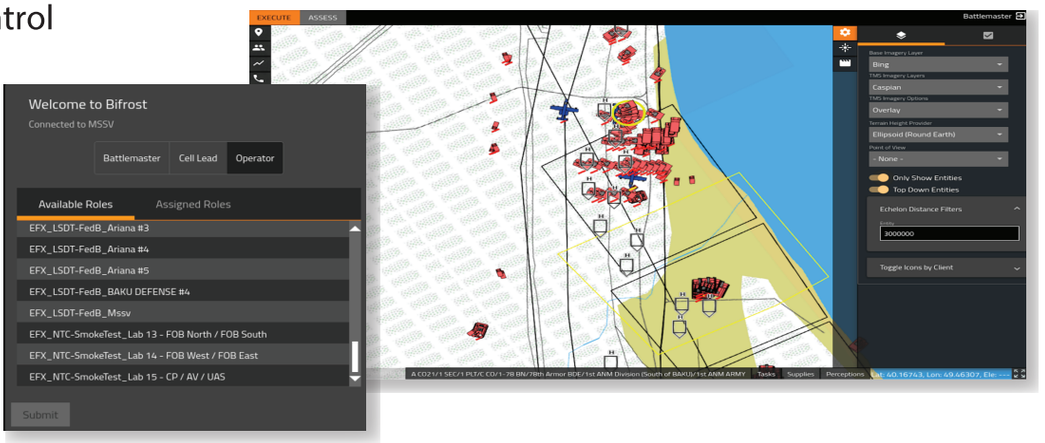
Bifrost

Bifrost is a next generation, service-oriented architecture for sharing simulation states through modern commercial approaches and technology.

Bifrost Highlights

The Bifrost Control client is a 3D web user interface that allows operators to visualize and control constructive simulation. Bifrost's user interface can control multiple sources of simulated entities, providing a common single user interface across multiple simulations.

- Scalable to more than 4 million entities over a global environment
- Lowers the barrier of entry, making it easier to incorporate simulations or components (e.g., satellite feeds, commercial air tracks)
- OneSAF server cluster used to provide large scale entity and aggregated view and control



Bifrost utilizes modern technology pioneered in the commercial sector to improve Modeling & Simulation capabilities.

- Takes advantage of multi-core processors to support large scale and a large number of clients
- Works naturally in the cloud environment
- Efficient over the network and simple to route across multiple networks
- Natively supports mobile devices, desktops, and servers

Bifrost Highlights (continued)

Bifrost optimizes network usage to work efficiently on U.S. Army networks, cloud deployments, and long-haul exercises.

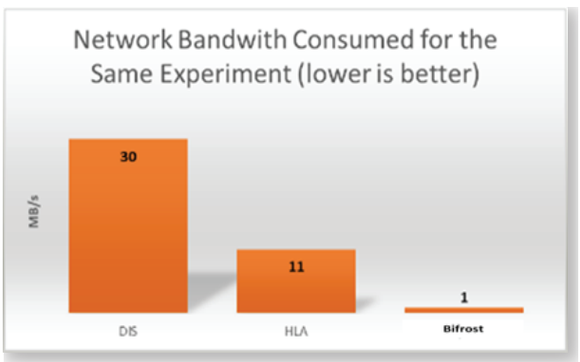
- Does not rely on multicast, which simplifies shared deployment in commercial or private cloud environments
- Demonstrated connection to over 200,000 simulated entities in Orlando, to virtual simulators in Ft. Riley and Ft. Carson over VPN on a cell phone hotspot
- Demonstrated connection to over 1 million entities from Ft. Benning to seven sites across the Battle Lab Simulation Collaborative Environment
- Demonstrated connection to over 1.1 million entities over a 1.5 Mb/ Wi-Fi connection at the 2019 Interservice/Industry Training, Simulation and Education Conference (I/ITSEC)
- Connected to FireSim by Ft. Sill through the user data gateway

Benefits of Bifrost

Provides collaborative capabilities that support distributed exercises between geographically separate sites.

- Demonstrated connections on DoD networks between various distributed sites
- Natively support cloud or on premises deployment

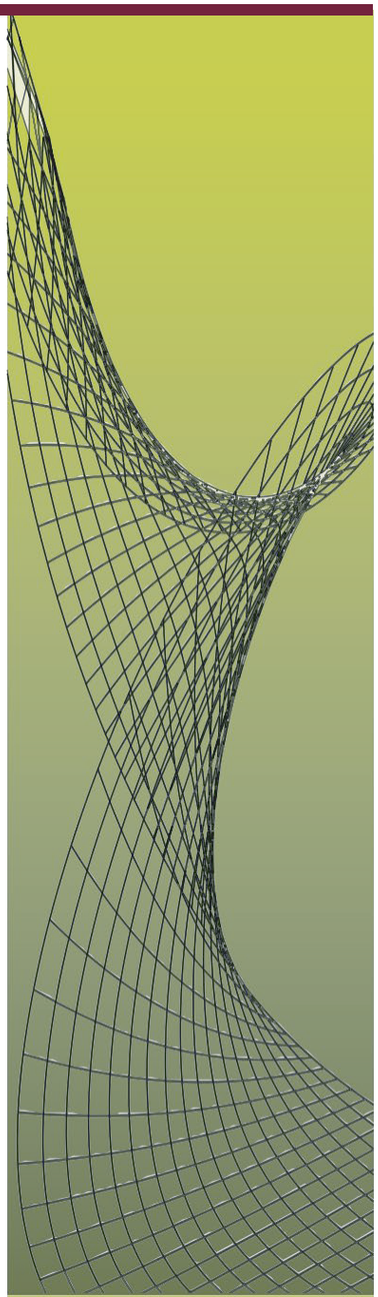
Uses little bandwidth.



Uses less than 1/20th of the network bandwidth of the equivalent high-level architecture exercise.

Does not require a coordinated Federation Object Model (FOM) agreement.

- Data model is discoverable at runtime through the application programming interface
- Data model can be extended during runtime without requiring restart



For more information, please contact:

Angela Stacy
Assistant Program Manager
One Semi-Automated Forces

Email: usarmy.orlando.peo-stri.list.onesaf-product-support@army.mil

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