Technical Guide to Enable Work from Anywhere

Delivering an enhanced remote experience
to a distributed workforce

Table of Contents

Introduction

The changing dynamics of COVID-19 has driven an unprecedented shift toward remote work. Millions of employees had to quickly adapt to working in entirely new ways – creating unique technical challenges for IT departments. In time, the workforce will be back in full swing, but work from anywhere is expected to be the new normal. This technical guide outlines the ways that IT can improve application and network performance to drive workforce productivity so that companies can thrive.

"**74% of companies plan to permanently shift to more remote work even after the COVID-19 restrictions subside** [i]."

IT Challenges

IT teams are tasked with providing consistently high-performance systems and applications that power today's businesses.

This is particularly challenging for IT today since remote environments are outside of their control and these networks are experiencing an all-time high utilization rate[ii]. Each remote user and their associated network are now effectively a new branch representing a drastic spike in the number of sites for IT to service almost overnight.

To address this new paradigm, you need to consider your organization's readiness for:

- Unreliable connectivity
- Poor application and collaboration experience
- Identification of performance bottlenecks and security threats

Riverbed® has compiled technical guidance to support the transition to a hybrid on-prem/remote workforce. Specifically, Riverbed has identified three key use cases to guide IT organizations during this transition:

1. Optimize remote user connectivity
2. Accelerate business-critical application performance for work-from-anywhere users
3. Improve network resiliency and security

Figure 1: IT complexity has increased exponentially with the spike in remote work and lack of control over at-home and mobile environments.

Use Case 1: Optimize Remote User Connectivity

Many organizations have already solved for basic connectivity for their remote teams. What is critical is to ensure users can reliably and securely access high-performing applications and tools, typically over VPN. As businesses establish long-term telework policies, they need to find efficient ways to rapidly connect those users back into the corporate network and to their applications. However, enterprise IT has limited control of the remote network so it's imperative to ensure connectivity to the data center or cloud is optimized to account for unreliable, last-mile access over public Wi-Fi hot spots, cellular data networks (LTE), and home DSL/cable modems.

In order to leverage the existing infrastructure (VPN concentrators, laptops, etc.) and best optimize connections to user's business applications, Riverbed recommends the following connectivity options depending on the specific scenario:

1. VPN to Data Center

2. VPN to public cloud where apps are owned and managed by the organization (IaaS)

3. VPN to public cloud where apps are owned and managed by a third party (SaaS)

4. Direct Internet Access (DIA)

How It Works

Connectivity Scenario 1: Optimize VPN Connections to the Data Center

Remote workers need fast, reliable, and consistent access to on-premises applications. Paired with a lightweight Riverbed **Client Accelerator** agent installed on users' laptops and leveraging **Riverbed® SteelHead™** appliances deployed behind the VPN gateway in the data center, application performance is greatly enhanced by up to 75x while enabling IT with the ability to prioritize business-critical applications through QoS.

Figure 2: Optimized VPN connections with SteelHead in the datacenter and Client Accelerator on laptops.

