

EDGE HYPERCONVERGENCE FOR ROBO'S **Riverbed SteelFusion Brings IT All Together**

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Hyperconvergence is one of the hottest IT trends going in to 2016. In a recent Taneja Group survey of senior enterprise IT folks we found that over 25% of organizations are looking to adopt hyperconvergence as their primary data center architecture. Yet the centralized enterprise datacenter may just be the tip of the iceberg when it comes to the vast opportunity for hyperconverged solutions. Where there are remote or branch office (ROBO) requirements demanding localized computing, some form of hyperconvergence would seem the ideal way to address the scale, distribution, protection and remote management challenges involved in putting IT infrastructure “out there” remotely and in large numbers.

However, most of today’s popular hyperconverged appliances were designed as data center infrastructure, converging data center IT resources like servers, storage, virtualization and networking into Lego™ like IT building blocks. While these at first might seem ideal for ROBOs – the promise of dropping in “whole” modular appliances precludes any number of onsite integration and maintenance challenges, ROBOs have different and often more challenging requirements than a datacenter. A ROBO does not often come with trained IT staff or a protected datacenter environment. They are, by definition, located remotely across relatively unreliable networks. And they fan out to the thousands (or tens of thousands) of locations.

Certainly any amount of convergence simplifies infrastructure making easier to deploy and maintain. But in general popular hyperconvergence appliances haven’t been designed to be remotely managed en masse, don’t address unreliable networks, and converge storage locally and directly within themselves. Persisting data in the ROBO is a recipe leading to a myriad of ROBO data protection issues. In ROBO scenarios, the datacenter form of hyperconvergence is not significantly better than simple converged infrastructure (e.g. pre-configured rack or blades in a box).

Riverbed’s SteelFusion we feel has brought full hyperconvergence benefits to the ROBO edge of the organization. They’ve married their world-class WANO technologies, virtualization, and remote storage “projection” to create what we might call “Edge Hyperconvergence”. We see the edge hyperconverged SteelFusion as purposely designed for companies with any number of ROBO’s that each require local IT processing.

HYPERCONVERGENCE AT THE ROBO EDGE

Wide area network connectivity and bandwidth to the ROBO is both costly and prone to disruption (e.g. there is no way to keep squirrels out of the wiring closets at many bare-bones ROBO locations). We’ve determined then that Edge Hyperconvergence requires at least two significant differentiators from regular data center hyperconverged solutions. First, they need special networking services including ROBO-class WAN optimization (and massive network fan-out).

Since hyperconverged solutions promise to reduce the number of unique disparate components required in the ROBO, these WANO capabilities need to be fully baked in. With SteelFusion, all the con-

verged resources (in the ROBO edge appliance) make full use of the integrated SteelHead WANO services for optimum results. Keep in mind that at large scales of deployment, every percentage point of cost reduction adds up to large returns.

Second, it's been shown time and again that important data simply can't live safely at each remote edge location no matter how complex or layered the backup/DR scheme might be. ROBO backup schemes are notoriously infamous for either not actually happening or not being at all useful for recovery operations. Important data is simply best persisted and mastered in the centralized, consolidated, and fully protected data center where there are mature existing enterprise storage solutions and best practices.

Yet this data must be made available for primary processing in the ROBO location. This requires both efficient WANO (as above) and intelligent forward caching. Forward caching all data really solves multiple problems including providing for local application computing performance while increasing local edge application availability. And it enables data center data protection that can be leveraged to recover any failed ROBO to any spare or alternative SteelFusion (or datacenter vSphere) host.

We like to think of this storage approach as data "projection" – present a virtual volume image at the edge location for direct use, but actually host and protect the master copy of it in the datacenter SAN. To be clear, data projected out to the edge location will be primary data that includes both virtual machine images and data volumes. Virtual machines will run directly at the edge location on the hyper-converged appliance to provide local performance and availability, while being able to access and process their primary data stores virtually.

SteelFusion's edge data projection capability is based on a sophisticated (e.g. virtual server optimized) block-level prediction algorithm with an authoritative local write cache (asynchronously written back leveraging the integrated WANO). Not only does this keep the master data copy in the data center where it belongs, but the forward caching greatly increases ROBO resiliency in the face of short-term network issues.

