## Introduction

The data storage requirements of every organization are growing exponentially and consequently so is the need to protect data. For business critical applications data is normally replicated to another location over a dedicated private network. Conversely it may be acceptable for some applications to replicate data over the internet to, say a cloud facility. The network, public, private or hybrid, is therefore an integral part of the replication process but network performance can be very unpredictable at times.

**Remote Office Locations**
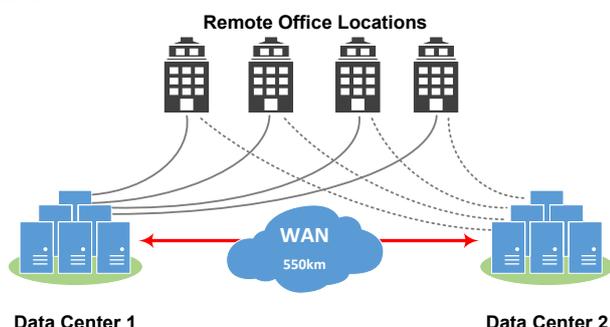


A typical dual data center multi-office location scenario

A myriad of replication and backup solutions are available on the market today with varying features, sophistication and price tags. Vendors will verify that their solutions are fit for general purpose but it's impossible to test against every organisation's application, data and network configuration.

Replication and backup solutions must therefore, be tested under the same real-world operational conditions that the solution will actually be running under. Real-world should not only include normal conditions but extreme so that the solution's resilience to abnormal events can be tested.

## Virtual Test Network

Network Emulation provides a controllable and repeatable Virtual Test Network which mimics an organization's operational network. The Network Emulator is connected in-line between the replication or backup solution end-points and impairs the flow of packets as if it was actually running on the live network.
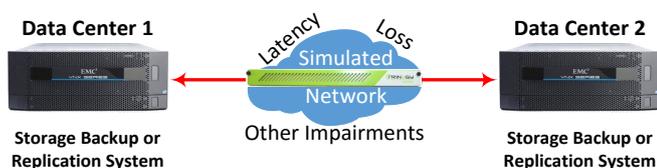


Storage Professionals can verify, in a safe environment, the solution's resilience to adverse conditions such as network congestion, increased latency, packet loss, packet duplication, packet reordering or other retransmission issues that are likely to be encountered in the operational network. Further sustained impairment testing can be carried out to determine the impact of certain conditions which are present for longer periods of time. Checks can be made to ensure that the solution avoids meaningless message cycles, doesn't hang or crash and that good retry and recovery capabilities are present.

The Recovery Point Objective (RPO) and Recovery Time Objective (RTO) can also be verified under normal and abnormal conditions to ensure that the solution meets the organization's requirements.

A Virtual Test Network also provides the reporting metrics and graphs on what's really happening, providing total visibility of the communication traffic, performance and errors.

By using a Virtual Test Network Storage Professionals can identify the network criteria under which the solution will experience issues and can ultimately take it into account for their backup and recovery plans.

## Why not use the real network?

It really isn't practical or viable to test in a real network because live networks are not controllable or repeatable. Test results will vary depending on what else is happening on the network when the test is executed. Recreating the same conditions to qualify a fix or configuration change is impossible. It's also unlikely that any Network or Operations Manager would allow you to cause adverse conditions on a live network.

## Summary

A Virtual Test Network is more useful than the real network because network scenarios can be created, on demand in a controlled and repeatable environment. Organizations are able to obtain the insight, proof and confidence that the solution is network-ready and meets their business requirements.

iTrinegy is a world leader in Virtual Test Networks and is trusted by governments, military organizations and enterprises across the globe. Our unrivalled pedigree in safeguarding networked application performance ensures business-critical services are successfully delivered over all types of networks.