Connectivity Scenario 2: Optimize VPN Connections to IaaS Public Cloud

For remote workers who have applications hosted in the public cloud and have their traffic first traversing through a VPN connection to their datacenter, Riverbed recommends deploying **Cloud Accelerator** (a software form factor of SteelHead) directly to the IaaS cloud of choice—AWS and Azure. Similar to the datacenter-only solution from scenario 1, users can expect drastic performance improvements while overcoming the effects of additional latency introduced by backhauling all corporate traffic.
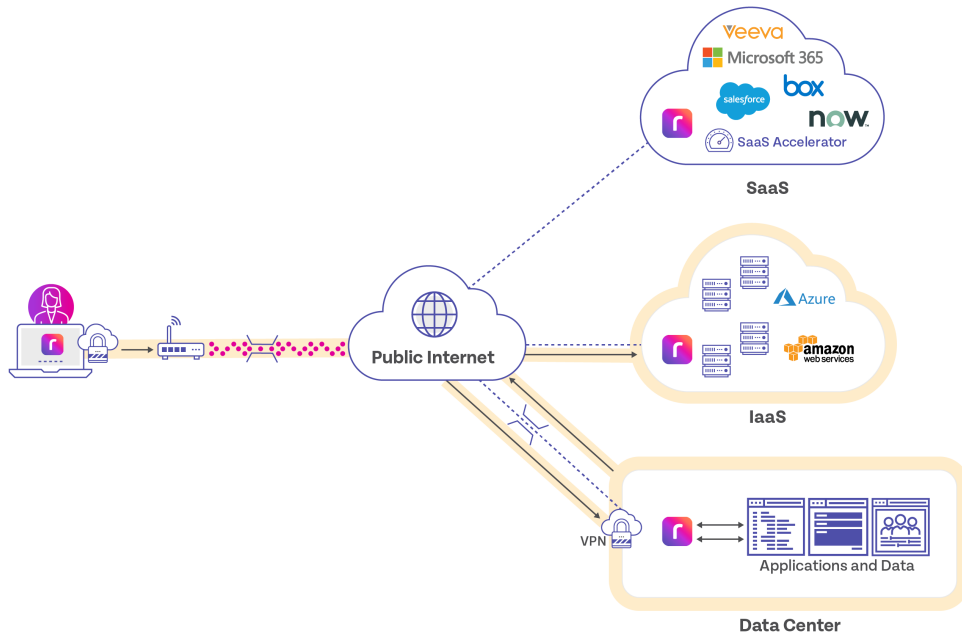
Figure 3: Optimized VPN connections to IaaS with Cloud Accelerator.

Connectivity Scenario 3: Optimize VPN Connections to SaaS

For remote workers who have enterprise SaaS applications and have their traffic first traversing through a VPN connection to their datacenter, Riverbed recommends deploying **SaaS Accelerator** along with **Client Accelerator** via a subscription model to accelerate SaaS delivery of business-critical applications, including Box, Microsoft 365, Salesforce, and ServiceNow. Users can expect up to 10x faster performance.
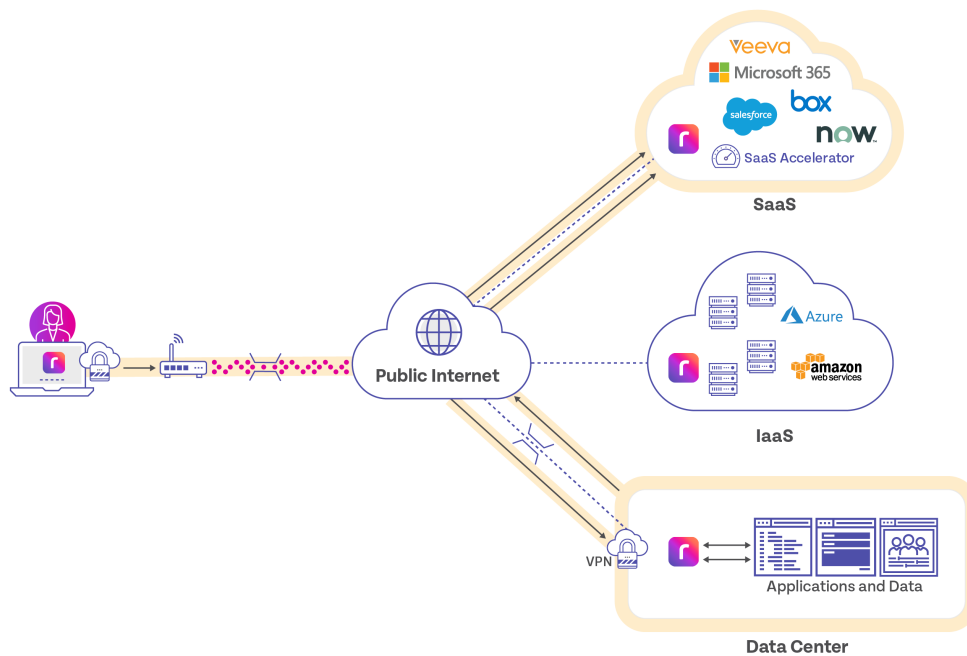

Figure 4: SaaS Accelerator with VPN.

