

CONVERGED IT INFRASTRUCTURE'S PLACE IN THE INTERNET OF THINGS

How Glassbeam SCALAR Empowers Hyperconvergence Vendors

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All of the trends leading towards the world-wide Internet of Things (IoT) – ubiquitous, embedded computing, mobile, organically distributed nodes, and far-flung networks tying them together - are also coming in full force into the IT data center. These solutions are taking the form of converged and hyperconverged modules of IT infrastructure. Organizations adopting such solutions gain from a simpler building-block way to architect and deploy IT, and forward-thinking vendors now have a unique opportunity to profit from subscription services that while delivering superior customer insight and support, also help build a trusted advisor relationship that promises an ongoing “win-win” scenario for both the client and the vendor.

There are many direct (e.g. revenue impacting) and indirect (e.g. customer satisfaction) benefits we mention in this report, but the key enabler to this opportunity is in establishing an IoT scale data analysis capability. Specifically, by approaching converged and hyperconverged solutions as an IoT “appliance”, and harvesting low-level component data on utilization, health, configuration, performance, availability, faults, and other end point metrics across the full worldwide customer base deployment of appliances, an IoT vendor can then analyze the resulting stream of data with great profit for both the vendor and each individual client. Top-notch analytics can feed support, drive product management, assure sales/account control, inform marketing, and even provide a revenue opportunity directly (e.g. offering a gold level of service to the end customer).

An IoT data stream from a large pool of appliances is almost literally the definition of “big data” – non-stop machine data at large scale with tremendous variety (even within a single converged solution stack) – and operating and maintaining such a big data solution requires a significant amount of data wrangling, data science and ongoing maintenance to stay current. Unfortunately this means IT vendors looking to position IoT oriented solutions may have to invest a large amount of cash, staff and resources into building out and supporting such analytics. For many vendors, especially those with a varied or complex convergence solution portfolio or established as a channel partner building them from third-party reference architectures, these big data costs can be prohibitive. However, failing to provide these services may result in large friction selling and supporting converged solutions to clients now expecting to manage IT infrastructure as appliances.

In this report, we’ll look at the convergence and hyperconvergence appliance trend, and the increasing customer expectations for such solutions. In particular we’ll see how IT appliances in the market need to be treated as complete, commoditized products as ubiquitous and with the same end user expectations as emerging household IoT solutions. In this context, we’ll look at Glassbeam’s unique B2B SaaS SCALAR that converged and hyperconverged IT appliance vendors can immediately adopt to provide an IoT machine data analytic solution. We’ll see how Glassbeam can help differentiate amongst competing solutions, build a trusted client relationship, better manage and support clients, and even provide additional direct revenue opportunities.

IT Convergence/Hyperconvergence Is In the Internet of Things

Perhaps the newest and biggest data center IoT solution opportunity is now arriving in the form of converged infrastructure that offers increasingly integrated, smarter modules of IT resources. Examples of such solutions in the market today include EMC VCE vBlocks, Dell vStarts, HP Converged Systems, and IBM Pure Systems. IT convergence eases both implementation and operational burdens for the end user, and reduces the time-to-value and risk of successful deployment. Many users continue into longer term operations maintaining such systems as converged units, while some exercise the option to “unblock” the infrastructure stack at some point back into their traditional “silo” management domains (as noted during Taneja Group field research). By offering additional value-add services to their converged solutions, convergence vendors can expect to improve the percentage of those maintaining convergence throughout the infrastructure longer life-cycle.

But not only are cross-domain stacks of traditional IT vendor solutions being offered pre-converged (and often pre-racked) as system “units”, many vendors are taking the next step and “hyperconverging” servers, virtualization, primary storage and networking. Examples of these include Nutanix, Simplivity and Scale Computing. With these solutions the client is basically consuming IT appliances. In fact, clients looking to hyperconverged solutions fully expect to operate them long-term as operational building blocks. In a recent 2015 Taneja Group research study, over 25% of enterprises surveyed claim that their vision for their future datacenter architecture will be based primarily on hyperconverged solutions.

