Application Performance Testing for
Satellite Communications

JAR:emulate

high precision **network emulators**

Network Emulation & Pre-Deployment Testing Solutions for Satellite Communications

As the growth of satellite communications accelerates, organisations across the globe are turning to network emulators to ensure quality of service for end users prior to deployment.

JARs' products are used to test the resilience of IP-based systems that communicate across satellite links, thereby:

- Reducing the costs associated with application re-writes late in the development lifecycle
- Ensuring quality of delivery for end users – first time – regardless of the satellite network conditions present
- Reducing the costs of fixing issues by allowing for accurate trouble shooting in a virtualised, replicated satellite network

Background

Recent years have witnessed a surge in the transmission of Internet Protocol data across satellite networks. Satellites are now extensively used to carry voice, video and a significant array of data communications for thousands of organisations across the world every day.

The satellite market is on course to deliver $26 billion in satellite equipment through to 2016, and satellite communications are playing an increasingly important role in the delivery of services to end users.

The global pay TV market, for example, totalled $125 billion in the first half of 2011 and is forecast by Infonetics Research to grow to $353 billion by 2015 - *driven in the majority by the rise of satellite delivered IP services.*

The Challenge

Satellite networks experience very long latencies and considerable data loss, as the signal travels to and from orbiting vehicles through fluctuating atmospheric conditions.

These factors create major implications for the performance of critical applications including voice communications, logistical support systems, emergency service co-ordination, military control structures and so on.
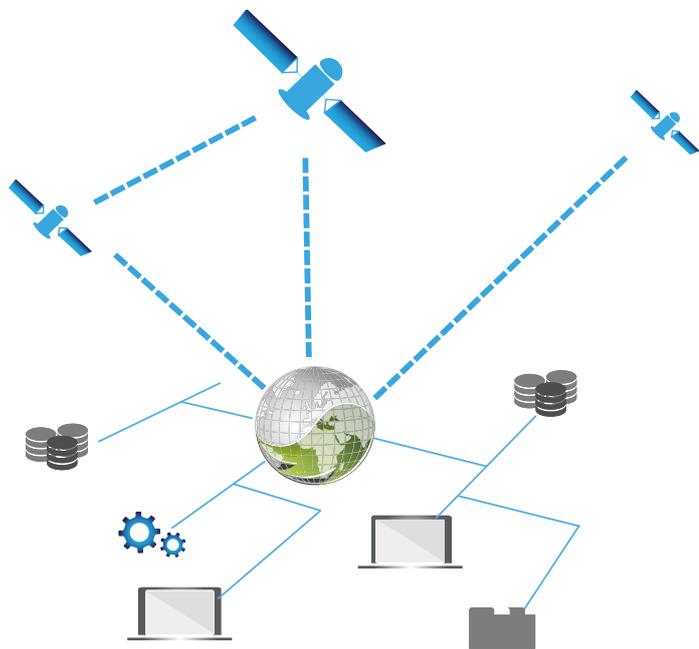
Those responsible for ensuring application delivery to end users over satellite links need to understand – as early as possible – what issues those applications will face, so the costs of re-work is minimal and end user performance is assured.

JAR:Emulates' network emulators can be deployed to accurately create the high latency of uplink/downlink transfers, the effects of poor weather and signal decline that can impact on satellite communications. Issues can then be resolved in the test lab, long before end users running business critical applications encounter them.

Satellite transmission bands such as Ka-Band and Ku-Band can be emulated, alongside point to multi-point VSAT satellite networks, all under worst or best case satellite conditions, or anywhere in between.

Ensuring Application Performance

Satellites today are used for a vast array of internet protocol (IP) based communications, from delivering business critical applications to business users, to supporting emergency service responses and military exercises. Lives depend on satellite systems being capable of providing instant and accurate information between any two required locations anywhere in the world under any foreseeable circumstances. Organisations that use satellite networks must have confidence in the systems that direct and support their operations. **These systems must be rigorously tested under the exact network conditions they must perform on - before they are deployed to those that rely on them.**

Satellite networks are susceptible to multiple impairments, which should be tested against before release:

• High latencies dependent on or bit height and number of satellite hops
• Fading RF channel environments, resulting in significant bit error rates and bursts in traffic
• Atmospheric conditions such as raid fade impacting quality of transmissions

It stands to reason that expensive field trials or deployment should not be the first opportunity to identify and resolve mission critical application performance issues caused by IP satellite communications.

Casestudy

JAR was commissioned by one of the world's largest defence manufacturers to ensure its state of the art battlefield control software would deliver for end users across satellite links. This organisation had to adhere to stringent end-to-end service level agreements under all possible field conditions. The JAR:Emulate unit was employed to rigorously test and troubleshoot critical application performance in an emulated network environment prior to release. Conditions such as limited bandwidth, high latency and data loss were injected onto the test LAN, with measurements taken of how the battlefield control software reacted. This visibility allowed the application team to implement targeted software optimisation before release – dramatically reducing costs and ensuring an on time release to the end customer.

JAR: WAN Emulation Solutions

JAR provides a precision testing solution for emulating the full range of wide area networks from the safety and repeatability of a testing environment. By introducing network conditions such as latency, bandwidth limitations, jitter, packet loss, and packet fragmentation, those responsible for ensuring application performance across satellite networks can determine the end user experience whilst the costs and time associated with remedial action are minimal.
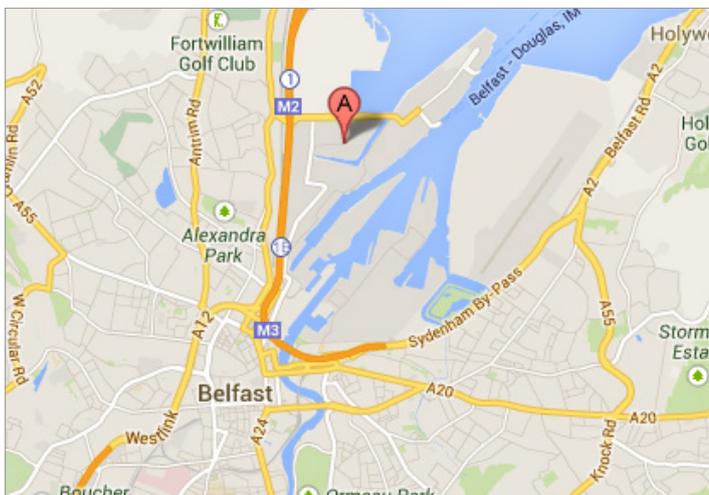
About JAR Technologies

JAR is a leading provider of Web and Application Testing Tools for the Application Performance and Quality Assurance market.

With a wide spectrum of experience and expertise from developing the **'World's first hybrid WAN Emulator'** to offering cloud based web load testing tools, JAR are committed to providing revolutionary and flexible bespoke solutions for our partners and their customers.

For more information on JAR:emulate, including more detailed information on the product range and feature set please visit www.jartechnologies.com

If you would like to discuss how JAR:emulate can benefit your company or are simply interested in finding out more please use the contact details below to get in touch.

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