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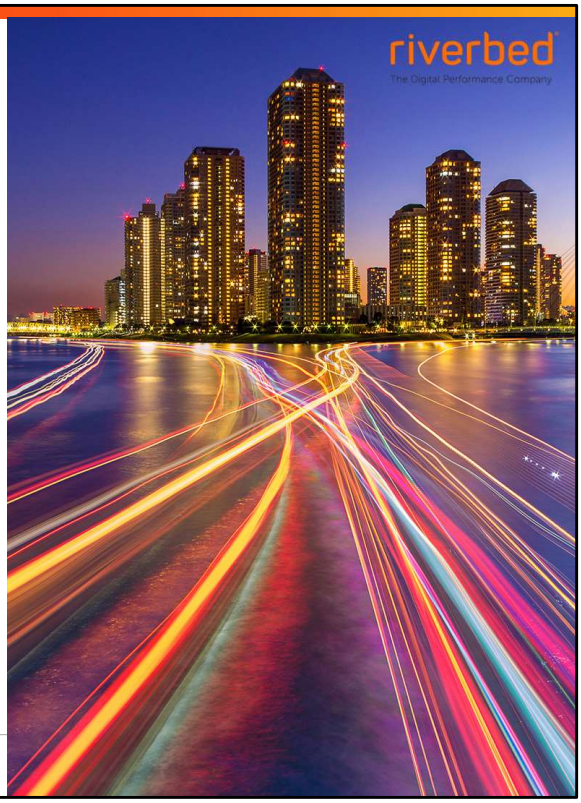
Learning Objectives

After completing this module, you will be able to:

- Describe how Riverbed solutions optimize cloud environments.



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Key Points

- Public, private, and hybrid cloud environments face the same performance limitations as today's applications and networks.
- Riverbed Cloud Services enable the cloud as an extension or even a replacement of the datacenter.
- Riverbed cloud solutions optimize applications and provide access to cloud-based services.

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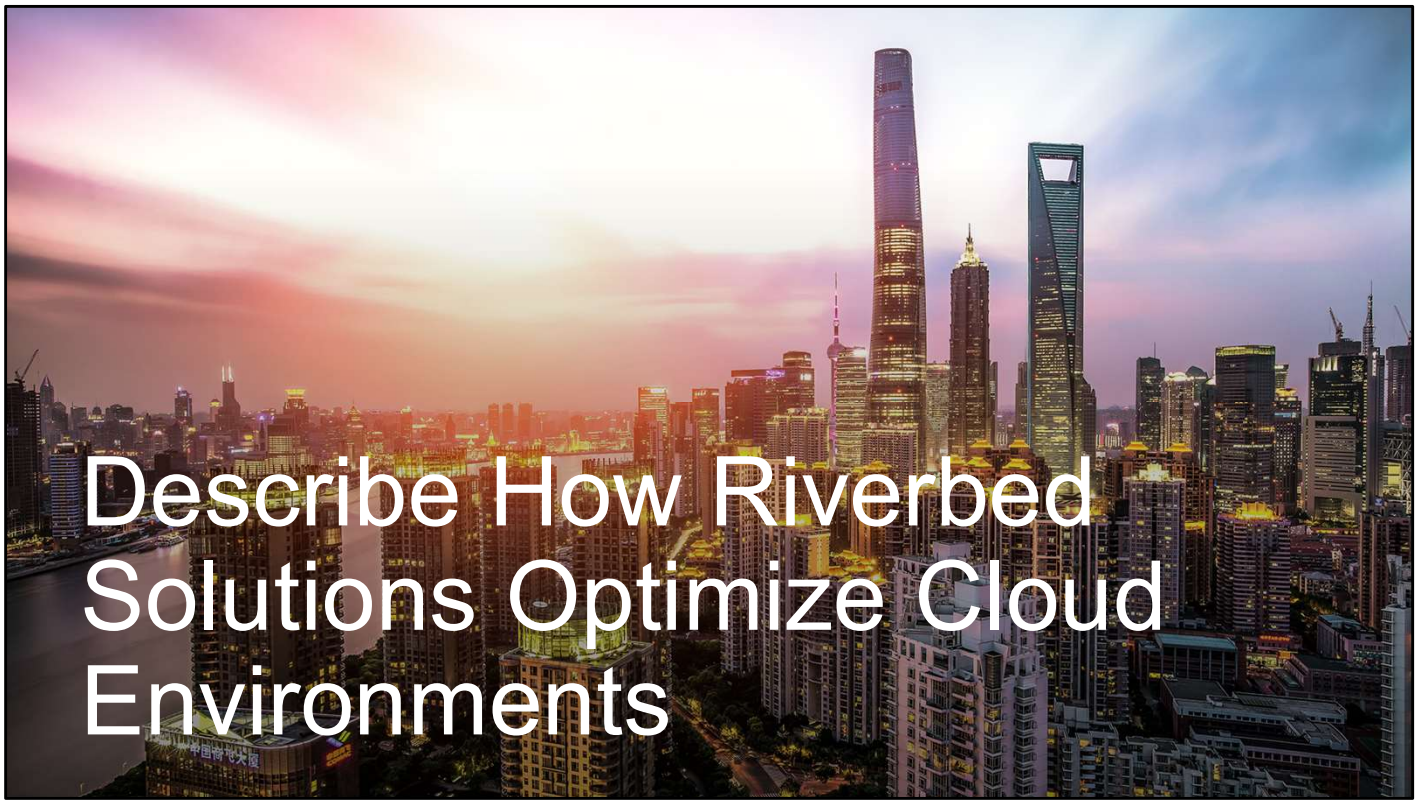

