

Guarantee Application, Network and Security Performance on Satellite



APPOSITE
TECHNOLOGIES

About Apposite Technologies

- Apposite is the market leader in Network Emulation for testing of applications over WANs
- Now Apposite is changing the market for Traffic Generation
- Founded in 2005
- Based in Los Angeles
- 3,000+ Customers Globally



3,000 Leading Organizations Choose Apposite

Enterprise



Developers



Gov't/Military



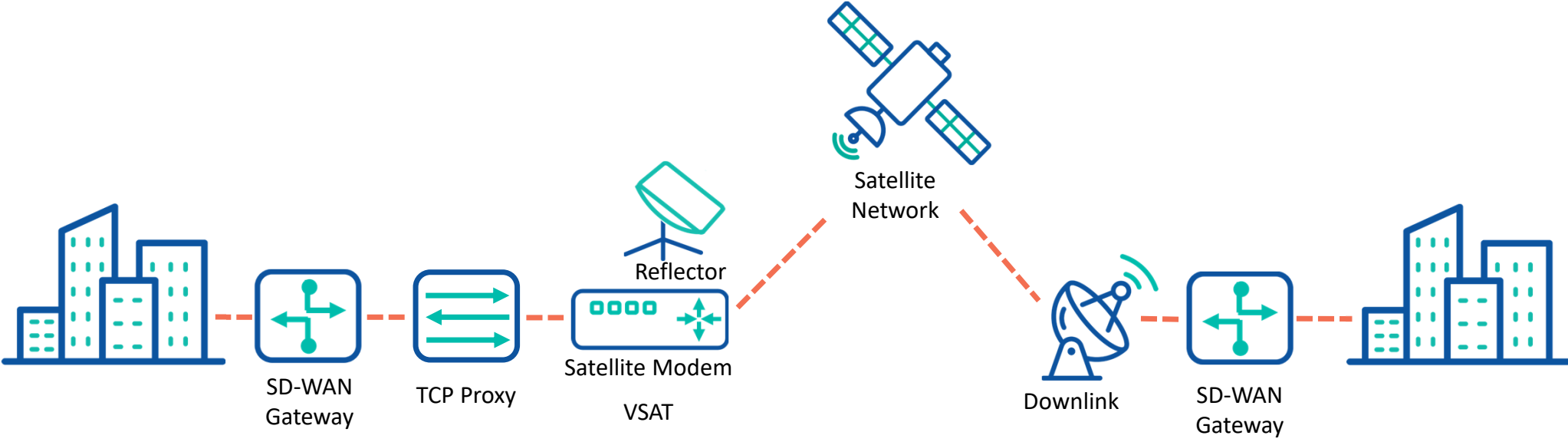
Telecoms



Clients That Trust Apposite for Satellite Performance Testing

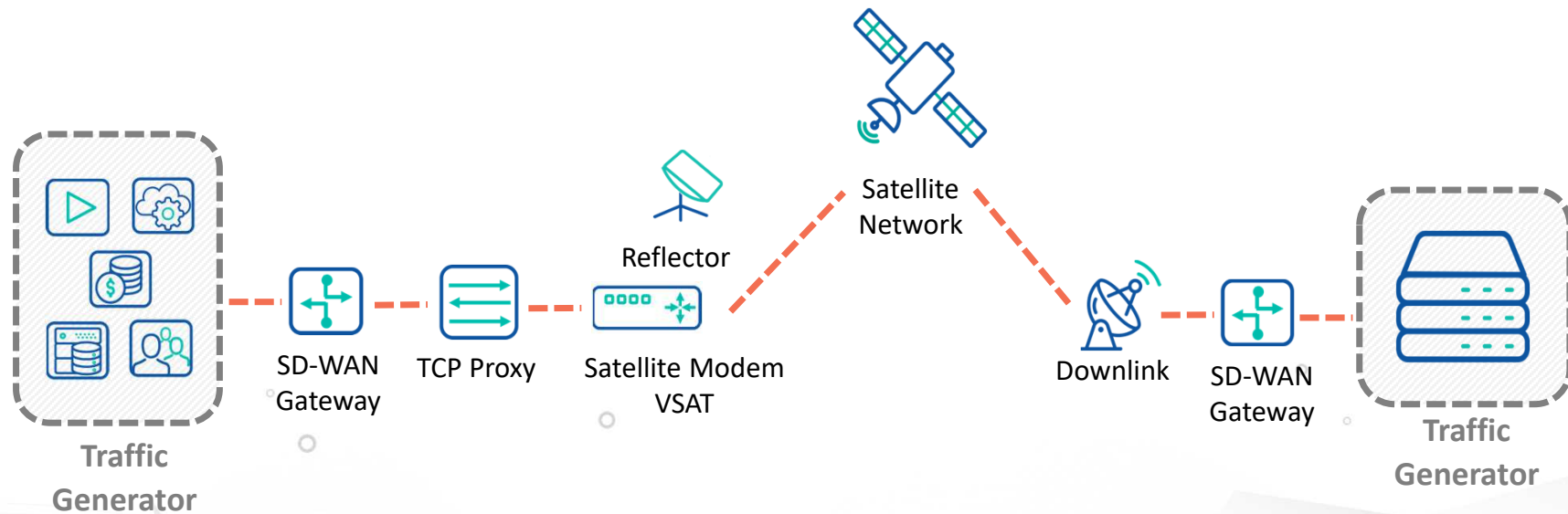


Typical Satellite Network



End-to-End Satellite System Test