Connectivity Scenario 4: Direct Connectivity to SaaS

SaaS Accelerator also works seamlessly with Direct Internet Access (DIA). Users can reliably access their SaaS applications regardless of location such that if VPN is not an IT requirement, they can consistently expect accelerated performance even as they move from one location to another.
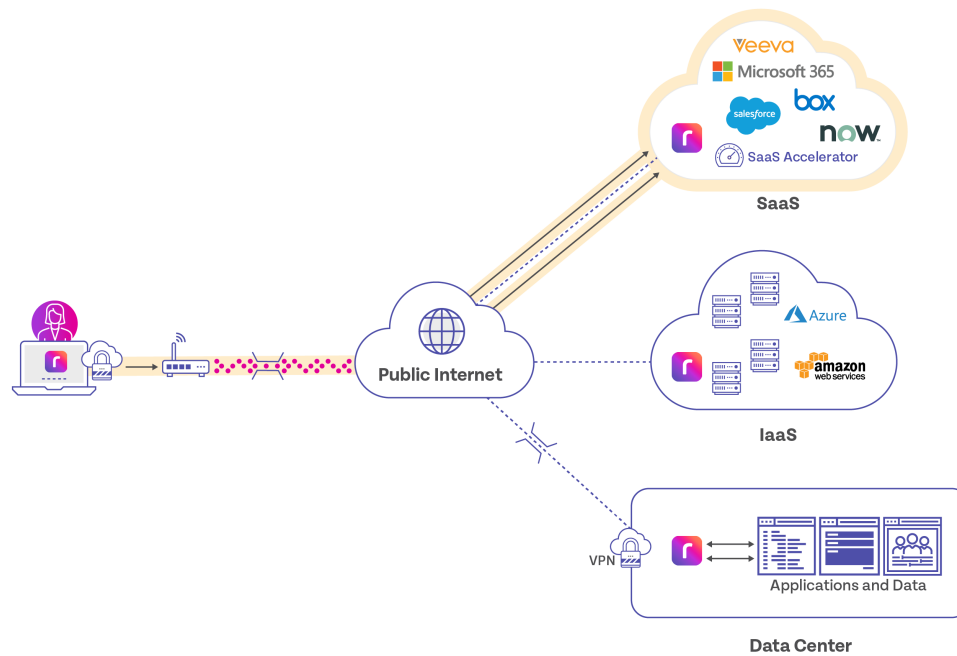

Figure 5: Direct Internet Access with SaaS Accelerator.

Use Case 2: Accelerate Business-critical App Performance

Poor application and network performance are nothing new but with the growing number of work-from-anywhere employees, the unpredictability and performance issues have only increased. For enterprise applications such as MICROSOFT 365, users often encounter performance issues long before IT is even aware of any problems.[iii] When you introduce consumer-grade Wi-Fi, oversubscribed connections from heavy usage of collaboration and enterprise applications, along with additional latency from application servers (on-prem or public cloud), the perfect storm for a massive productivity slowdown will ensue.

How It Works

Riverbed **Application Acceleration** solutions address the unpredictability and poor performance of business-critical applications. Riverbed **Client Accelerator** and **SaaS Accelerator** optimize application traffic to the nomadic workforce anywhere that they decide to connect.

