

REPORT REPRINT

Tintri's true nature emerges in the cloud

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The most distinctive quality of startup Tintri's storage systems has always been the way they handle data for virtualized servers and desktops. More recently, however, the company has been heading upmarket and into the cloud.

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Almost by definition, Tintri has always been a cloud-friendly company – its storage systems were designed specifically to simplify the handling of data for virtualized servers and desktops. But over the last year or so, the company has been refining those hybrid and all-flash systems, and extending their integration with third-party virtualization platforms. It has also launched a scale-out system that it claims can be managed by a single administrator while storing data for no less than 160,000 VMs. In 2015 Tintri said it hoped to go public in 2016; it now it says it will do so when market conditions and other factors are right. Given the volatile attitude of Wall Street to storage startups, that is an understandable position.

THE 451 TAKE

Breaking into markets dominated by OEMs is challenging, and to some extent Tintri's technical advantages in the midrange market have been weakened by improvements to those OEMs' legacy products. There is also a long-term possibility that hyperconverged storage could take a large slice of the low-end and midrange storage markets, and there is the difficulty of maintaining margins in those sectors. Meanwhile, Tintri's scaling strengths are greatest in large deployments. All this makes a move upmarket and into the cloud inevitable and sensible for Tintri. Because the company's biggest strength is simplicity of management when storing data for virtualization platforms such VMware vSphere, the rise of application container virtualization might seem to be a long-term threat. However, Tintri has already demonstrated the first phase of support for containers, and says that if there is market demand, it could deliver the same level of support for containers that it already offers for VM storage.

BACKGROUND

Founded in 2008, Tintri shipped its first storage system in 2011. The company has raised \$260m in funding, and the most recent \$125m funding round occurred in 2015. The company is not saying what revenue it has seen during 2016. Early this year, Tintri said its partner program included 300 resellers. Just over a year ago, Tintri was claiming 800 customers, and it now claims over 1,200 customers. Alongside that growing customer count, other factors driving revenue growth will have been repeat business with existing customers and increasing deal sizes.

Applications span the usual mix for primary general-purpose storage, including virtual servers, VDI, Exchange, development and test, and databases. Customers are enterprises and service providers across multiple global regions. Enterprise customers are biased toward larger organizations, including a claimed 20% of the Fortune 100, with named buyers including Comcast, Chevron, GE, NASA, Toyota, Sony and UnitedHealth Group. Tintri says that it won more \$1m-plus deals in the third quarter of 2016 than any previous quarter.

Last summer, Tintri extended its existing service-provider program with its Cloud Service Provider Solution, which includes optional pay-as-you-go financing. Across both enterprises and service providers, 'cloud' deployments account for 30-40% of all sales, with Tintri defining cloud as usage within strongly automated and shared infrastructures.

Tintri's hybrid-flash T800 series lists at roughly \$75,000 for 20TB of effective capacity. Its T5000 series AFAs run from around \$115,000 list for 17TB of effective capacity to well into six figures.

PRODUCT BASICS

Tintri's VMstore storage system is described in depth in a previous report. The dual-controller, 2U T5000 all-flash system features in-line data compression and block-level deduplication. The dual-controller, 4U T800 hybrid-flash system also supports in-line deduplication and compression, as well as a real-time tiering mechanism that Tintri says enables 99% of IOs to be handled from flash.

The most distinctive feature of the system is its ability to configure storage services, such as snapshot and replication, at the level of individual VMs or groups of VMs. This greatly simplifies administration and boosts the efficiency of storage resource utilization. The ability to do this is of such value that VMware has moved to make it possible for all vendors' storage systems via the VMware VVOLS feature. However, 451 Research believes VVOLS does not blunt Tintri's competitive edge, but instead raises its profile.

Tintri can point to multiple advantages of its VM-level management versus the VVOLS-enabled equivalents offered by rival storage vendors in the areas of scalability and manageability. Another distinction of Tintri's devices versus the VVOLS-enabled rival products is that Tintri's VMstore does not only provide per-VM management for VMware vSphere VMs, but also for a concurrent mix of vSphere, Microsoft Hyper-V, Citrix XenServer, Red Hat Enterprise Virtualization and OpenStack-based VMs. Finally, Tintri's systems include end-to-end VM-level visibility of VM performance and policy-based QoS controls. Such controls are unusual in any storage system. In Tintri's case, they are even more unusual because they are applied to individual VMs or groups of VMs, rather than entire data volumes.