- Traffic generator emulates the devices sending and receiving traffic on either end of the network
- Replicate the expected mix of application traffic at high scale
- Measure key performance metrics like throughput, latency, and packet loss by application type
- Saturate the network to validate QoS policies and identify any performance bottlenecks



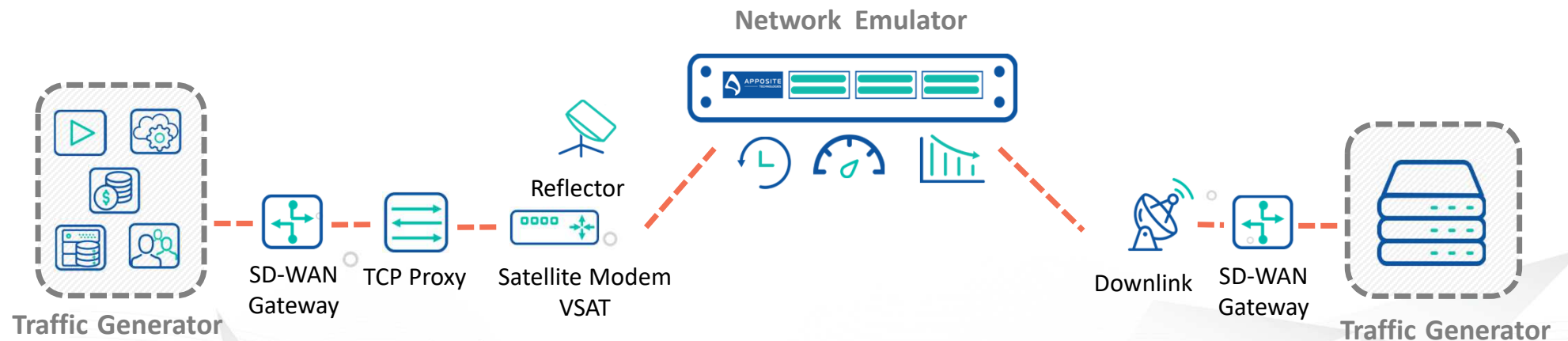
Using a Network Emulator

Challenges of Testing on Live Satellite Links

- Access to satellite networks is expensive & availability is often limited
- Tests are subject to whatever the conditions are that day
- Difficult to control and reproduce the test environment

