

Whitepaper

Six expert tips to optimize your network end-user experience

Version 1.0



Welcome to the intelligent internet

Maximizing your global internet performance for everyone, everywhere

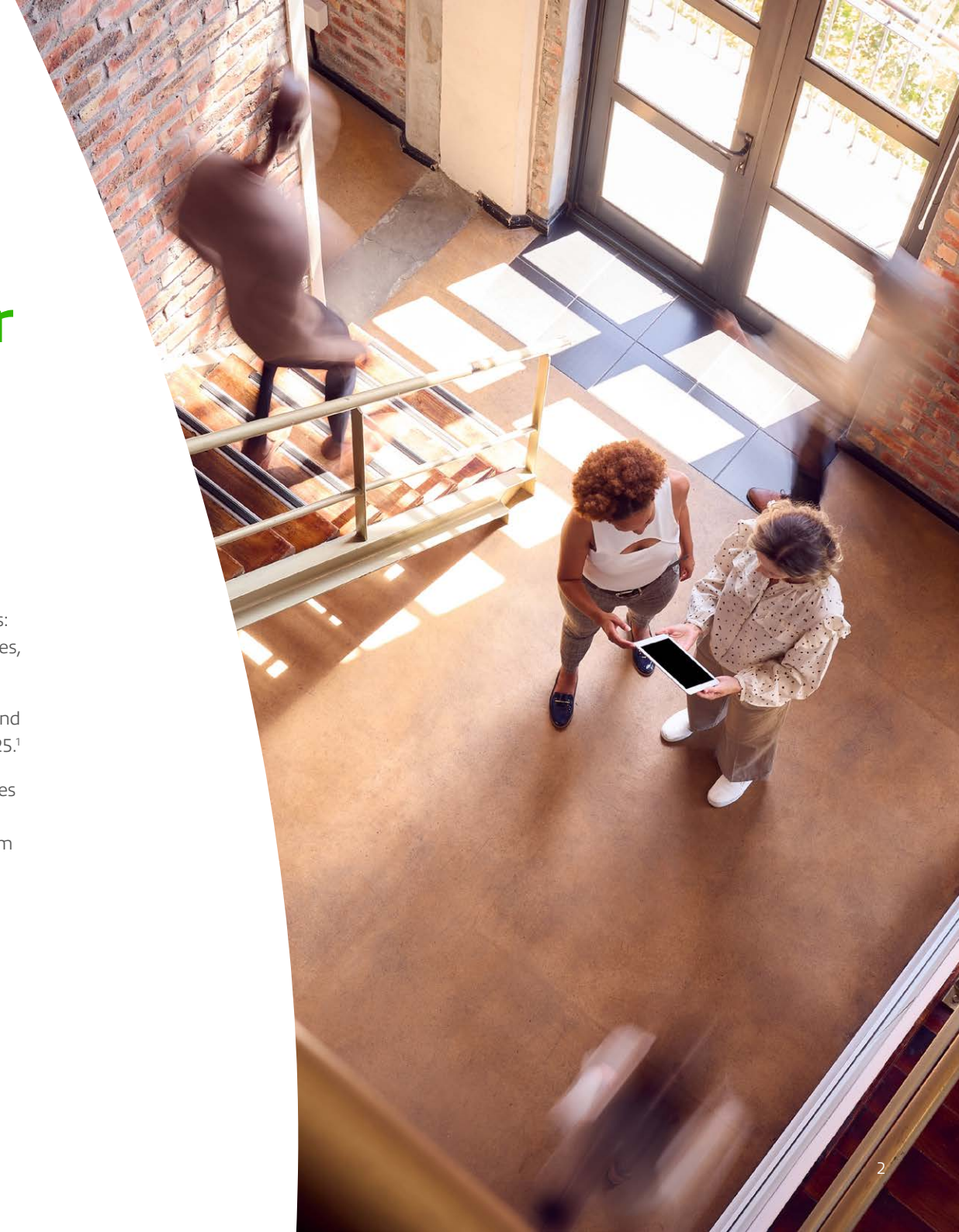
Network performance has become central to an organization's daily operations. Users expect to be able to access corporate applications from anywhere 24/7 and be connected, productive and secure. But does the increasing use of the internet complicate network optimization?

