

Testing Your Applications Before You Go Offshore

A Shunra Software White Paper



Going Offshore? Test Your Apps First!

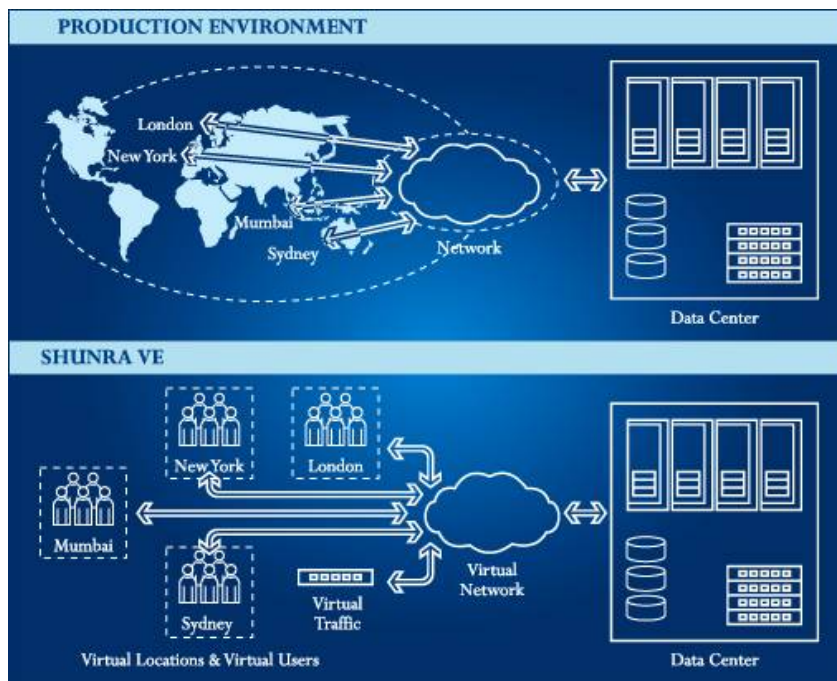
Why WAN Emulation is Essential for Avoiding Deployment Headaches and Ensuring Project Success

Many corporations are moving operations offshore to take advantage of compelling economic benefits. Certain business functions, such as software development and customer service, seem to be particularly conducive to this cost-cutting strategy.

But if you're a network manager whose company is making a move offshore, beware. Offshore staffs can't get their work done if their core business applications don't work well over wide-area network links. Flaky performance and intermittent downtime can quickly offset any savings that might have been gained – and may even lead to other problems such as lost revenue and unhappy customers.

That's why it's absolutely essential to properly assess how applications will behave and perform on your target WAN before you actually turn them loose on your WAN.

This can only be done with effective WAN emulation. WAN emulation works by running target applications in your actual multi-tier data center environment, using a test bed network that accurately reflects the conditions on your production network (see diagram). This allows development, network and QA staff to observe the offshore end-user experience without leaving the lab. They can test application performance under current and projected traffic loads. They can evaluate worst-case scenarios. Most importantly, they can nip potential problems in the bud – while it's still inexpensive to do so.



WAN emulation replicates your enterprise environment in the lab, enabling users to accurately test the functionality, scalability, and performance of any distributed N-Tier application, and actually see the remote end-user's experience, before deployment.

High-Risk Behaviors

Anyone who has been in the networking field for any length of time understands that applications behave much differently over a real-world WAN than they do on a development and lab LAN. Latency, packet loss, jitter, bandwidth contention and other WAN characteristics all impact the delivery of IT services to the end-user.

Unfortunately, developers rarely consider these factors when they're first building an application. They focus instead on issues such as application functionality and interface design. It is only after they've tackled these issues that they start to consider the performance of the application on the network. In fact, many applications aren't tested on the production network until they're practically complete, or even deployed in production.

This build-first-test-later approach can be disastrous. It's often difficult or impossible to address network performance problems in an application so late in the game. Design and coding approaches are usually too entrenched at that point to be changed. Too much time and money has already been invested in the application.

So, instead of having an application that's appropriately designed for the network on which it is to be used, most companies wind up trying to re-design the network to suit the application. That usually means adding more bandwidth. Sometimes this works – but it's an expensive fix. Sometimes it doesn't, because the problems in the application can't be overcome with raw bandwidth alone.

These problems, which often occur with even the simplest domestic WAN, are exacerbated in offshore situation. Distances are greater and bandwidth is more expensive. There are usually more network "hops," which can create more latency and bandwidth contention issues. Local last-mile links may also be limited.

And the problem isn't limited to internally developed applications. The same principles apply to packaged applications. Companies typically evaluate these packaged applications based on a variety of factors: functionality, ease-of-use, vendor reputation and cost. But they rarely test them for performance on their WAN. So they can wind up in an even worse situation – stuck with a piece of software that they've paid for and can't fix, because they don't own the code.

Simply put, the failure to adequately test applications on the network before putting them into production is a high-risk behavior. If your offshore call center goes down, it can cost you tens of thousands of dollars per hour and undermine precious customer relationships. It can put your developers and networking teams in crisis mode for days. Ultimately, it can transform an otherwise successful move offshore into a total disaster.

