

EBOOK

Accelerating Cloud Data Movement

Finding the Right Balance of Cost,
Speed, Security and Flexibility
with Riverbed SteelHead

riverbed®



Executive Summary

Moving data to the cloud or between clouds enables enterprises to tailor the unique services of each cloud to meet business needs. Conversely, data movement also presents significant cost, security and management challenges. The initial expenses for cloud migration can be substantial, including costs for data transfer and infrastructure setup. For on-going data movement, organizations often face higher-than-expected operational costs due to factors like bandwidth usage, on-going maintenance and cloud service fees. And that doesn't even begin to consider security concerns in moving sensitive data to the cloud.

As a result, many organizations experience cloud sticker shock due to poor planning, rushed assessments, and unexpected complexities during migration. This ebook explores alternative approaches to cloud data movement and reviews how Riverbed SteelHead solutions enable remarkable economics while still delivering speed, security and flexibility.



Moving Data to and Between Clouds

Moving data to the cloud and across clouds can offer numerous benefits across various scenarios:

- Support of a multi-cloud strategy
- Data backup and disaster recovery
- Scalable storage solutions
- Machine learning and AI
- Big data analytics
- Application hosting and development
- Cost efficiency
- Enhanced security
- IOT data management
- Compliance and regulatory requirements

Moving data to and between clouds also comes with several challenges such as:

- Scalability and performance
- Cost management
- Data security, privacy and regulatory compliance
- Data governance
- Change management

From a management perspective, ensuring robust security measures and compliance with privacy regulations (e.g., GDPR, HIPAA) is critical yet challenging. Effective data governance involves managing data availability, usability, integrity, and security, which can be complex in cloud environments. Adhering to various regulatory requirements can be a burden, especially for industries with stringent compliance standards.



Moving Your Data to the Cloud

Cloud providers have two basic ways to move data from their data centers or across clouds, regardless of where the data originates: direct connections and Virtual Private Networks (VPN). Each have their own strengths and weaknesses when it comes to connecting to major cloud providers. Here's a comparison:

There are tradeoffs between these two approaches. In general, direct connect is usually best for scenarios where the traffic patterns are well established and not changing significantly over time, while requiring high performance (volume and speed), and secure connections, such as large-scale data transfers between clouds or data center and clouds, real-time applications, and industries with strict compliance requirements. VPN is often suitable for smaller-scale operations, remote access, and situations where cost and flexibility are more critical than performance.

Another issue is direct connect services require long-term commitments that are odds with consumption-based approach of cloud services. You'll still be paying for the direct connect service regardless if the data movement requirements change, whereas your consumption-based cloud compute costs are reduced.

Finally, direct connect services, such as AWS Direct Connect, Azure ExpressRoute, FastConnect from Oracle Cloud and Google Cloud Interconnect, may not be available everywhere, such as a remote manufacturing location and oil drilling site in the middle of the ocean. As a result, you may end up with a mixture of connection services, requiring different skill sets to manage them, thus increasing both costs and complexity.

Direct Connect	
Pros	Cons
Performance Offers high bandwidth (up to 100 Gbps), making it ideal for large data transfers and real-time applications	Cost Generally, more expensive due to the need for dedicated infrastructure
Reliability Provides a dedicated, private connection that ensures consistent performance	Time and complexity to value Requires weeks to set up, and price negotiations across service providers, hosting providers and clouds
Security Reduces exposure to the public internet, enhancing security	Flexibility Less flexible as it is tied to specific locations and requires physical infrastructure as well as contract commitments ranging from one to three years

VPN	
Pros	Cons
Cost Effective Typically, lower cost as it uses existing internet connections	Performance Limited by VPN server bandwidth, typically capped at 1 Gbps. Higher bandwidth requires multiple links with load distribution technologies such as ECMP, increasing complexity and risk. Further, internet bandwidth and can experience higher latency and variable performance
Ease of Setup Easier to configure and manage through software	Security Relies on encryption over the public internet, which can be less secure than a dedicated connection
Flexibility More flexible and can be set up quickly without the need for physical infrastructure	Reliability More susceptible to internet congestion and variability

When Direct Connect Isn't an Option

For many organizations, a direct connect to their cloud provider is not a viable choice. This can be because of cost, commitment, lack of availability or the complexity of setting one up. Yet the limitations of a standard VPN connection fail to meet the requirements for performance, reliability and security. Riverbed has a better option.

With Riverbed [SteelHead Cloud](#), you can sidestep the tradeoffs between direct connect services and VPN data transfers to the cloud. You get the reliable performance and security of a direct connect with the cost, ease of setup and flexibility of using a VPN to move data to the cloud.

The Right Balance

Riverbed provides solutions that accelerate applications and move data efficiently and at scale regardless of location, network conditions, deployment models, or applications used.