HYPERCONVERGED REFERENCE ARCHITECTURES EXCITE PARTNERS

Hyperconverged IT solutions are often naturally, and mostly, based on software defined IT resource concepts. With fully software defined hyperconverged solutions, upstream vendors like VMware can enable a large community of downstream IT partners to build out their own distinct appliance versions leveraging “hyperconvergence reference architectures”, VMware offers EVO:Rails and EVO:Rack references and EMC has Vspex:Blue for partners. These alone lead to many high-quality partner “versions” coming to market. Many software defined storage vendors like Maxta now also have well established hyperconverged reference architectures too. Differentiating among these in the market is becoming a big challenge, and at Taneja Group we expect that such differentiation will be based on demonstrated expertise, quality of support, vendor reputation, optimized hardware choices, price points, and established client relationship.

“Between hyperconvergence reference architecture solutions... differentiation will be based on demonstrated expertise, quality of support, vendor reputation, optimized hardware choices, price points, and established relationship”

Despite the competition, the opportunity for the ambitious IT vendor partner seems irresistible. Hyperconverged reference architectures make it easy for channel partners to follow a recipe and consistently provide a high-value, higher-margin solution with lower risk, cost, and time to market than by customizing unique solutions per client. Clients win because they get working solutions faster that intrinsically have lower risk, higher availability, known costs and simplified operational requirements. And not only can these partners then build up directly valuable support organizations and services based on having consistent solutions deployed across clients (providing leverage), but these front-line partners can leverage the growing IoT data stream “feedback” to help establish a more trusted advisor relationship with each client.

CUSTOMER EXPECTATIONS FOR THE IOT FUTURE

These hyperconverged, effectively IoT, solution partners have an opportunity to serve their clients as if they were much larger vendor organizations with traditionally large investments in support and technical staff. Smaller and medium sized companies will in fact come to expect that their more local IoT IT vendors will come to have growing and deeper insight into their individual implementations – their successes and failures leading to proactive support, their balance and usage of key resources across the company, management of remaining capacities (leading to just in time upgrades, expansions, etc.), conformance with best practices (or opportunities to improve) through “cohort” comparisons to the larger pool of other client deployments, and more.

IT customers are going to expect the same “remote” management and feedback of “intelligence” into their IT appliances in the same way they are coming to expect such remotely pooled intelligence optimizes household commodity IoT devices like thermometers, fitness devices, and smart cars (e.g. Tesla’s ability to improve performance through downloaded patch upgrades having analyzed performance across their whole customer “fleet”).

CHALLENGES WHEN BECOMING AN IT CONVERGANCE SOLUTION PROVIDER

There are several big challenges that convergence and hyperconvergence solution vendors alike face in meeting growing IoT-oriented customer expectations. Some of the main ones include:

1. **Providing front line converged solution support** – Since converged stacks of infrastructure include multiple domains of IT resources by definition, it can be difficult for the converging vendor to readily provide quality support over the full end-to-end stack. First level support needs to quickly understand where in the stack a problem originates and be able to rapidly isolate and identify either component level or increasingly complex cross-domain interaction issues.
2. **Building and maintaining a proactive IT vendor service relationship** across the full solution lifecycle - Customers are wanting their infrastructure providers to help keep them running, current, and optimized. This means being in a position to know the intimate details of each customer’s currently deployed configurations, proactively applying any applicable patches and identifying trending issues.
3. **Establishing and sharing best practices** – Customers also expect their appliance vendors to be able to examine and leverage information gleaned from across their complete install base, providing back best practices and comparative “cohort” analysis.
4. **Offering a single number to call for anything** – In the IT “service provider” style, and as an ongoing partner with the client as a trusted agent, vendors are expected to be fully knowledgeable at all times about their clients’ actual deployments, usage, configurations, failure rates, and remaining capacities, even more so than the clients themselves. The client expects their supplier to also be their expert “go to” guy for any related need or servicing.
5. **Managing the inherent supply chain of included elements** – By investing in converged solutions, clients expect the convergence vendor to not only have the insight and information to deal with the whole stack of infrastructure, but deal directly on the client’s behalf back up the supply chain of any other vendor’s included components in the converged stack. No longer can the convergence solution vendor wash their hands of solutions they’ve sold or point fingers at other vendors or suppliers.

