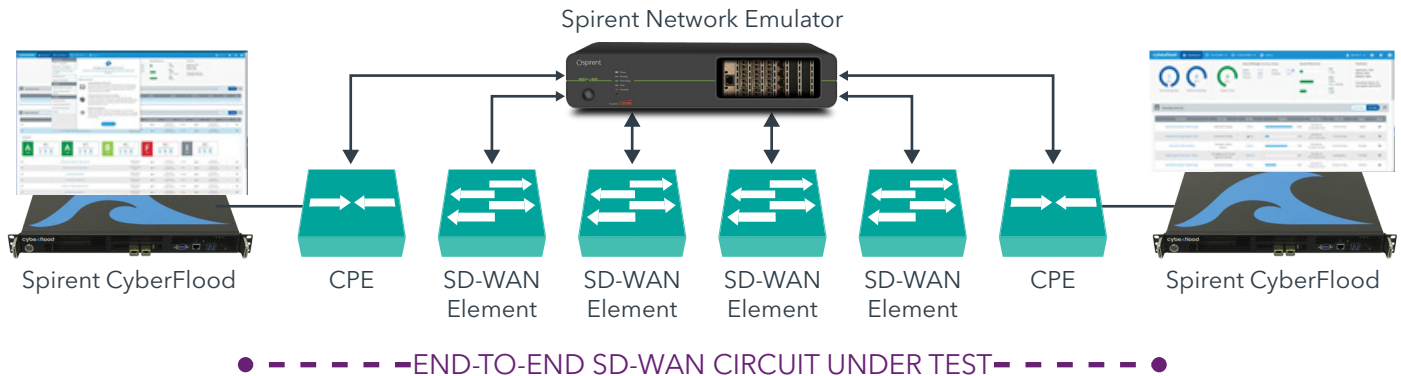Spirent™
Promise. Assured.

Determining SD-WAN User Quality of Experience under Real-World Conditions

Measuring user QoE with application traffic across SD-WAN circuit

Test Components

- Spirent Network Emulator
- Spirent CyberFlood with NetSecOPEN Traffic Mix
- Spirent CF20 Appliance

Use Case Steps

1. The defined Device Under Test (DUT) is the SD-WAN infrastructure.
2. In the SD-WAN circuit, insert Spirent Network Emulator between each hop within the circuit.
3. On the Spirent Network Emulator, define impairment chain sets with key real-world impairment conditions:
   (0% PL, 0 mSec Latency, +/- 0 mSec Jitter), (1% PL, 20 mSec Latency, 5 mSec Jitter), (5% PL, 20 mSec Latency, 5 ms. Jitter), (1% PL, 200 mSec Latency, 5 ms. Jitter), (5% PL, 20 mSec Latency, 15 ms. Jitter), (10% PL, 200 mSec Latency, 15 msl Jitter).
4. At the end of each circuit, connect Spirent CyberFlood to Spirent CF20 Appliance at the appropriate speed.
5. On CyberFlood, load the NetSecOPEN traffic eMix test.
6. Begin with no impairment set and run the traffic mix to completion *(this will be the normalization baseline)*.
7. Loop through each impairment set divided evenly between each hop to each hop so that the end to end impairment sums up to the values in the set, then run the NetSecOPEN mix to completion.
8. Divide the impaired set results by the normalized baseline and multiply by 100 to gain a percentage.
9. Graph all result and draw a trend line. If a result set falls off the trendline, then the SD-WAN infrastructure has a measurable impact on end user QoE.

Benefits

- Utilizes real world application traffic in a meaningful mix with non-trivial SSL/TLS exchanges so that the SD-WAN may inspect and route traffic realistically.
- Spirent Network Emulator correctly induces the effects of WAN condition on traffic; it reduces available tolerance forcing the SD-WAN infrastructure nodes to process efficiently.
- Measures exactly how real-world customers experience quality (QoE).
- Allows tester to tune and retest in a reproducible way.