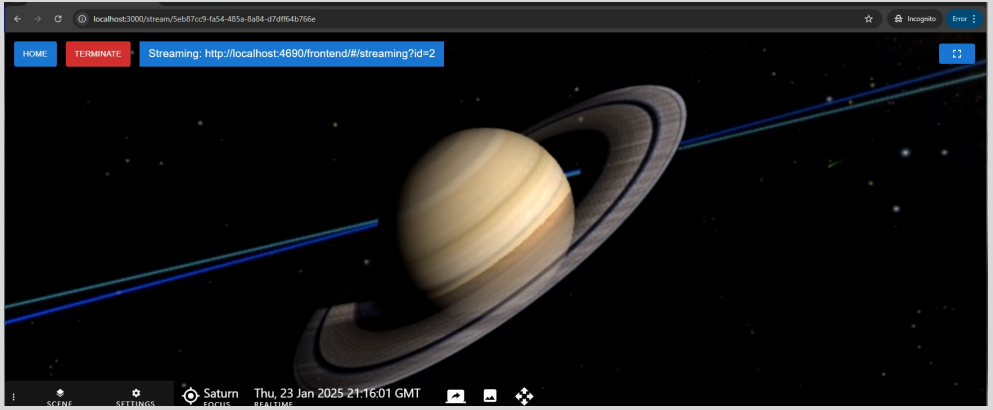
Machine 1





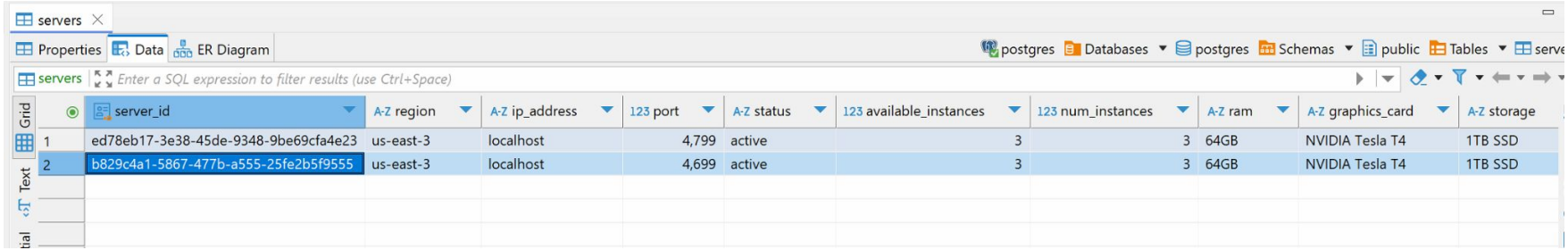
Machine 2





Automate Database Setup

1. Added seed.js script to automate database setup:
2. Creates required tables.
3. Populates initial data (e.g., WebRTC server: localhost:4699).
4. Ensures a consistent deployment process.



	server_id	region	ip_address	port	status	available_instances	num_instances	ram	graphics_card	storage
1	ed78eb17-3e38-45de-9348-9be69cfa4e23	us-east-3	localhost	4,799	active	3	3	64GB	NVIDIA Tesla T4	1TB SSD
2	b829c4a1-5867-477b-a555-25fe2b5f9555	us-east-3	localhost	4,699	active	3	3	64GB	NVIDIA Tesla T4	1TB SSD

Cloud Computing Deployment (AWS instances)

Deployment Requirements:

- Operating System: Windows
- CPU: Intel i5 equivalent or better
- GPU: Nvidia GTX 1060 or comparable
- RAM: 16 GB
- Disk Space: Minimum 100 GB available
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Software to be Installed:

- Qt (version 6.6.3 MSVC build)
- CMake (version 3.31)
- Visual Studio (with C++ Build Tools module)
- Visual Studio Code
- Node.js
- Python (latest stable version)
- PostgreSQL (version 13 or higher)
- DBeaver (PostgreSQL GUI tool)
- Git Bash

Network and Connectivity Requirements:

- The machine must allow remote WebSocket connections.
- Open Ports:
  - 4680–4700 (range)
  - 8443 (for HTTPS/WebRTC signaling)
- Ports must be open on both the local firewall and any parent networks (e.g., corporate routers, external firewalls).

Demo Video

Demo video of OpenSpace WebRTC in its current status:

- Non-secure connection (inside the same machine, same network): Watch here (https://www.youtube.com/embed/lCfv9l-rLxg?start=126&end=304)
- Secure connection (Rendering server running on AWS instance and client accessing through the web browser from outside the network): Watch here (https://www.youtube.com/embed/lCfv9l-rLxg?start=441)

Thanks!