Big Data Machine Analytics for IT providers Isn’t a Core Competency

The way to address the challenges above starts with having a solid handle on the low level, and often voluminous, machine data coming back from each client’s infrastructure, often referred to as “call home” data. It’s critical to be able to analyze this data quickly and coherently across the complete stack of componentry in a converged solution.

Hyperconvergence IT Vendor Focuses on Core Value

In preparing this report I was able to interview a startup IT Hyperconvergence vendor currently implementing Glassbeam SCALAR for their “call home” analytics. The first question I asked was why they chose Glassbeam instead of building out their own IoT analytical stack. It turns out their team had previous industry experience doing just that, and had early on decided that the engineering and operational effort involved simply wasn’t going to be where they wanted to focus their energies. They felt that Glassbeam had not only solved the problems of cloud-scaling and operational effectiveness (including the customizable customer portal), but also that Glassbeam’s growing analytical depth and broadening IT “device” coverage was something they could quickly leverage for their own needs – complete operations and coverage from the start with a subscription matched to their ramping sales.

In particular, Hyperconvergence involves stacking multiple IT components together, from a virtualization layer down to specific infrastructure resources like software-defined storage. If they had to stop and first become an expert in processing, analyzing, and then maintaining the reams of machine data coming off of each layer of this stack, they wouldn’t be able to focus as much on building out their own unique hyperconvergence value-add features. In addition, they also knew that there were going to be multiple customer portal integrations over time (i.e. Salesforce) each requiring custom development, and that Glassbeam was going to support that evolution much better than any solo effort on their part.

This vendor told me they are using Glassbeam to produce information to help drive and optimize the operations of three main groups - support, end customers, and their own product developers. Support will not only receive live health, availability/heartbeat, and fault/incident data across their entire install base, but benefit from nightly detailed telemetry. Since they want their solution to be highly resilient and “self-repairing”, they use Glassbeam to watch what is really going on and help them be pro-active (the customer may never notice what for other vendors would be incidents). Customers will benefit from direct access to information on usage, utilization and spikes, and also receive analyzed recommendations on how to increase performance. They recognize that their clients’ admins won’t now how to immediately use the hyperconverged infrastructure to its fullest – they intend to leverage Glassbeam to help everything run optimally efficient.

Internally their engineers and product managers are using Glassbeam analysis to see how their customers are using their solution in production - what kinds of failures they experience and the common operating modes they are running. They plan to use that intelligence to continually (eg. agilely) build increasingly resilient solutions and become ever more competitive.

For some vendors of completely homegrown or otherwise organic technology, such analytics may have been baked in to their proprietary solution from the start. But for convergence vendors integrating multiple vendor components, and for those offering solutions based on hyperconvergence reference architectures, there is no natural built-in big data analytical capability. Worse, there is no standard for converged component analysis nor much guidance in developing that capability. In fact, building out such a capability can be quite cost prohibitive, and it simply isn’t a core business competency for most IT infrastructure vendors to go the DIY route on something that deserves huge investments in time and money. We’ve even talked with vendors with their own initial or partial analytical solutions that after some time in the market are now looking to switch to a more complete and cost-effective Glassbeam provided solution.

DIFFERENTIATING WITH GLASSBEAM MACHINE DATA ANALYTICS

Glassbeam has developed a common platform for IoT machine data analytics with their SCALAR service for organizations that deliver these converged “things” to clients. Converged IT

infrastructure is a natural fit for Glassbeam, as we've seen both IT clients and their IT providers move towards the new IoT world dealing with more intelligent "devices" that are increasingly remotely supported, managed and optimized.