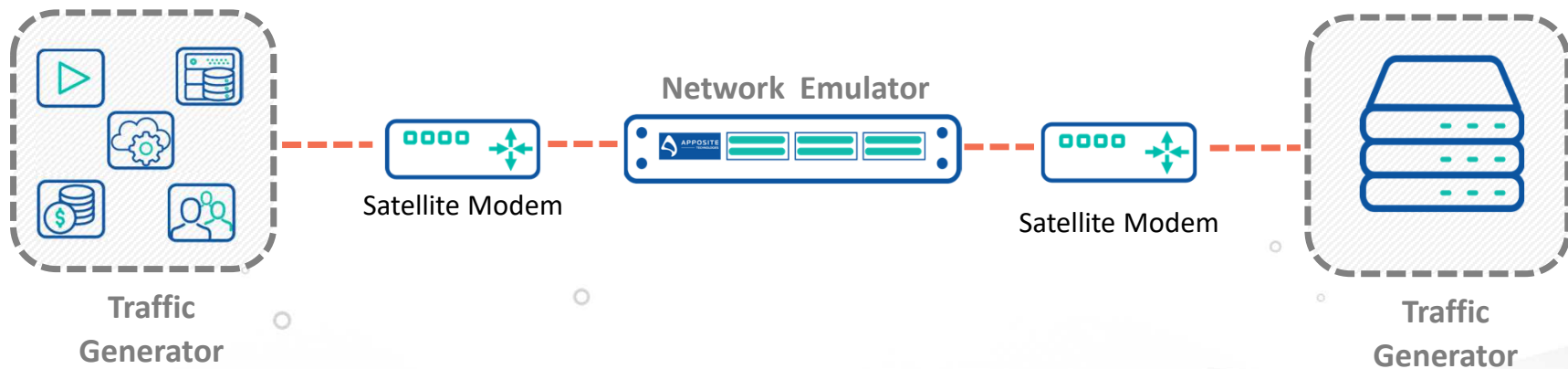
Emulating the Satellite Network with a Network Emulator

- Control network impairments like latency, link flapping, bandwidth constraints, & loss to replicate conditions like rain, storms and snow
- Test under the best possible to the worst possible scenarios
- Conduct tests in a reliable, repeatable way for consistent results



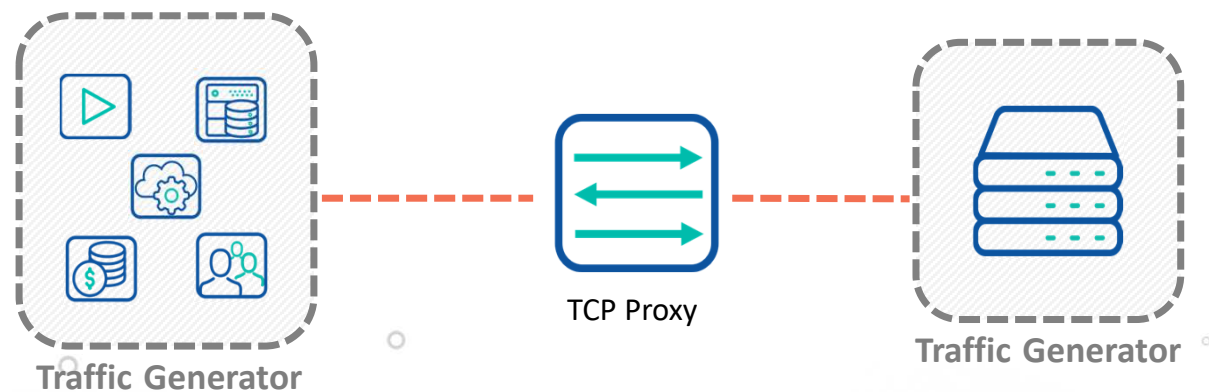
Isolating a Satellite Modem

- Use a traffic generator to emulate a mix of application traffic at high scale to simulate real-world usage scenarios
- Add a network emulator to replicate and control the dynamic characteristics of the satellite network
- Assess how well the satellite modem handles the traffic load
- Validate adherence to QoS policies and identify potential bottlenecks



