



# Application Performance Testing for **Military Services**



**JAR:emulate**

high precision **network emulators**

## Background

For thousands of years networks and the information sent on them have been essential to conducting military operations and affairs. With the rise of modern telecommunications, the ways in which information is delivered to front line troops is becoming increasingly diverse.

Until relatively recently the extent of military communication was fundamentally radio use - walkie talkies, handsets, and large comm packs with antennas.

However, the systems used for information exchange and command are changing rapidly, and military services are now aiming to deliver critical IP Services over wireless and satellite networks.

## The Challenge

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

These factors create massive implications for the performance of critical applications including voice communications, battlefield management systems and logistical support systems.

Coupled with the inherent challenges of IP networks, there is also the consideration of hostile intent: how will battlefield critical applications handle jamming for example?

## Network Emulation & Pre-Deployment Testing Solutions

The MoD, alongside leading defence sector specialists across the globe, are now using emulators to simulate IP network environments that are used to test the resilience of IP-based systems and equipment before they are deployed in the field.

JAR Technologies' network emulators recreate the radio and satellite networks used by military services so application performance can be rigorously tested and quality assured before live operations expose issues.

JAR Technologies' network emulators can be deployed by the MoD to test the performance of technologies focused around Network Enabled Capability (NEC) or Network Centric Operations (NCO) or any field based TCP/IP Communication Systems including bespoke military protocols and applications, VoIP, IP over Wireless, and Radio over IP (RoIP).

For example, military services can accurately create the high latency of uplink/downlink transfers, the effects of poor weather and signal decline that can impact on satellite communications. Any issues are resolved in the test lab, long before operational troops or support experience these in the field.

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 Military Systems Work

Modern warfare is a highly complex environment. Lives depend on military systems being capable of providing instant and accurate information between any two required locations anywhere in the world under any foreseeable circumstances. The military must have confidence in the systems that direct and support their operations - be that in the logistical supply chain, battlefield management, search & rescue and so on.

**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.**

Those involved in military planning and R&D development encounter a specific set of challenges in discovering and eliminating performance related risks. These include:

- ⊕ More demanding real-time performance requirements
- ⊕ Complex multi-tier networks
- ⊕ Inter-regional and global communication spans
- ⊕ Greater mobility of staff / equipment
- ⊕ Greater risk of intentional interference

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 networks.



## Battlefield Simulation

MoD developers and planners have to be absolutely certain that battlefield simulation systems will deliver to stringent end-to-end service level agreements under all possible field conditions. The primary way to achieve this level of quality assurance is to rigorously test and troubleshoot applications in an emulated network environment prior to release. Such a virtual testing environment must be capable of accurately simulating the wide spectrum of conditions that can exist on military networks so that the end-to-end performance of applications under those conditions may be accurately measured and analysed for issues.

## JAR: WAN Emulation Solutions

JAR Technologies 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, military planners can determine the end user experience whilst the costs and time associated with remedial action are minimal.

When developers are creating an application, they are benefitting from the perfect conditions of their fast local area network. However, the real world military conditions (over satellite, VOIP or ROIP networks for example) can differ greatly - significantly reducing the quality of delivery to those in the field reliant on them.

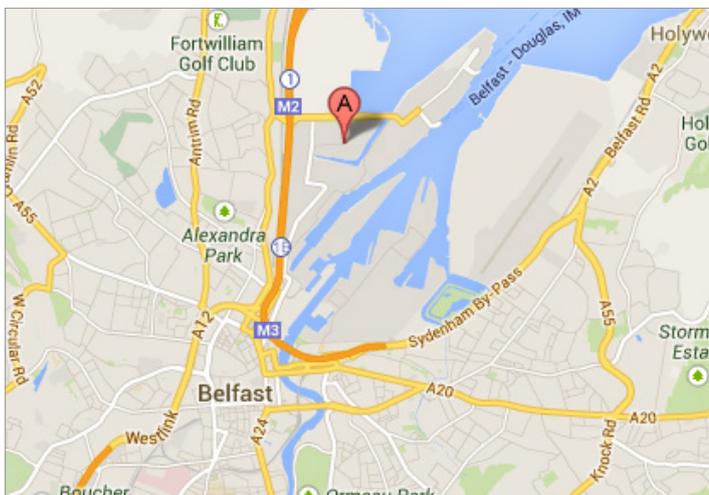
## About JAR Technologies

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](http://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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