Improve performance of any application, for any user, over any network

Riverbed Acceleration offers comprehensive solutions to boost performance with a focus on security, efficiency, and resiliency. We enable consistent application performance whether on premises, in the cloud, or at the edge. By optimizing data transmission and reducing latency, Riverbed's solutions help businesses overcome network challenges, providing a seamless user experience and improved productivity.



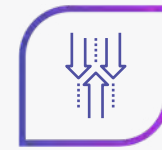
Attain resiliency for business continuity and data security

Riverbed solutions enable you to reliably protect more data and recover faster in the face of unforeseen circumstances, outages, and disaster. Our Acceleration solutions quickly, securely, and efficiently move data at scale across the edge, data centers, and cloud to help you achieve efficient RTO and RPO.



Migrate applications and data to cloud, confidently

Riverbed helps you overcome the risks of diminished performance as you migrate to cloud with our Cloud and SaaS acceleration solutions. We also help protect your investments in our solutions with Riverbed Flex, which provides assurance that our technology will continue to deliver value as organizations evolve cloud and network architectures and change deployment models.

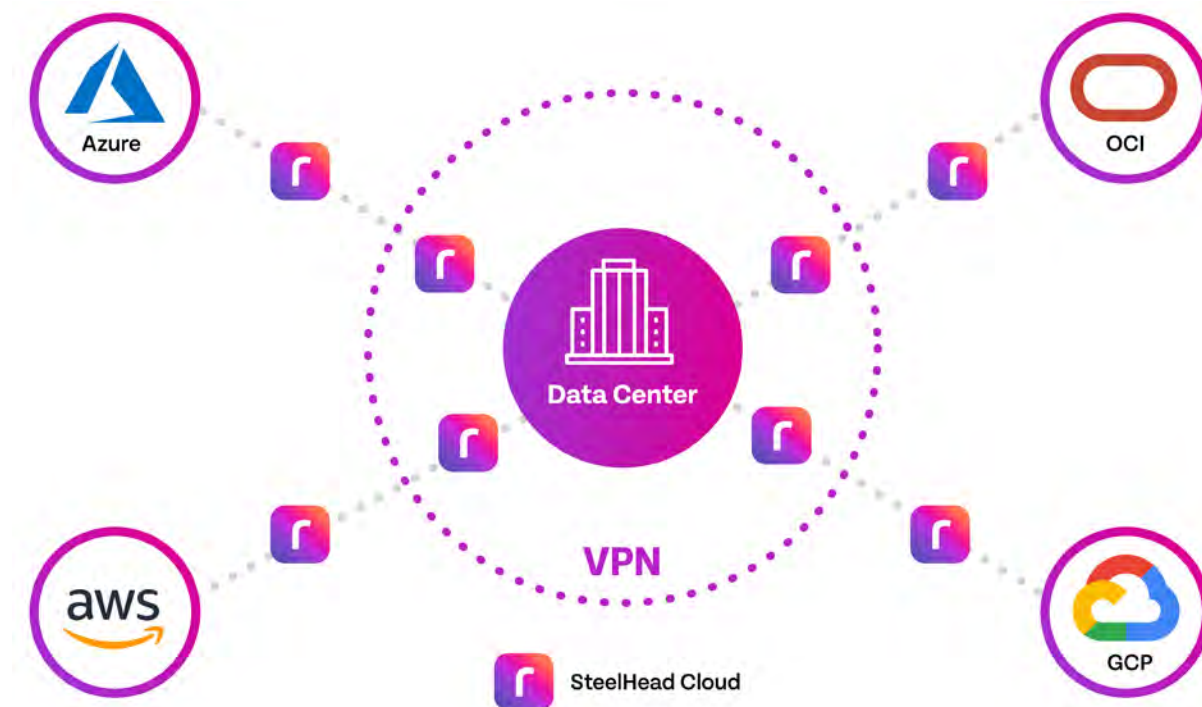


Efficiently move data at scale over distance

The current methods to transport data from one location to another are slow and unreliable, especially at scale and over long distances. Riverbed accelerates and simplifies the process of moving data across the enterprise IT landscape, helping you speed their time to insights, which drives better decision-making.

Riverbed Cloud

Riverbed SteelHead Cloud can provide comparable speed and capacity of a direct connection with the price model of a VPN connection. This can save you significant money as it facilitates faster, more efficient and cost-favorable movement of large data sets between data centers and cloud, or edge locations to the cloud, through data streamlining and transport optimization techniques. Additionally, SteelHead Cloud enhances security of data transfers with post-quantum-computing encryption and confidential computing support.



