

Ensemble Simulator

Design, integrate and test in a virtual networking environment

Benefits

- **Lower capex**
Eliminate the need for dedicated “lab” equipment for development and testing purposes
- **Lower risk to production networks**
Test configurations and operational procedures in a safe “sandbox” environment before deploying to production networks
- **Enable DevOps lifecycle model**
Design, test and evolve networks in a DevOps environment that encourages experimentation, research and automation
- **Risk-free training**
Train new personnel in a risk-free environment; enable experimentation and learn from mistakes “on the ground” rather than “mid-flight”
- **Advance automation**
Develop and test network automations and procedures without risk to production networks
- **Evaluate resilience and recovery**
Inject simulated fault conditions and verify network response and recovery actions

Overview

Service providers need to continuously extend the capacity and capability of their production networks, drawing on increasingly software-defined network technologies.

While new features can be extensively tested, lab and test environments cannot match the scale and complexity of many live networks. Service providers need mitigating tools such as Ensemble Simulator to enable network-scale testing and integration without risking existing services.

Adtran’s Ensemble Simulator is a virtual training, development and test environment designed to help users operate a complex network, validate configuration changes, and integrate with Adtran’s networking technologies without having to invest in costly physical infrastructure. Optimized for the transition to software-defined networks, Ensemble Simulator provides a highly cost-efficient way to mitigate the challenges of increasing functional and architectural complexity. This tool significantly simplifies the demanding task of integrating domain controllers with service orchestrators and other operational support systems. Ensemble Simulator provides an orchestrated virtual machine (VM) execution environment for software normally residing in embedded network element controllers and traffic modules. This enables complete node functionality, including standard user interfaces, SDN software APIs, hardware and service configuration settings, as well as infrastructure to support communications to other real or simulated nodes, and to external network management applications. Individual network elements and even large multi-node networks can be designed, simulated and tested without major capital investment, dedicated infrastructure or the risk of applying untested configurations to production networks.

ENSEMBLE SIMULATOR

The screenshot displays the ADVA Ensemble Simulator interface. At the top, there are tabs for 'TEST' and 'TOPOLOGY'. Below this is a 'Tests' table with columns for Name, ID, Description, Status, State, Topology, Nr. NEs/VMs, and Created by. The table lists five tests, all in a 'Running' state with a green smiley face icon. Below the table, there are two overlapping windows. The left window is the 'ADVA Simulator' showing a network diagram with two nodes, NODE1 (10.19.81.4) and NODE2 (10.19.81.5), connected by a green line. A callout box shows '128.0.0.0/29 Area: 0.0.0.0'. The right window is the 'RESOURCES' view for a specific test, showing general information like IP (10.19.80.201), VM state (Online), and a list of services (SNMP, NED, TUI, CP, NE) with their status (running or stopped).

High-level technical specifications

Adtran platform support

- FSP 3000 optical transport system for release 19.1.1/3.1.6 and later
- FSP 150 XG400 Series 100 Gbit/s demarcation and aggregation for release 19.5.1 and later

Core simulation features

- Single and multi-node simulations
- REST API for programmatic control
- Network definition and setup wizard
- FSP 3000 “support data” import

Scenario control

- Fiber cut and OSC failure events
- Control test execution through REST API
- Software upgrade conversion verification
- Simulator database backup/ restore

Host environment

- Dedicated server or VM hosting option
- OS: Ubuntu 20.04.3 LTS
- VM: VMWare or equivalent
- Multi-user, multi-test scalability

Cloud-based model

- Access Simulator in the cloud
- No dedicated IT resources
- Secure access via VPN
- Subscription-based access
- Multi-user, multi-test scalability

Ease of use

- Independent user environments
- Very large or very small simulations
- Compatible with Ensemble Controller
- Enable DevOps

Applications in your network

Simulate live networks in a safe environment

- Mirror an existing production network by importing configurations directly into the simulator
- Test and verify network changes, upgrades and expansions prior to live deployment
- Test and integrate SDN and orchestrator functions with network element software APIs
- Create automated acceptance and regression tests, “what if” fault scenario analysis
- Multiple users test in their own environments simultaneously without interference to others
- Develop, test and document detailed and accurate workflows and operational procedures
- Conduct training for new personnel and for new technologies introduced into the network