The internet lies at the heart of two of the most significant recent technology trends: the shift to the cloud, away from on-premises applications and corporate data centres, and the growth in hybrid working.

According to Gartner, there is no business strategy today without a cloud strategy, and it forecasts that 85% of organizations will have adopted a cloud-first principle by 2025.¹

As the digital economy grows, enterprises are looking to build network infrastructures that will enable them to scale up and down, rapidly connecting branch offices and mobile users in different geographic regions. As a result, they have moved away from traditional WANs towards using the internet more widely.

1. Gartner Says Cloud Will Be the Centerpiece of New Digital Experiences



Internet service variability

However, not all internet services are alike, and choosing services based primarily on price can leave businesses with a complex environment that is difficult to manage and optimize. And because local facilities managers frequently procure internet services, they may not be suitable for a global cloud and application strategy.

In addition, internet services can be unpredictable, with network latency, performance, availability, and service quality issues varying daily. This can mean that applications can have an acceptable performance one day while being unusable the next. Without an overall view of the network, identifying the root cause of any performance issues can be impossible.

Diverse services

Although the internet may seem like a single, unified network, it is a worldwide system of individual networks, each with its variations and vulnerabilities under load. This becomes even more obvious when data starts to criss-cross the globe. In Africa, for example, there is a patchwork of internet services, each with its own limitations. In China, there is no formal peering between ISPs, which can significantly slow down traffic.

Luckily, there are several ways to overcome these internet performance issues. With them you can create a global internet infrastructure that delivers an optimal end-user experience for the cloud and hybrid working. We have outlined six of these below.

Six tips for improving the end-user experience

With 18 years of experience creating high-performing global internet networks, our engineers recommend the following six tips for delivering exceptional performance worldwide.

By 2025, G2000 organizations are still experiencing two to three systemic service provider network outages per year, showcasing the importance of added investments in connectivity redundancy and service resiliency.²

2. IDC FutureScape: Worldwide Future of Connectedness 2022 Predictions



1. Design the network for application performance

Moving applications to the cloud can impact performance depending on the users' location. Latency increases with distance, and interconnects between different regions are variable. This can mean that while users in the head office enjoy optimized applications, those in more remote offices suffer from poor performance.

During the design stage, you need to assess where users are located, what applications are running on the network, where they are hosted, and any service dependencies between them. With this information, you can set up bandwidth and latency policies for the network to support your applications in a multicloud environment. This could also include site-based traffic optimization to prioritize business-critical applications over email, for example.

Remember that the best performance is not always over the shortest route. Several factors could affect this, so working out how to interconnect with cloud applications can make a massive difference to performance.

We had a customer in Argentina that wanted to use a security application hosted in Brazil. While it seemed like a direct route, when we looked at the data routing, it was going via the US, so it was much more optimal to host the application in Miami.



2. Gain visibility into the network

The first step in improving performance is to be able to measure it. But the big issue many enterprises have is they can't measure what they can't see.

You need complete visibility and control over data traffic and application performance to exploit the benefits of a globally connected infrastructure. Insight into internet performance is essential to the network's overall performance – even when running an overlay network like SD-WAN.

By having a single view on the network, traffic can be re-routed if bottlenecks are identified with a specific ISP to avoid traffic overload, for example. This could be done in real-time as issues are identified or even planned in advance to get over predicted spikes in traffic, such as those caused by Black Friday shopping.

The expereo.one dashboard provides real-time insight into network performance to effectively manage the network. It provides a full overview of the internet and SD-WAN services backed up by real-time analytics. In addition, expereo.one also uses machine learning and AIOps to predict where issues may arise by recognizing traffic patterns, for example.



