

Architecture and Technology Stack

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1. Introduction

The Mursion Software (“Software”) enables users to participate in live simulations of defined scenarios in virtual environments where the user interacts with virtual characters (avatars) to practice or assess interpersonal skills (“Simulations”). The Software is provided as a subscription-based software as a service offering (the “Subscription”) granting a limited license to use and access the Software for the Subscription Term subject to the terms and conditions agreed upon via a contract or Master Services Agreement with Mursion.

2. Software Components

You or your organization’s IT team are responsible for obtaining, maintaining, and supporting all internet access, computer hardware, and other services needed to use, operate or access the Software. There are two basic components that power the Mursion experience.

Stand-alone networked application for Windows or MacOS, responsible for the core simulation experience, built using Virtual Reality, Artificial Intelligence, and associated rendering technology. This application is end-point encrypted to facilitate a secure and private simulation experience.

Web-based application that assists with the logistics of scheduling and managing users and their simulations and provides a front-end to access past simulation performance videos, and related Mursion experience metrics.

3. Hardware Requirements

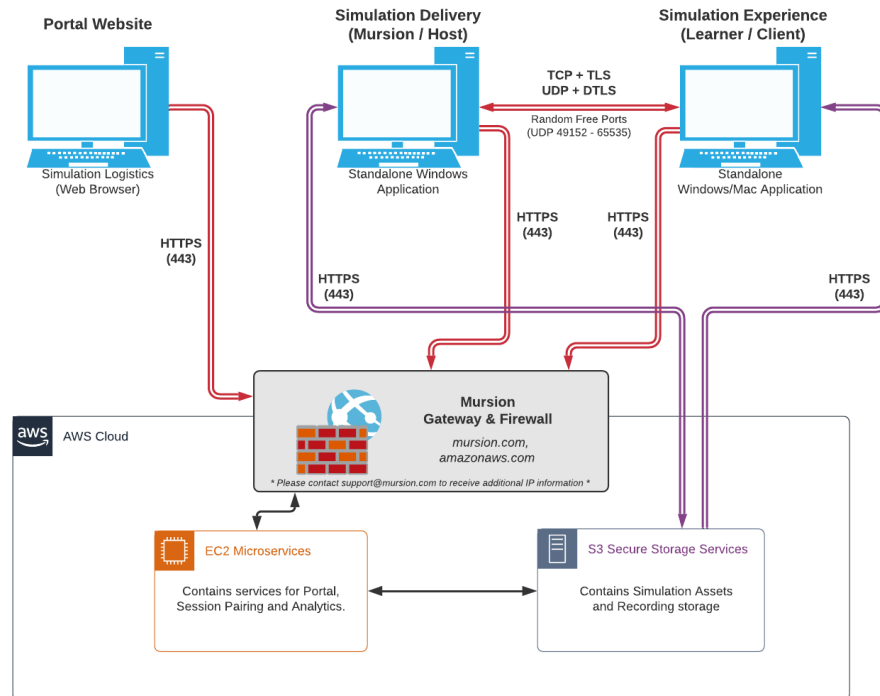
Since Mursion software uses gaming technology to create an authentic, effective, and responsive simulation platform, it is reliant on the use of CPUs, GPUs, and Network Interfaces to create a smooth and engaging experience. The software is designed to adapt automatically to a user’s personal computer depending on it’s hardware configuration, operating system, and runtime system resource usage. The minimum and recommended hardware requirements to run the Mursion Software can be found [here](#).