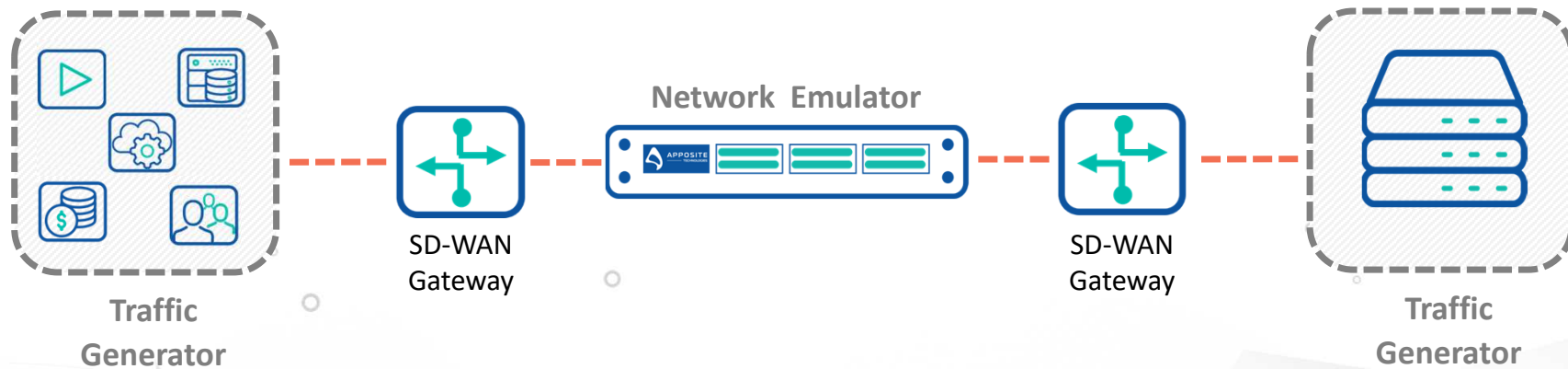
Isolating a TCP Proxy

- Use the traffic generator to generate a high volume of TCP sessions, and transfer data over the connections
- Measure how many simultaneous TCP connections the device can support
- Determine how fast the proxy can set up and tear down TCP sessions
- Measure supported data rates with and without the TCP proxy to prove that it does improve performance



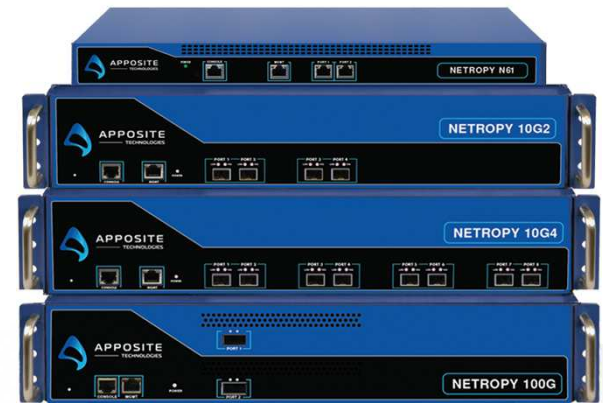
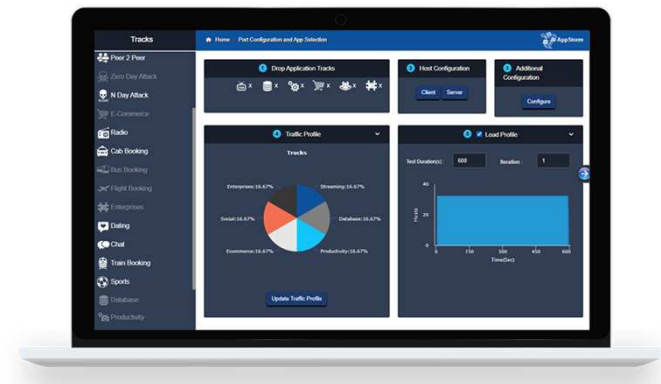
Isolating an SD-WAN Gateway