Describe How Riverbed Solutions Optimize Cloud Environments

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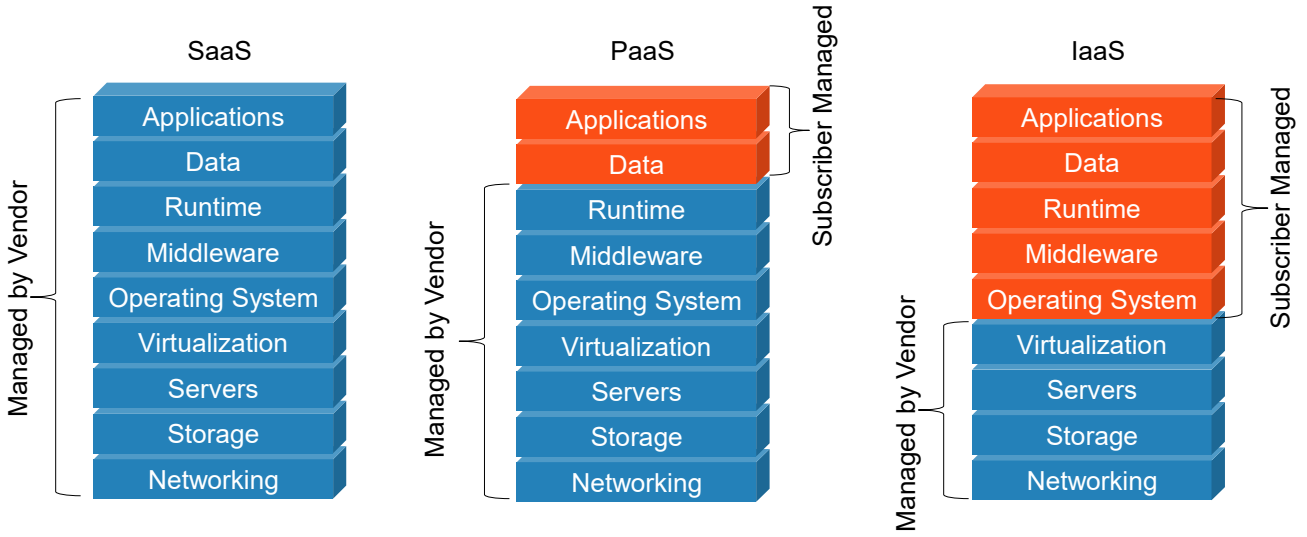
Cloud Computing – SaaS vs PaaS vs IaaS

How they stack up



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SaaS
The cloud provider manages and controls the underlying cloud infrastructure, operating systems, application platform, and even individual application capabilities. The customer has the ability to use the vendor's applications running on a cloud infrastructure. For example, the applications are accessible from various client devices through either a web browser or an application programming interface (API).