Data Center AWS via IPsec VPN¹ (Monthly rate)

Two VPN Connections	\$ 73
Three Transit Gateway Attachments	109.50
615,938 GB Data Transferred over TGW	12,318.75
43,116 GB Standard Data Transfer	25,444.01
Dedicated 5Gbps Internet Connection	5,000,00
Total Monthly Cost	\$42,945,26

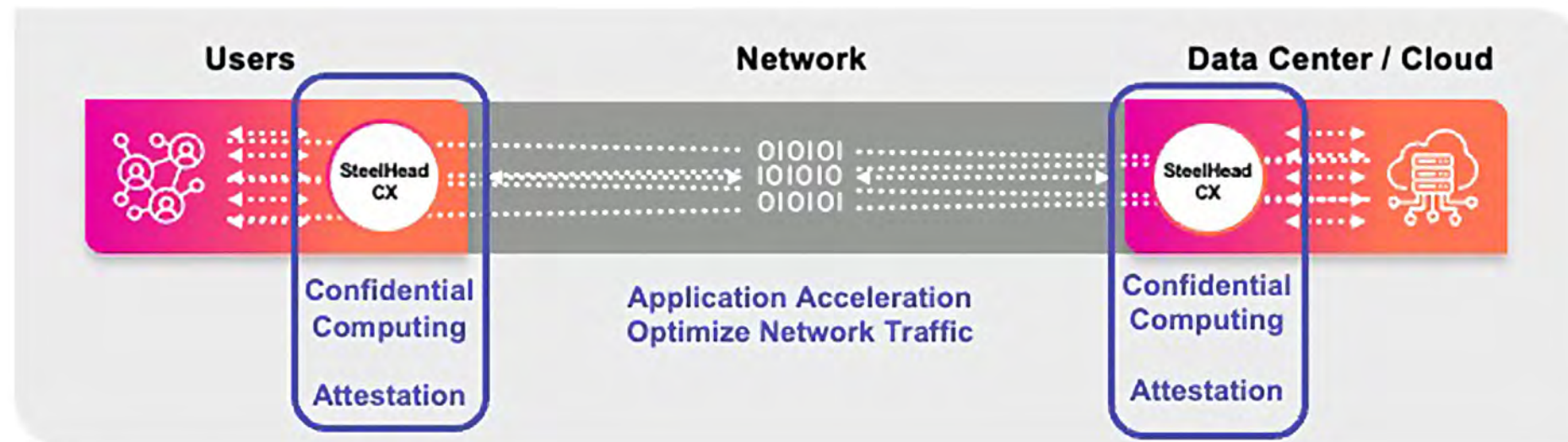
Datacenter to AWS via SteelHead on VPN (Monthly rate)

SteelHead ² costs	\$ 9,374.38
615,938 GB Data Transferred over TGW	12,318.75
43,116 GB Standard Data Transfer	3,707.53
Dedicated 5Gbps Internet Connection	2,500.00
Total Monthly Cost	\$27,900,65
Monthly Savings (35%)	\$15,044,61³

¹Data center to Cloud connection via multiple IPsec tunnels, concentrated using a Transit Gateway. A bundle of two VPN connections (4 tunnels) for a total of 5Gbps. Data flows at 100% capacity for 4hrs/day, and at 25% capacity for 20hrs/day, where 70% egress to internet. ²While SteelHead has demonstrated data transmission reductions up to 99%, we have assumed here only a 90% data transmission reduction. SteelHead scales down the bandwidth requirement to 500Mbps, which results in the ability to choose a cheaper direct internet access contract at 2Gbps which still satisfies the minimum bandwidth of 1.25 Gbps. Data transfer on the LAN side remains the same, but is greatly reduced on the WAN side, with a much-reduced egress data costs. ³Your experience may vary. Ask your authorized Riverbed representative to do a cost analysis on your particular scenario.

SteelHead Cloud is compatible with major Infrastructure-as-a-Service (IaaS) platforms like Microsoft Azure, AWS Oracle Cloud Infrastructure and Google Cloud Platform – and meets the needs of the U.S. Department of Defense with IL5 and IL6 certification on AWS Gov and Azure Gov clouds – eliminating vendor lock-in and providing flexibility in choosing cloud providers.

SteelHead Leverages Confidential Computing



With embedded Intel® Confidential Computing, Riverbed Acceleration enables secure data sharing across on-premises locations, edge devices, and cloud servers—even when working with sensitive, confidential, or regulated data. Initial support for confidential computing is on SteelHead Cloud running on Azure, with support on other clouds to follow. In addition, RiOS 10 integrates quantum-safe algorithms and hybrid cryptographic solutions, allowing organizations to seamlessly secure their networks against quantum risks while maintaining compatibility with existing infrastructure.



Keeping Your Data Moving

Riverbed Acceleration is the key to unlocking the full potential of cloud data movement. With secure, high-speed data transfer capabilities and robust performance enhancements, Riverbed enables your cloud initiatives can thrive in any network environment. Whether you're operating at the edge, in the cloud, or across a hybrid infrastructure, Riverbed Acceleration keeps your data moving efficiently and securely.

Discover how Riverbed Acceleration can help you manage the cost, complexity and security of moving data to the cloud. Contact us today to learn more about our solutions and how they can help you achieve your cloud data migration goals.

For more information on Riverbed's products and services

VISIT US AT [RIVERBED.COM/ACCELERATE](https://riverbed.com/accelerate)

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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.

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