Glassbeam's services start by ingesting the often massive amounts of logs and other system produced "machine" data into their core cloud-based platform. Turning it on is easy, and the onboarding process happens off-site, with no risk or disruption. Glassbeam has developed quick log processing methods and algorithms to help digest varied machine data at scale, has built up a significant expertise in large scale IoT analytics across multiple industries, and can quickly establish a tailored implementation leveraging what they've already learned from similar clients facing similar specific challenges.

Value is returned to the IT vendor by feeding back analytical results in the form of deep client reports, "enhancing" market data views, and business decision-making information. In other words, making sense and regularly mining valuable insight out of data that previously might have only been used occasionally and only for partially troubleshooting difficult support cases. In fact, we expect Glassbeam to enable many IT vendors to offer enhanced support options that can bring in

The IoT Supply Chain

In the vastly expanding world of the Internet of Things, there are at least two directions of "spread" when it comes to management. One is of course the sheer growing number of endpoint devices – the "things" themselves. But another direction of concern and opportunity comes from the increasingly integrated service and supply chain for each of those "things". You might think of the endpoint devices as spreading nodes on a network graph (increasing "breadth"), with the supply chain of involved service and support parties building up multiple layers of depth. Opportunities exist to add value with big data analytics at every level.

For example, in hyperconvergence solutions there could be a big brand "reference architecture" partner, multiple recommended component suppliers, many channel partners that assemble, sell and support appliances, and even multiple layers of concerned parties within enterprise size organizations (CIO/architecture, datacenter, application, et.al.).

Glassbeam is garnering interest from IoT device supply chain service and support providers. I was able to interview one burgeoning managed services company using Glassbeam that provides outsourced asset support and supply services, primarily managing the supply chain for IoT device vendors. Practically, this means they take on technical support, the direct dispatch of replacement parts, and the management of inventory and repair processes. Their clients want better support SLA's with their clients in-turn through optimization of the supply chain. They also help make better decisions about logistics, parts, and inventory production.

It turns out that in order to optimize the supply chain, it's not sufficient to just look at data coming out of traditional in-house (i.e. vendor) supply systems. In order to be proactive, it's key to get data out of the "machines" themselves. As one example, if they can understand that devices are going to fail because a component is showing signs of failure, either individually or as a population, they can proactively ship replacements from a central inventory. Besides the obvious customer SLA, care and satisfaction benefits, the logistical costs (shipping, avoiding widely distributed or pre-positioned inventory, etc) are much less than with traditional crisis response activities. Overnight shipping is expensive (IoT can be global!) and still may take a relatively unacceptable amount of time. At IoT scales, the costs for crisis logistics can be quite significant.

There are other supply chain "events" that Glassbeam analytics supports, but this Glassbeam client noted that perhaps the most exciting opportunity for them is coming from the development of new types of supply chain-oriented service offerings that will bring them additional revenue, scale and efficiency, and client loyalty and retention.

incremental and ongoing direct revenue, in addition to the myriad indirect benefits (which we'll examine shortly).

At the heart of Glassbeam's analytical toolkit is a growing body of machine learning techniques applied to IoT machine data. As one might expect, these are exactly the things that might require big investments in long-term data science projects to achieve on one's own.

Glassbeam can also provide their IT vendor clients with offerings they can in-turn provide (e.g. sell or embed) direct to their own end customers. These include intelligent infrastructure insight and management enhancement in the form of a customer access portal that each customer can use to explore their own complete historical data, targeted high-value analytical reports that might include unique perspectives like "cohort" and comparison analysis across similar industry users, and identification of gaps in or new recommended best practices.

Glassbeam SCALAR is a SaaS based service model so that IT vendors gain the benefits of an immediately available and elastic subscription model, with unlimited scale. Costs therefore stay aligned and scale relative to revenue streams. We think this meshes nicely with convergence and hyperconvergence provider needs in a market that we also think has huge, perhaps explosive, growth potential, but unknown timeframes and lots of volatility in terms of both disruptive new solutions and the ever-changing roles of major ecosystem players.