IaaS
The cloud provider manages and delivers the underlying infrastructure, including storage, network and computing resources. The customer is able to deploy, run and control software, which may include operating systems and applications. Major providers include:

- Amazon Web Services
- Microsoft Azure
- Google Cloud
- IBM / VMWare

PaaS
The cloud provider provides users with the platform and environment to develop, manage, and run applications over the Internet. PaaS takes away or lessens the complexities of building, maintaining, and enhancing the cloud infrastructure that developers need in order to develop and launch an app. In other words, PaaS makes higher-level programming easy for web and software developers, and ultimately for businesses.

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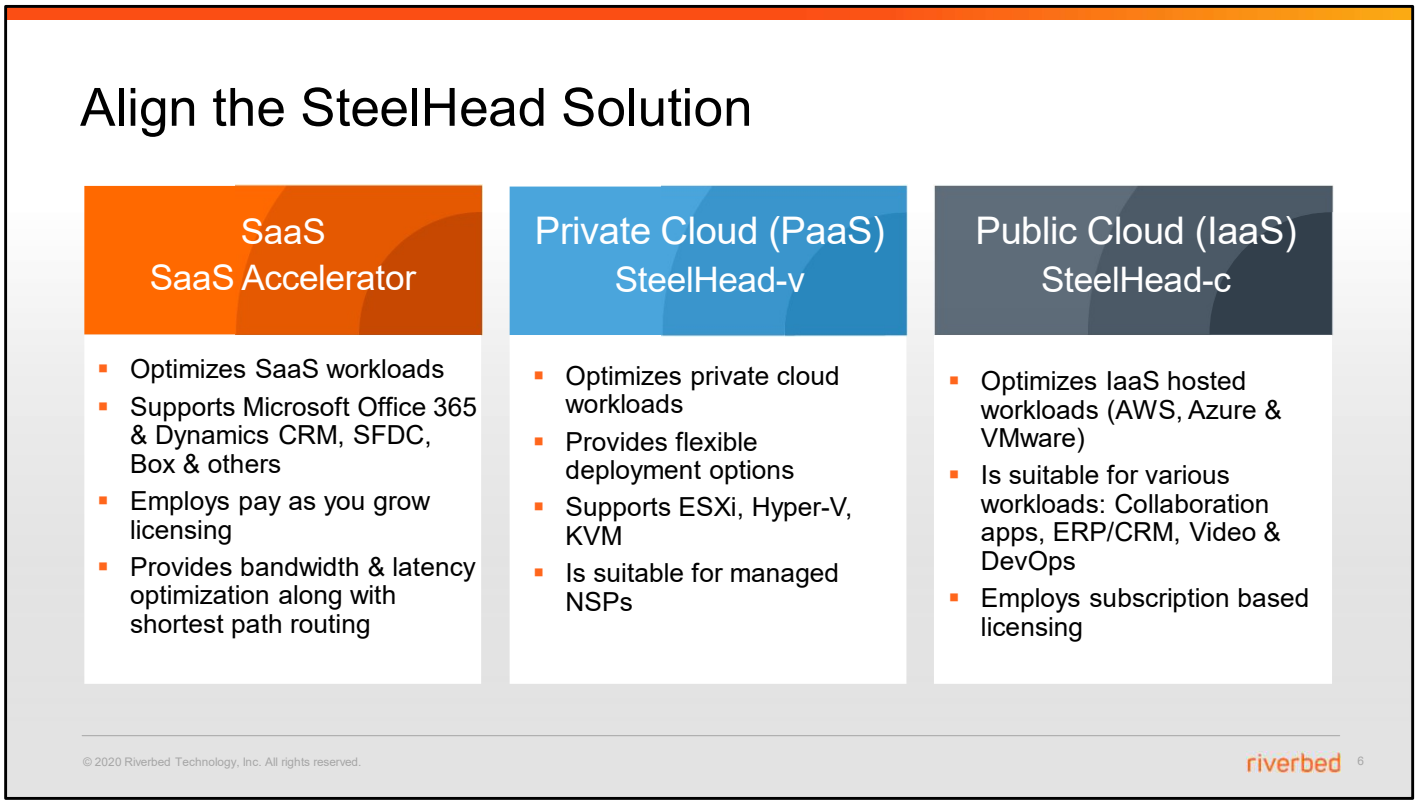

The hybrid enterprise with multiple datacenters, branch offices, and public and private environments faces performance limitations inherent in networks and applications—bandwidth constraints, latency and competition among applications. Dynamic SaaS applications, in particular, frequently experience slow performance and deliver a less-than-optimal user experience due to the distance from the cloud to the user.