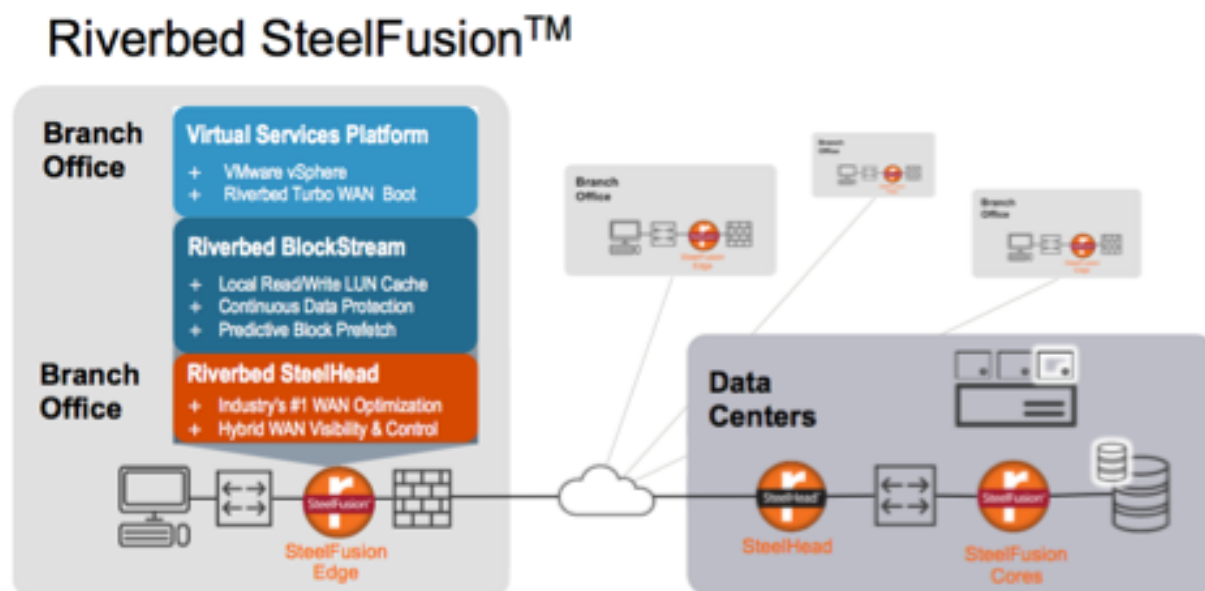


Figure 1 - Riverbed SteelFusion Architecture

When IT Matters At the Edge

There are remote users that can make use of remotely hosted virtual desktops. There are scenarios in which cloud storage can be leveraged as a cold tier or backup target directly from each branch. But there are many ROBO scenarios in which local edge applications demand local execution performance and an assured availability better than WAN networks can provide. The legacy approach is to deploy some small stack of IT infrastructure to each ROBO and attempt to build and support what is effectively a lot of mini-datacenters. Perhaps a second generation approach looked to deploy a pre-converged rack or datacenter-style hyperconverged appliance. Unfortunately as we've seen, these solutions might help with simplifying the deployed stack, but they don't do any better job of protecting data, ensuring availability, or assisting with any kind of improved or agile recovery.

Truly, Riverbed's SteelFusion is the only solution we see today that offers a hyperconverged approach specifically built for the ROBO and all its special requirements. Because all data is effectively kept in the data center, it can be copied, snapshotted, de-duplicated, and backed up and restored with data center SAN level RPO/RTO. But most likely a given data center will be far more resilient than any ROBO so that a failed ROBO recovery can be had directly by simply mounting the relevant data center volumes (or data center SAN snapshots, et.al.) elsewhere.

Nothing But Productivity

A hyperconverged SteelFusion appliance deployed out to a ROBO is effectively a stateless device. Which means that each instance is technically fungible and actually surpasses datacenter hyperconverged approaches in deployment/re-deployment/recoverability. As an analogy, business users might relate this to how much safer (and functional) it is to keep their docs on a cloud file system versus the very real risk of losing everything stored only on a laptop drive due to any number of potential calamities.



Figure 2 - Stateless Riverbed SteelFusion In the Branch

Stateless branch infrastructure delivered with an edge hyperconverged appliance leads to what Riverbed calls "Zero Branch IT". So far we've talked mostly about functional aspects, but SteelFusion also minimizes IT Opex both at the edge and in the data center. There is simply no need to have local IT personnel spend time with SteelFusion once its plugged in – most IT activities and all data management can now take place in the central data center by consolidated staff. And of course SteelFusion's own management capabilities are naturally designed to oversee and make it easy to manage large numbers of remote SteelFusion appliances. Every hour of IT staff time reduced per ROBO at scale adds up quickly to some very impressive savings.

TANEJA GROUP OPINION

When we coined the term hyperconvergence here at Taneja Group, we wanted to identify the category of new solutions that were bringing together multiple silos of IT infrastructure into one fully integrated appliance. Originally this meant leveraging increasingly powerful commodity physical appliances hosting increasingly virtualized and software defined logical resources that were inherently converged together and sold as unified blocks of IT infrastructure. This architectural shift simplifies an otherwise large IT stack of hardware. And if the vendor is on the ball, it can eliminate many intra-resource misalignment and silo domain management issues.

We described that servers, storage, a hypervisor, and a modicum of networking all needed to be brought together as one platform (although today there are wide variations). But that was clearly a data center view of infrastructure. Now we see Riverbed redefining hyperconvergence for the ROBO by removing all direct local storage in favor their virtually projected storage (and supporting WANO capabilities).

This unique, new, but still hyperconverged, storage resource is ideal to help address a whole laundry list of ROBO challenges with data at the edge regarding protection, performance, availability, and cost. To help avoid misguided apples to oranges comparisons, we now propose that SteelFusion illustrates a valid new sub-category of Edge Hyperconvergence solutions, optimized for ROBO scenarios.

Riverbed is uniquely positioned to provide outstanding Edge Hyperconvergence, with their rich history of world-class WANO solutions, long-standing supplier of ROBO infrastructure, demonstrated execution at scale, and well-documented support. They intimately understand branch operations and have arrived at this edge hyperconvergence approach organically – its not a cynical boxing up of whatever they had lying around. With SteelFusion we feel they are able to provide an unmatched computing experience to ROBO denizens with hungry application needs.

Bottomline – SteelFusion could be a great investment with immediate returns on multiple levels. While this may mean crossing IT silo boundaries, SteelFusion has comprehensive access controls built into the solution that make it easy for operations teams, even in large enterprises. Organizations with any current silo specific ROBO architecture upgrade or refresh plans ought to consider this edge hyperconverged approach first to take advantage of the significant opportunities it presents.

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