3. Overcome the limitations of static Border Gateway Protocol (BGP)

Internet routing relies on the BGP protocol. However, BGP doesn't consider performance when it makes its routing decisions – it simply chooses the shortest route. However, the shortest route could also include increased packet loss, overloaded data transit services, or other efficiency restrictions.

To overcome the limitations of BGP, add an optimization layer that can test and identify optimal routes over the internet and override the static BGP routes. By automatically selecting the best routing path to compensate for BGP's inherent shortcomings, major application performance and availability improvements are possible for all destinations, guaranteeing the best infrastructure efficiencies.

Expereo achieves this through Enhanced Internet. It is designed to optimize BGP with performance and traffic analysis, detecting any abnormal routing scenarios. Enhanced Internet operates from a global network of 30 Expereo cloud acceleration hubs across the globe or from within a customer premise or data center and also has access to cloud hyperscalers to optimize cloud traffic.



4. SD-WAN is not living up to performance expectations

SD-WAN is an overlay network that can operate over multiple networks, including the internet. As such, it is designed to improve performance by enabling flexible routing depending on individual application requirements. At the same time, it prevents bottlenecks by diverting traffic to alternate, less-busy channels and allows you to squeeze the most performance possible out of your links.

The issue is that SD-WAN performance is reliant on how good your network underlay connectivity is. Choosing the wrong internet connection for any of your sites may result in inadequate internet peering, network congestion and unpredictable connections. This is why due diligence is imperative when looking at providers.

The ISP's quality of service is an essential ingredient in overall SD-WAN performance. expereo.one provides an overview of SD-WAN and the internet and how they interact. ISPs are monitored for performance metrics, including packet loss, latency, peering capacity, and reliability. This ensures your SD-WAN infrastructure can always select a high-performing route in real time when choosing where to tunnel.



5. Managing multiple global ISPs

Managing multiple ISPs is complex and multinational corporations may have as many as 100 ISPs across all regions they operate. Keeping track of their performance and whether they are meeting service level agreements (SLA) while identifying any issues or bottlenecks is extremely difficult.

Often internet connections are procured by facilities or procurement in a region, so it isn't immediately obvious how many services are running or where performance issues are when IT is called in to troubleshoot. The global IT skills shortage has exacerbated the issue, with many IT departments struggling to manage their projects without having to deal with errant ISPs. A one-size-fits-all approach doesn't work when sourcing and managing internet services. You need total visibility and control into your internet services to ensure performance at the best price point. Without this, making smart business decisions and providing a consistent service to users is impossible.

Expereo can take this headache away. We manage 3,600 ISPs in 190 countries, acting as a single point of contact (SPOC) and providing a single invoice for all services. We constantly monitor all ISPs to keep track of their network performance and identify the root cause of any problems. If an ISP fails to perform, we can seamlessly swap it out for a better service. In addition, our API allows you to access performance information directly from your service management system, such as ServiceNow.



6. Overcoming cloud performance issues

There is no business strategy without a cloud strategy. By 2024, the majority of legacy applications will receive some modernization investment, with cloud services used by 65% of the applications to extend functionality or replace inefficient code, according to IDC.³

Cloud network performance, however, is one of the biggest challenges for IT departments. If the network loses or delays data traffic, this could significantly impact the business. These bottlenecks can entirely derail operations when it comes to emerging cloud-native applications built for and running in the cloud.

Direct cloud interconnect is essential to optimize cloud performance. Expereo has developed a Cloud Connect service that ensures your data goes through the most direct route possible to reach its destination without going through multiple nodes. We optimize performance by running virtual servers in the cloud to measure ongoing traffic. In fact, we have been able to improve the performance of cloud applications in 90% of cases over the internet connection provided by the cloud hyperscaler.

3. IDC FutureScape: Worldwide Future of Connectedness 2022

Expereo is the world's largest provider of managed networks, SD-WAN, SASE, and cloud connectivity solutions. To find out more about how expereoOne can help you to optimize your networking capabilities, click the button below.

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