As organizations migrate their initial data and later broaden their application footprint into the cloud, ensuring that applications perform as needed (and as guaranteed) becomes critical. For SaaS and cloud applications, reduced application visibility, loss of control, and slow or unpredictable performance, as well as difficult migrations and complex deployments, can challenge IT.

The Riverbed Solution

Built for public cloud environments, Riverbed® SteelHead™ CX for Cloud extends Riverbed's #1 optimization solution for hybrid enterprises to IaaS clouds. SteelHead CX speeds migration to the public cloud and accelerates access for users from virtually any location.

SteelHead CX for Cloud delivers the best end-user experience across hybrid networks by optimizing application performance for cloud and SaaS applications. The solution helps ensure you can meet application performance SLAs for users no matter where they are located, regardless of network latency and enterprise bandwidth limitations.

Compatibility with Microsoft Azure, Amazon Web Services, and VMware ESX-based cloud and vCloud Air environments offers the freedom to deploy applications in nearly any cloud environment and move between cloud providers with ease. SteelHead accelerates the majority of cloud providers and has been certified for Microsoft Azure and VMware vCloud Air.

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SteelHead CX for Cloud (SteelHead-c)

Accelerates applications and reduces bandwidth consumption

- Increases application performance up to 100x
- Reduces bandwidth utilization by up to 95%
- Increases throughput by up to 50%

Increases cloud flexibility and platform choice

- Offers compatibility with a wide variety of cloud services
- Provides freedom to move between cloud providers with ease
- Quickly integrates with other SteelHead solutions
- Enables elastic sizing and easy cloning

Provides cloud-like, cost-effective economics

- Enables the shift from Capex to Opex expenditures
- Manages cost based on user demand
- Employs monthly subscription-based pricing
- Features commitments as short as six months

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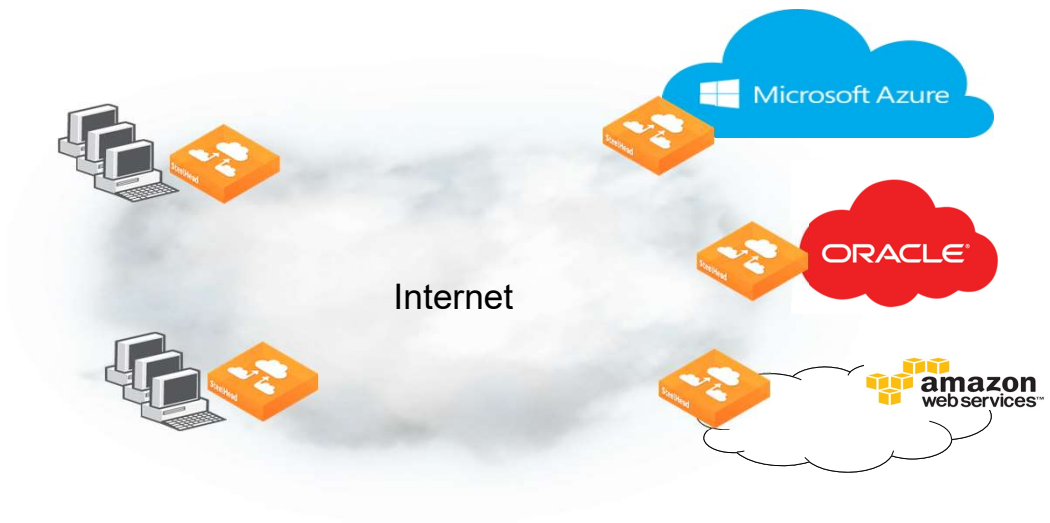
SteelHead in the Cloud: AWS, MS Azure, Oracle Cloud