- Use a traffic generator to generate the expected application traffic being sent through the network, like video streaming, web browsing and VoIP
- Use a network emulator to create multiple links with individual network conditions
- Determine whether the gateway is correctly prioritizing application traffic according to QoS policies
- Verify whether the SD-WAN gateway is selecting the best alternative link in the case of an outage



Apposite Solution Highlights

- Support for Traffic Generation and Network Emulation
- Easy-to-use, wizard-driven test methodology
- Browser-based GUI that is platform agnostic
- Single platform stateless and stateful traffic from Layer 2–7, including security attacks
- Automation through a comprehensive RESTful API
- Over 30K app flows included with built-in application library + 10K malicious attacks in the Attack Library
- Interface speeds 1Gbps, 2.5Gbps, 5Gbps, 10Gbps, 25Gbps, 40Gbps, and 100Gbps
- Virtual Editions: VMWare, KVM
- Cloud Editions: AWS, Google Cloud, Azure



Satellite Solution Brief & Video

- Measure Network Throughput
- Measure Latency, Jitter and Loss
- Validate QoS Policies

Satellite Performance Testing: Testing End-to-End Satellite Systems and Individual Network Devices

Satellite Performance Testing Video

SOLUTION BRIEF

Testing the Performance of Satellite Systems and Devices

INTRODUCTION

Satellite networks have become a critical part of our modern communication infrastructure, providing connectivity to remote areas and enabling global communication.

Ensuring optimal performance is not always an easy task. Satellite systems are comprised of a multitude of devices - including satellite modems, VSATs, SD-WAN gateways, TCP proxies, Performance Enhancing Proxies, hubs and ground stations - and the network itself is often volatile and susceptible to performance degradation. Therefore, testing is necessary to identify and address any potential issues before they impact users.

Apposite Test Capabilities

End-to-end system testing

Benchmarking performance of satellite network devices

- Modems
- VSATs
- TCP proxies, PEPs
- SD-WAN gateways
- Firewalls

Validating QoS by sending realistic application traffic at high scale

Testing with and without real satellite links with network emulation

CHALLENGES

Network volatility: Satellites are continuously moving, and the network conditions like latency, packet loss, and bandwidth are constantly changing depending on factors like weather. Testing on live links means your tests are subject to whatever the current conditions are.

Cost & availability: Buying time to test on live satellite links can be expensive and the limited availability of time slots can make scheduling time for comprehensive testing difficult.

Scalability: As the number of users on a satellite network increases, the network can become congested, leading to further performance degradation. Ensuring the scalability of satellite networks can be challenging, especially in areas with high demand for satellite services.

Satellite Solution Brief

Speaker Bios and Contact Information

Jim Danford, SVP Global Sales

With an engineering degree from Georgia Institute of Technology, Jim spent the early years of his career in engineering and engineering management positions for several companies in the network test and measurement market. After a transition into sales, Jim has led sales teams throughout the world for companies in network test and measurement as well as video production and distribution monitoring. Jim has been involved with many DoD projects throughout the years including DISA's Global Information Grid – Bandwidth Expansion (GIG-BE) project and the Pentagon Renovation Program (PENREN).

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Cade Nelson, Systems Engineer

Cade Nelson has been in the networking business since 1996 when he was hired as employee number 56 at Earthlink Networks. He has held positions as Senior Network Engineer, Systems Integration Engineer, and Product Engineer at many different tech companies. Cade has been called the “swiss army knife” of Apposite Technologies where he wears many hats from product engineering to product development.

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Thank You



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