Glassbeam can be leveraged by IT vendors under the covers, super powering the IT vendor support team silently with current and exact configuration, utilization, and error information across the whole stack of converged components. But we expect more and more that IT providers, especially those competing with the other vendors all basing solutions on the same open source packages or standard converged reference architectures, will be looking hard for high-value customer-facing points of differentiation. Given that Glassbeam is a low risk, high value service add-on, it seems an easy way to elevate the marketing and perceived value of an otherwise cookie-cutter offering – add a direct customer facing portal service, deliver advanced machine learning backed analytical intelligence, and jointly leverage knowledge across the whole user base to become a trusted advisor.

Outside of the obvious support-enhancing role Glassbeam plays, information produced out of Glassbeam can be used and useful to almost every other functional area –

- **Product Management** – Internal product management, developers, engineering and product owners can know exactly what is deployed where, what is working and what is not, which features and capabilities are being used, which failures and errors in which account profiles (versions, generations, industries, usage patterns, et.al.) are trending – This all leads to making better prioritization and investment decisions.
- **Customer Satisfaction and Retention** – When every touchpoint the IT vendor has at every level with their client is based on a definitive "state of implementation" and current health report (that can be shared with the client), the IT vendor can earn increased Net Promoter Scores and benefit revenue-wise from increasingly loyal customer retention
- **Selling Opportunities** – Having deep and detailed insight into what was bought and what is actually being used, remaining capacity and needs for expansion, customer-wide perspectives of health all lead to tighter account control, lower friction upsell and cross-selling opportunity identification, deeper penetration, and more referencable account champions
- **Market Insight** – Marketing can know what customers are doing with the solutions that might represent great opportunities for new marketing campaigns or targeted promotions, help tailor value propositions and messaging, and even lead to discovering new strategic business or investment directions
- **Supply Chain Optimization** – Glassbeam can help identify and predict which parts and components (versions, etc.) are failing as a group or are about to fail. In a converged stack

solution, the supply chain is often multi-vendor sourced while the cost of maintaining large scale numbers of “appliances” depends greatly on being as proactive as possible. We actually expect IT vendors to share Glassbeam analytics with their upstream vendors in-turn so that they can also do a better job of delivering high-value to their clients.

Taneja Group Opinion

Customers are growing to expect more from their technology vendors. Convergence and hyperconvergence are merely parts of a larger IT transformation story that includes increasing leverage of cloud based services, computers in everything creating massive deployments of IoT devices and appliances, big data and machine learning at scale, and ubiquitous “inter” networking.

In this emerging world, IT vendors in the convergence and hyperconvergence space will need to first and quite quickly capitalize on the flood of IoT style machine data available to them. Getting as much value and intelligence as possible out of this data stream is simply going to be table stakes once clients come to fully expect and demand IoT style appliance intelligence (overseen by the vendor). But here early in the converged IT market’s maturity lifecycle, we think analyzing and leveraging all the available data to its fullest now is critical to establishing competitive solution differentiation today. This effort should also lead to earning higher value business rewards, and becoming one of the “remarkable” leaders in the space with a reputation that will carry forward even as the market matures and other competitive capabilities evolve.

A second converged market lesson has become clear to us – all the data science, big data IT, and fundamental IoT analytics isn’t worth building out DIY as a one-off internal solution, especially for converged reference architectures partners whose offerings naturally have a high component similarity to other vendor’s solutions. These vendor partners should compete with all their energy and resources focused on becoming a better trusted advisor to their clients, while simply outsourcing on a subscription basis to get fully baked solution data analysis they can benefit from on day one.

Given that the perceived options for many IT infrastructure providers are either to do nothing or try to build a totally custom analytical solution, most are doing nothing while thinking they should build something someday soon. We trust that the convergence and hyperconvergence vendors who really understand what is at stake, and what the opportunity that doing scaled data analytics right, fast, and now represents, will soon be talking to Glassbeam.

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