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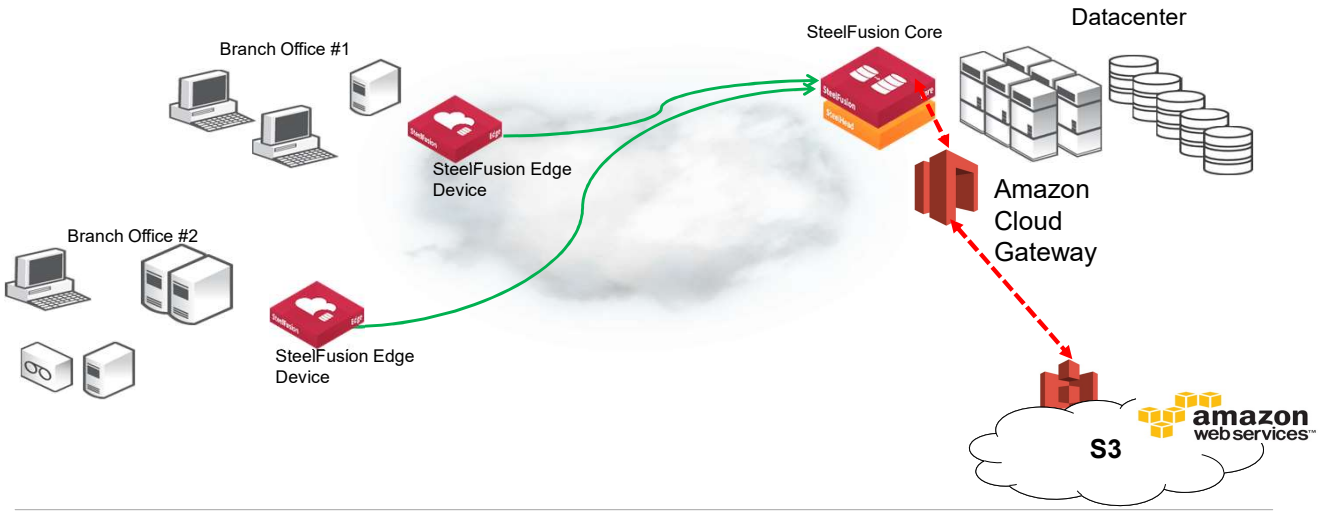
Other Cloud Scenarios – SteelFusion & AWS



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SteelFusion, when used in conjunction with an AWS Storage Gateway and Amazon cloud storage, delivers unparalleled data availability, flexibility, and protection for branch infrastructure. It simultaneously reduces datacenter storage requirements and improves data availability and recoverability by leveraging cheap, elastic cloud storage delivered via Amazon cloud storage services. By using an AWS Storage Gateway with SteelFusion, businesses can begin the transition to an environment where all storage is served by the cloud on demand, through SteelFusion, to applications and users.

Branch offices with constrained network links now enjoy all the same cloud storage benefits that datacenters enjoy through the use of SteelFusion and Amazon without compromising data, performance, and application availability. The problems of delivering cost effective storage to branches that can be managed and controlled centrally has been improved, allowing for an storage tier that can efficiently and effectively scale with business requirements. Rebuilding damaged or destroyed branch office environments is no longer a days-long recovery time objective, but one that can be compressed to as little as an hour, even though data resides two links away within Amazon cloud storage. And with the ability to utilize Amazon Direct Connect capabilities, SteelFusion can consolidate storage services away from the datacenter into managed public or private clouds, allowing businesses to access cloud storage at high bandwidth speeds and without the need to have a true datacenter storage environment.

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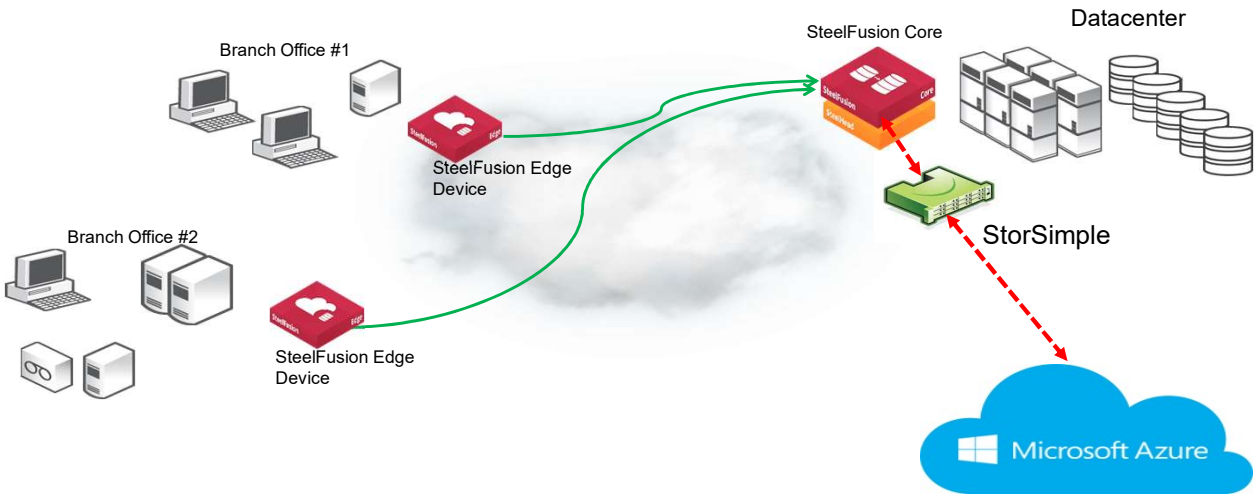
Other Cloud Scenarios – SteelFusion & MS Azure