4. Mursion Product Architecture

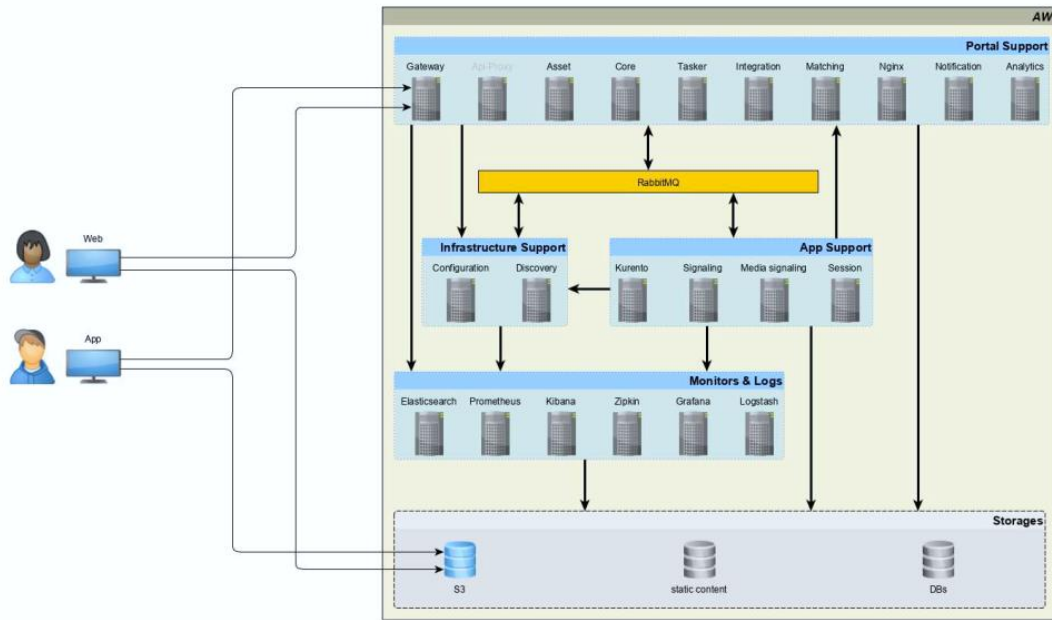
The following diagram shows Mursion’s product architecture including the protocols, ports, and gateways that are accessed by the application at runtime. If a walkthrough of this architecture is required, please contact Mursion’s Project Manager who can help schedule this for you.

Network Architecture

Mursion License 3



5. Technology Stack



- **Spring Boot 2 + Spring Cloud** - fast configuration, quick development, big ecosystem
- **RabbitMQ** - the most widely deployed open source message broker
- **JSON Web Tokens** - secure authorization & information exchange
- **Swagger** - easy-to-use API design tools for developers, QA and analysts
- **Single-Page Application** - no page reloads, no extra wait time
- **React+Redux** - reusable components with predictable states
- **Websockets** - full duplex communication with low latency
- **Unity3D** – cross-platform support for app deployment and VR rendering
- **NativeRTC** - proprietary WebRTC-based communication protocols

6. Security

Mursion's software is designed with Enterprise security in mind. An overview of Mursion's overall security policies can be found [here](#). Technologies that allow us to achieve enterprise security levels include:

- Network service isolation - Microservice architecture
- Encapsulated internal architecture - Single public entry point (API Gateway)
- Communication security - Transport Layer Security (TLS) - HTTPS & WSS for all communications
- Unauthorized access prevention - Spring Security Authorization and Authentication
- Email security - Encrypted emails based on client's certificate

- Internal information protection - Attribute-Based Access Control (ABAC)
- Data modification audit control
- Logical and physical data segregation capabilities
- Protected data integrity - double-validation via frontend and backend

7. Public IP Addresses

The Mursion software requires you to permit access to the following public IP addresses from machines that may be situated on your organization's network, home network, and potentially behind a firewall. For more details, please refer to the product architecture diagram in Section 3.

- amazonaws.com
- mursion.com
- the public address of the "Simulation Delivery" machine, shown in the architecture diagram, determined at runtime.

8. Software Installers

Deployment across internal machines on network

Mursion can provide you with a standard Software Installer that can be deployed across multiple machines. The installer can be run on both Windows and Mac machines. To obtain this installer, please contact your designated Mursion Project Manager.

Standalone software installation on local machines

Mursion's installer can be run by users directly on their personal or office machines after they have registered and created an account with Mursion, without needing elevated role-based privileges, unless such features are explicitly blocked by an organization's IT policies.

9. Technical Support

If you need further technical assistance with the setup of your Mursion Software, please contact Mursion Support at 1-855-999-5818 or support@mursion.com.

Support is available Monday through Friday, 8am – 9pm EST (5am – 6pm PST).

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