Riverbed's WAN Optimization and App Acceleration technologies:

- **Drastically reduce the amount of data** sent across private WAN circuits or the public internet by up to 99% with our byte-level de-duplication methods that work across all of your applications

- **Intelligently accelerate the TCP conversations** across the WAN by prioritizing the way data is sent over distance

- **Reduce the number of application round trips** across the WAN which directly applies to minimizing the impact of latency on application performance
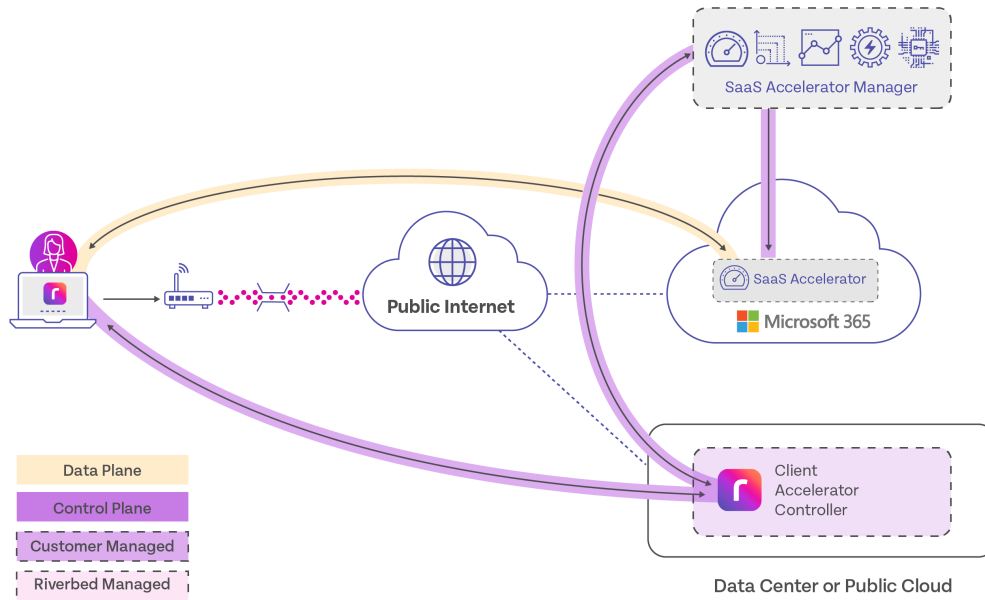

Figure 6: SaaS Accelerator end-to-end soltuion.

These principles all work in conjunction with one other to overcome the effects of latency, distance and bandwidth so the user community can maintain productivity levels as if they were still in the physical office. Once deployed and running to mobile and at-home workers, you can expect to see the following results:

- Up to **10x** faster user experience of popular SaaS applications: Microsoft 365, Salesforce, ServiceNow and others

- **99%** data reduction of local network traffic, critical in lower bandwidth environments

- **75x** faster downloads of on-prem SharePoint files

- **40x** faster CAD file sharing

Use Case 3: Improve Network Resiliency and Security

The right Network Performance Monitoring (NPM) solution can ensure network resiliency and security for your users whether they are in the office, on-the-go, or at home. According to Gartner, by 2024, 50% of network operations teams will be required to rearchitect their network monitoring stack, due to the impact of hybrid networking, which will be a significant increase from 20% in 2019.[iv]

The Riverbed unified NPM platform helps enterprises improve network resiliency and security for remote workforces. Unlike disparate tools, Riverbed combines cross-domain data including all packets, flows, and device metrics with machine learning and advanced analytics to provide deep visibility and insights across hybrid environments.

How It Works

Riverbed combines flow data collected by **NetProfiler** with packet data from **AppResponse** to enable network teams to proactively monitor and troubleshoot network issues before users are impacted. For deeper analysis, **NetIM** collects SNMP polling, CLI data, and synthetic testing feedback to diagnose infrastructure availability issues effectively and efficiently, ending fingerpointing. This comprehensive, full fidelity data is collated and analyzed using machine learning and AI to surface relevant insights for IT and business teams through a role-based **Portal**.

