Simulation in the Cloud

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Evolving the Simulation Center
CONSTRUCTIVE VIRTUAL

Cloud

Server-side Virtual World Compute Power

LIVE
Training Event Servers in the Cloud

- High Compute Power in Professionally Managed Centers
  - Scalable to large exercises and large numbers of exercises
  - On-demand access to resources
- Power to Model
  - Finally put the “Reality” in “Virtual Reality”
  - Tighter system connections reduces lag
- Server-side Computing for LVC
  - Provide modeling for all types of exercises and experiments
- Heterogeneous System-of-Systems
  - Multi-site collaboration
Simulation in the Cloud

NEW WORLD
• Soldier-centric
• Desktop Equipment
• Universal Access

ENABLERS
• Massive Computation
• Global Networks
• Cloud Services
• Distributed Management
Simulation as a Cloud Service

- Scalable Simulation Services provided to remote customers on the customers’ schedule
- Break the 1-to-1 relationship between equipment and events
- Light simulation client as an application on any military system
  - Browser-based
  - Generic Sim Engine & Tools
  - Flexible Game Engine
- Evolving Services at the core
  - Computation on Demand
Benefits to Warfighter Training

- **Scalable server farm for interactive training simulation**
  - **Constructive**: Primary host for training
  - **Live & Virtual**: Wrap-around play box
  - **Games**: Rich server-side models

- **Break the “one facility, one exercise” paradigm**
  - Multiple simultaneous exercises supported from a single simulation center
  - Put the Sim Center in the cloud

- **Physics-based objects, weather, and terrain**
  - Put the “reality” in virtual reality

- **Reduce sim-to-sim lag**
  - Host multiple sims on the same computer
OneSAF vs. World of Warcraft

**World of Warcraft**
- Visual Detail: 100X
- Algorithm Detail: 1X
- Heavy Client Demand

**OneSAF**
- Visual Detail: 1X
- Algorithm Detail: 100X
- Heavy Server Demand
Conclusion

- Increase soldier/unit access to training systems
  - Open connection on the dot.mil network
- Reduce operational costs for hardware, shipping, set-up time, travel, staffing
  - Connect from home station, stop traveling
- Increase model fidelity
  - Power to enrich the virtual world
- Increase model synchronization
  - Tight connections between processors
- Increase exercise reliability and availability
  - Multiple redundant resources