

Shunra Virtual Enterprise

Satellite Network Simulation

Overcoming Satellite Network Challenges

Any application in today's mobile world faces the probability of being used over a wireless network, whether it is being accessed by corporate users with cellular handhelds or a traveling workforce using Wi-Fi hotel connections through mobile combat systems connecting to headquarters over satellite networks. Satellite networks especially introduce challenging conditions for data and voice applications. The existence of high latency, combined with a higher than usual probability to drop packets can dramatically impact the functionality and performance of data, voice, and network services. Users in a satellite network are also exposed to the dynamics of mobility, where allocated network resources vary between a strong signal through weak or congested channels down to the occasional loss of signal and connectivity. Beyond the need for testing applications, any hardware or software that will be installed on a remote satellite must be carefully tested, to make sure it can perform under the remote conditions. Vendors rarely have the luxury of patching or upgrading the hardware on the satellite, so the QA process must make sure that the product is working perfectly before it is launched on a satellite.

Cutting-Edge Satellite Network Simulation

Shunra Virtual Enterprise (VE) provides a simulation environment that accurately replicates the conditions of any satellite network, including high latency, high bandwidth, packet loss, mobility and signal losses. Using Shunra VE, application testers can validate applications before deployment over satellite networks and technology vendors can thoroughly test their products under satellite network conditions.

Easy Set-up & Configuration

Shunra VE is extremely flexible and can automatically detect any lab environment and seamlessly integrate within it. It does not require any changes to the existing lab setup, and can be installed and running within an hour. Designing and running a Satellite network is simple and easy. Using Microsoft Visio®, which is included with Shunra VE, you simply drag-and-drop the components that comprise the satellite network to create a visual model.

Detailed Analysis, Summary Reports, and Completely Automated Test Environment

Shunra VE processes and stores your test results and produces intuitive reports and graphs in real time and offline for easy analysis. With VE Reporter, you can quickly correlate application performance with network statistics for full visibility into service level compliance issues, performance bottlenecks, and other potential problems. All reports can be exported into MS Office documents such as Word and Excel, and/or published in HTML. VE Reporter also provides executive summary reports which can be displayed on-screen or exported into Microsoft Word® for easy review and distribution to management. Shunra VE provides a fully automated environment through its extensive XML and TCLAPI, any testing scenario can be easily programmed, allowing the VE to integrate with previously established automation test beds. Alternatively, through its ability to control 3rd party lab hosts as well as other automation tools like load runner and silk performer, the VE can become the lab's command center, and serve as the focal point of the test environment.



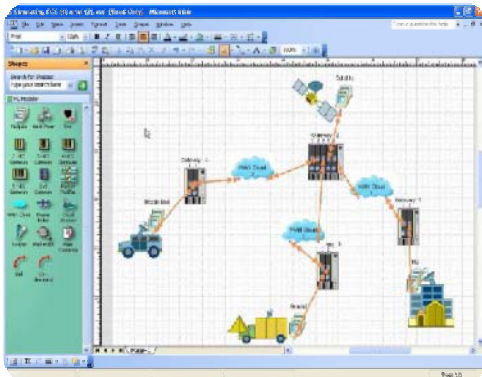
Product Overview



Benefits:

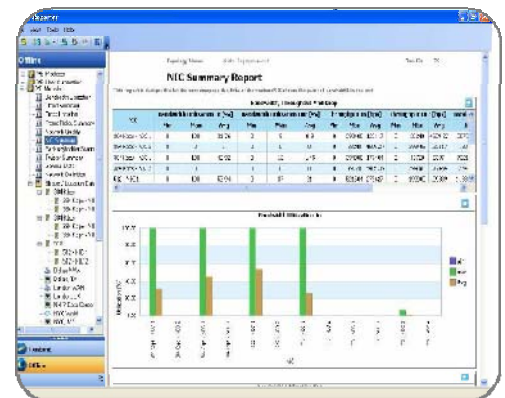
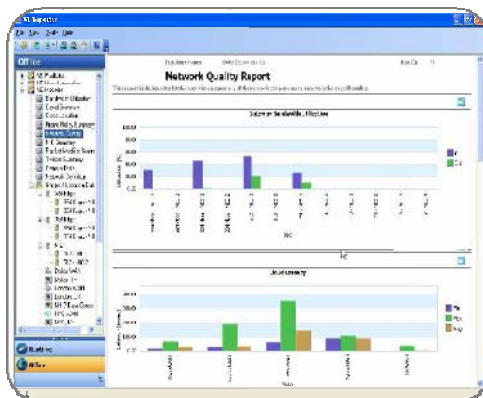
- **FCS** – Simulate true battlefield network conditions
- **Internet in the Sky** – Simulate any satellite network
- **FSO** – Simulate any high bandwidth long distance link
- **Defense Shield/National Missile Defense** – Simulate the network backbone of missile defense systems
- **Satellite-to-Satellite Communications** – Validate satellite performance before launch
- **Satellite-to-Ground Communications** – “See” and “Hear” what ground units will experience

Product Overview



SPECIFICATIONS

Latency	<ul style="list-style-type: none"> Fixed (0-8 seconds) Uniform Distribution (Jitter) Normal Distribution Linear Distribution Congestion Custom Profile import from spreadsheet tools Live network recording
Packet Loss	<ul style="list-style-type: none"> Custom Profile Periodic Loss Random Loss Gilbert-Elliott Model Burst Loss Congestion Live network recording
Dynamic Routing Effects	<ul style="list-style-type: none"> Out-of-Order Packets Duplicate Packets IP Fragmentation
Mobility	<ul style="list-style-type: none"> Lab hosts can dynamically migrate from one network location to another Mobility can be scheduled or applied in real time
Physical Errors	<ul style="list-style-type: none"> Bit Error Rate Network Disconnection High level reports can be exported to Word and HTML Raw data can be exported to CSV format Packet capture and decode for over 100 protocols in an exportable enc format
Bandwidth	<ul style="list-style-type: none"> Symmetric and asymmetric bandwidth Compensation for tunneling protocols As low as 2.4 kbps and as high as the physical interface limits
Router Simulation	<ul style="list-style-type: none"> Router queue simulation supports drop tail and RED Routing rules can be based on MPLS, VLAN, IP, QoS, and other protocol headers
Lab Integration	<ul style="list-style-type: none"> Automatically discovers hosts connected to the Appliance Supports IPv4 and IPv6, MPLS, VLAN
Network Monitoring	<ul style="list-style-type: none"> A stand-alone, web-based active network monitoring tool Utilizes ICMP to actively record latency, packet loss, and route changes Supports up to 50 active recordings SNMP Alerts generated when predefined thresholds are exceeded
Statistics & Graphs	<ul style="list-style-type: none"> High level service level reports Application response time per location Per shape run time and off line statistics including network quality, total throughput, and current load High level reports can be exported to Word and HTML Raw data can be exported to CSV format Packet capture and decode for over 100 protocols in an exportable enc format



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