In addition, Riverbed unified NPM applies security analytics to network flow and packet data to detect breaches and potential threats from new sites or malicious insiders. The goal is to reduce the time between breach and detection to mitigate risk. Threats that can be identified using Riverbed's **Advanced Security Module** include data exfiltration, password brute force attempts, blacklisted sites, DDoS attacks and more.
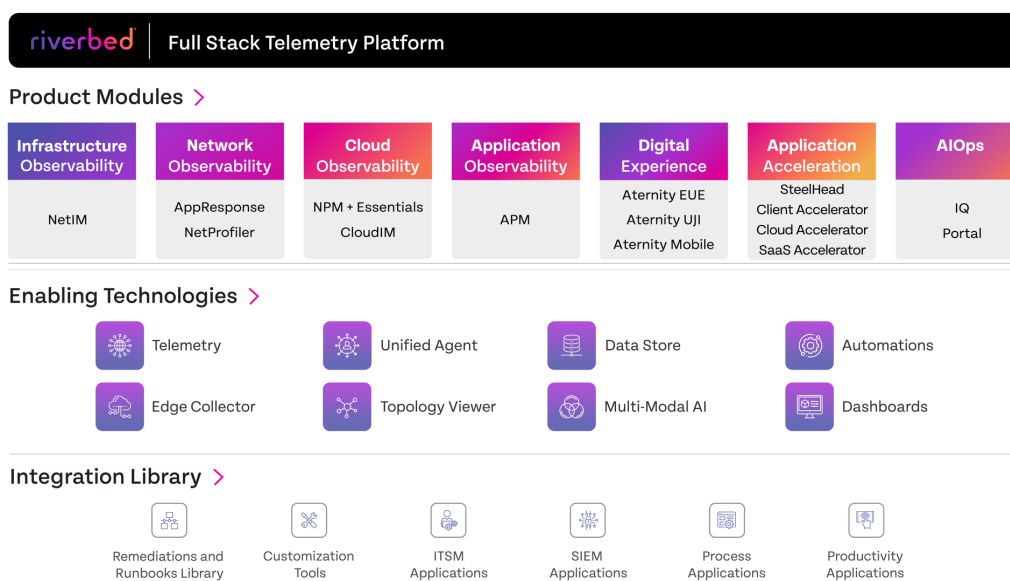

Figure 7: Riverbed unified NPM integrates packet data from AppResponse, flow data from NetProfiler, infrastructure polling from NetIM and security monitoring from NetProfiler Advanced Security Module and brings all the data together into unified, role-based views in Portal.

Next Steps

The shift to remote work has also shifted the focus of IT teams who are now tasked with supporting a work-from-anywhere model. To thrive in the new normal, IT must successfully optimize remote user connectivity, accelerate business-critical application performance, and improve network resiliency and security. Riverbed can help. Our product portfolio is uniquely designed to ensure application and network performance for workers whether remote or in the office. We optimize all types of networks with 99% data reduction, accelerate critical application performance, and mitigate latency. In addition, we provide full-fidelity monitoring of all flows, packets, and devices to proactively troubleshoot performance issues and detect security threats.

To learn more about how to better support the shift to work from anywhere, go to our website here.

i Gartner, COVID-19 Bulletin: Executive Pulse, 3 April 2020

ii Remote Work increased by 159% since 2005 (Global Workplace Analytics Report (July 2019, https://www.flexjobs.com/blog/post/flexjobs-gwa-report-remote-growth/

iii Wakefield Research, The State of Office 365 Performance, March 2019

iv Gartner, J. Chessman, Market Guide for Network Performance Monitoring and Diagnostics, 5 March 2020

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Riverbed — Empower the Experience

Riverbed is the only company with the collective richness of telemetry from network to app to end user that illuminates and then accelerates every interaction so that users get the flawless digital experience they expect across the entire digital ecosystem. Riverbed provides two industry-leading solutions: the Riverbed Unified Observability portfolio, which integrates data, insights, and actions across IT to enable customers to deliver seamless digital experiences; and Riverbed Acceleration, which offers fast, agile, and secure acceleration of any application over any network to users, whether they are mobile, remote, or on-premises. Together with our thousands of partners, and market-leading customers across the world, we empower every click, every digital experience. Learn more at riverbed.com.