

THE CLOUD PLATFORM for NETWORK SIMULATIONS at DATACENTER SCALE

WE SIMPLIFY NETWORK SIMULATION

SCP for ns-3



Simulation leads to Understanding

- **Insights** about existing system networks
- **Optimize** the network configuration
- **Predict** performance of future network systems or components that are not yet deployed or available
- **Interactions** between different types of workloads
- **Improve** Active Queue Management techniques such as ECN marking at switches and NICs.
- **Explore Tradeoffs** such as:
 - Packet pacing on client vs. server side
 - Network contribution vs. the media contribution to storage latency
 - Optimal link speed adoption for DC network NIC links vs. interior links.
- **Behavior** of various network forwarding strategies and topologies
- **Load Balancing** with various affinity algorithms; ECMP, static hashes, oblivious routing, random LB
- **Impact** of RTOs and Packet drops on ML training metrics for various buffer sizes



Collaborate across the industry

- Join a consortium, including Data Center operators and Networking Equipment Manufacturers, collaborating to securely share network simulation models and workload patterns for faster innovation.
- Access a rich suite of stacks, workloads, NICs and switch models



Flexible Simulation

- Mix and match multiple vendor's networking equipment models, traffic, topology and stack.



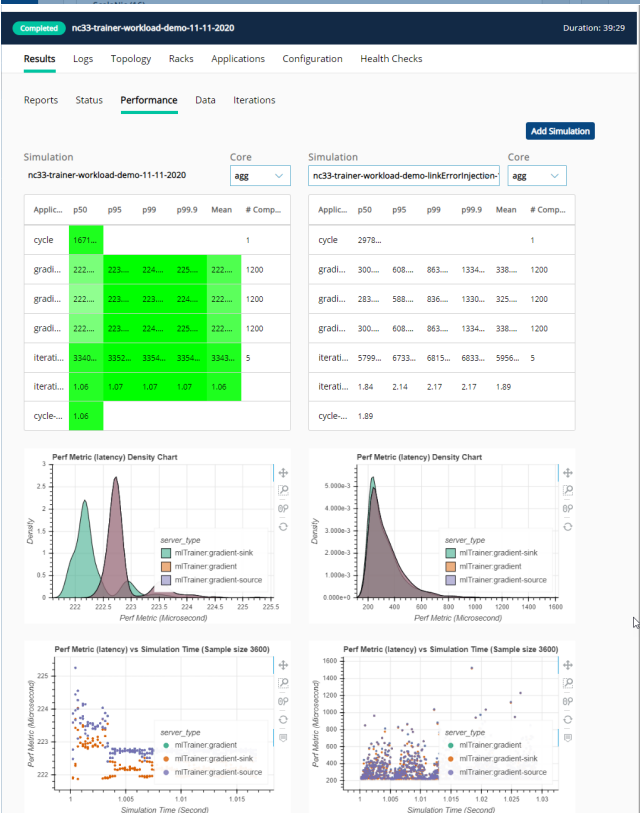
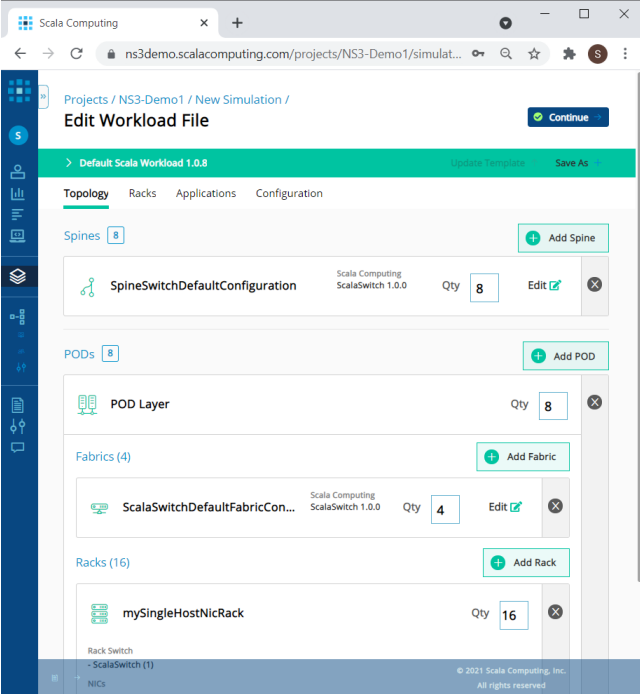
Public Cloud Benefits

- AWS provides secure, virtually unlimited computing resources without the queue
- No capital expenditures, reduced costs, and no burden on IT



SCP for ns-3 Advantages

- Flexible and easy-to-use pre-processing and data analytics engines wrapped around ns-3
- Multi-process enabled using MPI and optimized to be significantly faster and more robust
- Provides a platform for managing users, usage, models and results with tailored environments for developing new models and advanced analytics



Pre-Processing Engine

- Intuitive user interface tailored for discrete event-driven ns-3 network simulations.
- Modify networking equipment, topologies, traffic and stack parameters in an easy-to-use web-based UI.
- Topology setup is automatically validated to determine faulty configurations before wasting precious compute cycles and development time.

Performance

- The Scala Compute Platform (SCP) provides a secure and optimized infrastructure for the orchestration, provisioning and deployment of public cloud resources with no queue times.
- SCP for ns-3 **enables Data Center Scale simulation** in the cloud, up to hundreds of thousands of endpoints.
- Developed and enhanced by industry experts, Scala software modules have shown reduced runtimes from weeks to days and days to hours.

Data Analytics

- Scala's data analytics engine crunches 100's of Gigabytes of data in real-time to provide useful graphs including latency, goodput, and simulation execution timing.
- Understanding is increased with capabilities to compare network performance to a baseline or compare multiple simulations with different input parameters.

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Experience matters

- The Scala Computing team includes computer scientists, mathematicians, and enterprise industry veterans experienced in Enterprise, High-Performance Computing (HPC) and Artificial Intelligence (AI) computing systems. We are focused on the design of efficient parallel computing, large scale network interconnects, and fast storage.