An Ounce of Prevention

Obviously, the best way to avoid such disaster is to test every application's performance on the network before roll-out in an emulated production environment. Three principles are particularly important in developing an effective application testing strategy:

1) Fully capture attributes of your existing WAN infrastructure

Effective pre-production testing of business applications requires more than just seeing how they perform over a low-bandwidth link. It requires accurate emulation of the full WAN environment where the application will actually be deployed. It is therefore essential to implement technology that can take a "snapshot" of your WAN as it exists today and duplicate those characteristics in your testing environment.

A good WAN emulation solution will automate this process. This automation ensures the accuracy of the WAN model, while keeping the time and cost associated with creating the model as low as possible. Such a solution should also enable you to create "what-if" scenarios, so you can assess the potential impact that changes in the network – such as increased traffic or additional remote offices – may have on application performance.

2) Test early and often

Emulation testing is not just for network managers ideally it should begin early in the development process. The later testing starts, the more development work will have to be re-done in the event a problem is discovered. By making it easy to set up such tests, a good emulation environment will remove any obstacles that might otherwise deter developers from troubleshooting network performance at every appropriate point in the development process.

A good emulation environment will also make it easy to test vendors' packaged applications – even before those applications have actually been acquired and paid for. Vendors can even be apprised of your intent to test their application in an emulated WAN environment in any RFP/RFQ document.

3) Get actionable data

It's not enough to simply know an application is slow or buggy. You have to be able to determine the root-cause of functionality and performance problems so you can remedy them. Developers, who are not usually network savvy, need a solution that is as intuitive and automated as possible. Tests won't be performed with any frequency during the development cycle if they depend on the involvement of network technicians.

On the other hand, more network-savvy developers should be given the option to do more sophisticated functionality and regression testing in the emulated environment. This will provide

further protection against deployment problems in the future and will optimize the quality of production code.

An Action Plan

WAN emulation obviously holds a lot of appeal for network managers, as well as for developers. After all, the Network managers are the ones who ultimately have to make things work. With WAN emulation, they can head off application problems well before they hit the production network. They can avoid having to sink precious budget dollars into additional network capacity when better application design offer a more cost-effective remedy. And they won't get stuck trying to fix problems that can't be fixed.

The real question is how to get upper management on board. Obviously, it's a good idea to demonstrate how the success of any offshore operation depends on the effective delivery of IT services over the WAN. There is also plenty of research material available to build a strong ROI business case in dollars and cents. The Newport Group, for example, says it takes an average of 25.8 hours to resolve an application problem after deployment and that the average per hour cost of downtime is around \$12,700. You can probably adjust these numbers to reflect your own company's payroll and revenue figures.

It's a good idea to get your development and QA teams to buy into the idea, too. You can pitch them on emulation testing as a tool that's totally complementary to what they already have in place, which probably focuses only on coding errors and compliance with business specs. Show them how emulation will eliminate the finger-pointing and firefighting that happen so often today. Most of all, emulation will keep them from having to do work over again – allowing them to deliver more projects in a more timely manner within their current staffing constraints.

Obviously, the same network performance issues that raise their ugly heads when business operations move offshore affect companies domestically as well. Companies set up new offices and/or acquire other companies. They constantly have to deliver new IT services to new locations. If they do so without appropriate pre-deployment testing, they're continually running the risk of delays, cost over-runs and project failures. But if they're wise, they can avoid the proverbial pound of cure with just an ounce of WAN emulation.

About Shunra

Shunra provides solutions that empower organizations to address service level and performance concerns up front – before deployment. The Shunra Virtual Enterprise (Shunra VE) solution provides accurate, highly granular insight into how networked applications will function, perform and scale for remote end-users. It creates an exact replica of the production network environment, allowing IT professionals to safely develop, test and experiment with applications and infrastructure before rollout, and effectively plan for growth and change. With solutions tailored for networking and performance professionals, software developers, and quality assurance staff, Shunra VE facilitates collaboration across all IT disciplines – so IT organizations can quickly and more efficiently uncover and resolve problems before they impact the business. This results in more timely, higher quality and cost-efficient IT services, and the ability to “Deliver IT with Confidence”

Solutions for Any Enterprise

More than 1500 customers, including hundreds of *Fortune* 1000 and Global *Forbes* 2000 organizations, from financial institutions to manufacturing companies, retail, energy, media companies, as well as independent hardware and software vendors and telecommunications service providers, have gained measurable returns from Shunra’s solutions. Among them are: 3M, Boeing, Cisco, Dow Chemical, EMC, FedEx, General Electric, General Motors, JPMorgan Chase, Kelly Services, Merrill Lynch, Motorola, Nestlé, Pitney Bowes, and Vodafone.

Corporate Information

Shunra’s headquarters are located in New York City and Kfar Saba, Israel, with worldwide offices in Singapore, UK, The Netherlands and India. Shunra is also supported through a global network of channel partners.