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StorSimple is Microsoft's latest hybrid cloud storage offering based on StorSimple 8000 series hybrid storage arrays. These storage arrays provide higher performance and have even tighter integration with Azure by including two powerful Azure-based capabilities: StorSimple Virtual Appliance and StorSimple Manager. StorSimple 8000 series arrays come in two versions to meet a variety of capacity and performance needs: StorSimple 8100 and StorSimple 8600.

StorSimple Virtual Appliance provides on-demand access to enterprise data in Azure, letting you search, mine, and analyze historical data sets, conduct development and test, and perform disaster recovery in Azure. StorSimple Manager lets you centrally control all aspects of StorSimple storage and data management from the cloud to ensure consistent operations, data protection, and retention policies across the enterprise.

In a nutshell, the SteelFusion solution allows customers to consolidate their branch data to Azure by having the SteelFusion Core connecting to a StorSimple appliance in the Datacenter. The SteelFusion Core mounts LUNs presented by the StorSimple and it projects those LUNs to the SteelFusion Edge appliances at branch locations. The LUNs presented by the StorSimple appliance are back ended by Azure, which is providing the storage.

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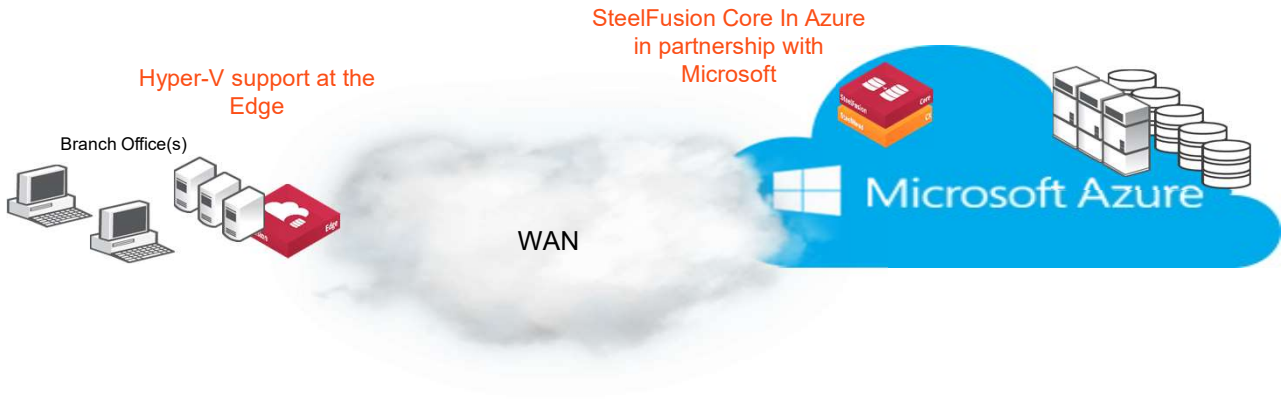
SteelFusion Design Scenarios

Azure Ready Edge – No Physical Data Centers at all



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All cloud infrastructure provisioning and orchestration occurs via a simple wizard interface, combining multiple disparate interfaces into a single, powerful point of interaction. The SteelFusion Azure-Ready Edge's enhanced orchestration workflow enables simple management of multiple environments.

Riverbed has worked closely with Microsoft to make the SteelFusion Azure-Ready Edge. It will include full support for Hyper-V virtualization on the edge. Adding even greater flexibility and as an addition to its current VMware capabilities, SteelFusion customers will now be able to choose a solution that supports either of the major virtualization providers.

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Module Review

You should now be able to:

- Describe how Riverbed solutions optimize cloud environments.

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