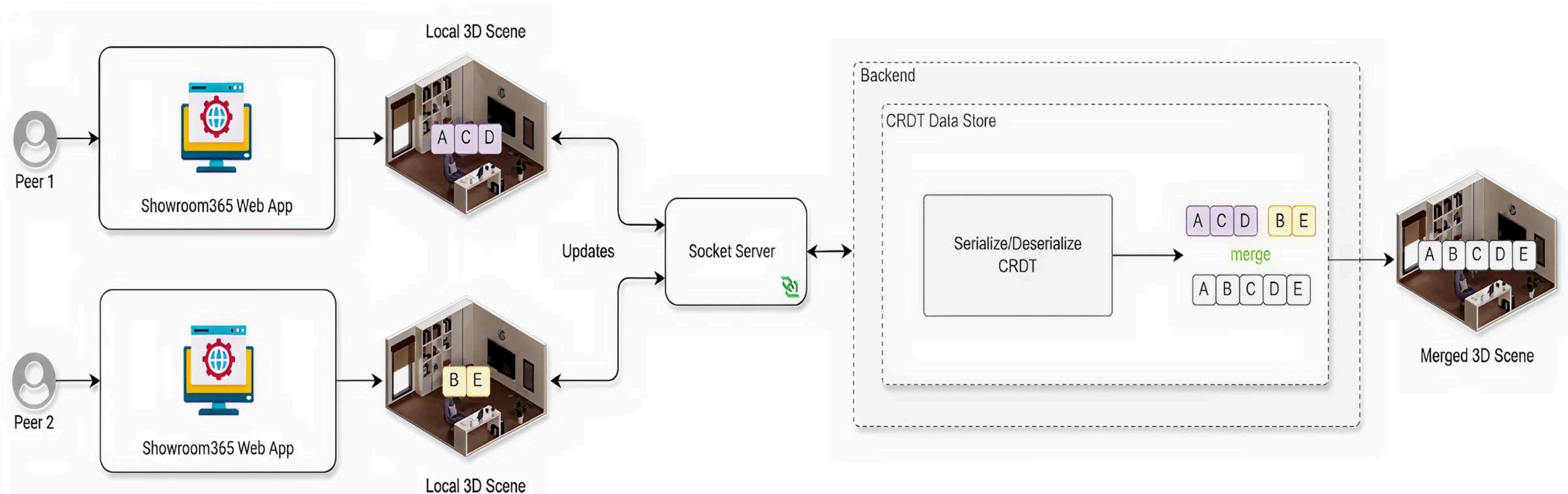


Spaces365 –Collaboration3D

Executive Summary

Collaboration3D is the enterprise-grade foundation of Spaces365, enabling sellers and buyers to collaboratively design and customize dream home layouts in real time within a shared 3D environment. All changes are instantly synchronized, ensuring a consistent, immersive experience for every participant—no matter where they are.

High-Level Collaboration3D Architecture Overview Diagram & Explanation



Key Components & Interactions

The Collaboration3D system operates on a peer-to-peer¹ synchronization model with a WebSocket² based communication provider for connectivity. Each peer — representing a user’s browser or client — maintains its own local replica³ of the 3D scene.

When a user performs an action (e.g., moving an object, changing a material, or adding a new model), the change is recorded locally as an update in the peer’s CRDT⁴ document. These updates are then broadcast through the connection provider (WebSocket) to all other connected peers.

Using the CRDT’s commutative and associative properties, Yjs⁵ automatically merges concurrent updates from multiple peers into a single, conflict-free state. For example, if Peer A applies changes A–C–D and Peer B applies changes B–E, the system deterministically converges to a merged state: A–B–C–D–E.

Once merged, this updated scene is propagated back to all peers, ensuring a synchronized and consistent 3D environment across every client — without requiring manual intervention or centralized control.

Deployment

Collaboration3D has been developed and deployed on AWS⁶. (Amazon Web Services) using the foundation of Ubuntu⁷ OS. It can be deployed on any of the hyper-scalers such as Microsoft Azure, Google Cloud etc. VisCommerce will support a vendor if they choose to deploy on their private cloud as well.

Security & Compliance

World class security infrastructure such as firewalls and routers serves as the foundation. 3D assets are in glTF⁸ compliant to khronos’s standard for 3DCommerce⁹.

Business Benefit & Alignment

Spaces365 empowers sellers and buyers to collaborate in real time within a shared 3D space, turning conversations into interactive design sessions. This focused collaboration improves alignment, speeds decision-making, and ensures every stakeholder contributes to —and sees— the same vision instantly.

References

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4. CRDT - <https://crdt.tech/>
5. Yjs - <https://yjs.dev/>
6. AWS - <https://aws.amazon.com>
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