PRODUCT DEVELOPMENTS

In May Tintri launched a form of scale-out storage in which Tintri analytics software monitors the space and resources needed by VMs across a pool of Tintri devices and recommends VM migrations to optimize the pool. A pool comprises up to 32 mixed hybrid and all-flash VMstore devices, providing up to 10PB of effective capacity and six million IOPS. According to Tintri, that size of pool would be able to handle a massive 160,000 VMs from a single console managed by one full-time employee. This software update coincided with an update to Tintri's VM-level or VM-group-level SaaS analytics, which are now powered by big-data engines such as Apache Spark and Elasticsearch.

Tintri has been extending the integration between its systems and other elements of customers' infrastructures. In November the company launched a VMware vRealize Orchestrator (VRO) plug-in, which allows the VMware orchestrator to create workflows – via drag and drop rather than scripting – that involve Tintri functions such as snapshots and replication. VRO is used by many service providers, according to Tintri, which says that its VRO plug-in is of more value than other vendors' plug-ins because of the VMstore's per-VM management and automation.

VMware vSphere is far from the only virtualization platform used by Tintri customers. The storage vendor has also been working to extend its integration with Hyper-V, and in October this year unveiled a System Center VM Manager (SCVMM) add-in and a System Center Operations Manager (SCOM) pack, in addition to previewing a vSphere-to-Hyper-V migration toolkit.

Also in development is the ability to export snapshots to AWS S3 and on-premises IBM Cloud Object Storage (formerly CleverSafe) systems, as well as synchronous replication for DR, adding to the existing asynchronous replication. The synchronous replication was demonstrated at VMworld in October, and is promised to be bidirectional, with the primary VMs – and hence applications – spread asymmetrically across two locations.

DRILLING INTO CONTAINERS

Enterprise use of application containers is still only emerging, and much is only at the stage of pilot programs. Within that current usage, much also involves containers deployed inside VMs, since this provides container isolation and security while giving developers the benefits of container flexibility. VMware and other Type 1 virtualization vendors would like this practice to continue because it would preserve their markets. That is why VMware vSphere 6.5, which went GA in November, includes a set of features called vSphere Integrated Containers (VSIC), which are promised to greatly simplify the use of containers within vSphere VMs.

Tintri's OS will officially support VSIC in a release scheduled for December. That support allows Tintri's system to provide QoS controls along with performance and resource-consumption analytics at the level of individual containers running inside VMs. For now, Tintri storage services as snapshots, cloning or replication only apply to VMs, but in the future those functions will also be managed at the level of containers, according to Tintri. VSIC is only the first step in VMware's plans to embrace containers, and Tintri will support VMware's future developments.

Even though the use of containers inside VMs is common at present, there is a strong possibility that, over the next few years, containers could see much wider usage outside of VMs in so-called bare-metal deployments. That is because bare-metal deployments would exploit more of the potential benefits of containers, in addition to eliminating the obvious drawbacks of using two layers of virtualization. As a result, Tintri is working up its support for bare-metal containers.

At VMworld USA this summer, Tintri demonstrated multiple bare-metal Docker containers sharing access to the same persistent data stored on a Tintri VMstore, using a Flocker plug-in, in what Tintri said was a standard Flocker setup. This was an important demonstration because, without that Flocker integration, containers have been limited by their inability to store persistent data, or to access data stored outside of the server they are running on. This integration with Flocker also plugs into container orchestration platforms such as Kubernetes, Apache Mesos and Docker Swarm, according to Tintri.

Does this mean that eventually all Tintri services will be manageable at a per-container level for bare-metal environments? Tintri says that will depend on customer demand. In a pure container management environment, Tintri says customers may prefer to make containers as lightweight and ephemeral as possible, and to use Docker-native repositories for deployment and cloning. That would eliminate the need for Tintri services such as snapshots, cloning and replication. Currently, that is what customers are telling Tintri, but the company says this might change, as it did for OpenStack, which initially did not support enterprise features like vMotion, but in time was requested by customers moving into production.

COMPETITION

EMC, NetApp, Dell, HPE and IBM dominate the market for midrange primary storage. Among these, Tintri names NetApp as a primary target because of NetApp's strong presence in storage for virtualized servers and desktops. All of these suppliers are selling hybrid and all-flash versions of storage systems that were originally designed to be powered entirely by disk – unlike Tintri's systems, which were designed from the ground up to combine disk with flash. However, the incumbents have developed their legacy systems – for example, by adding data-reduction functions and per-VM management via VMware's VVOLs, albeit with varying results.

A number of other startups have also seen the opportunity to compete with such systems using hybrid storage that was purpose-designed to marry disk with flash, including Coho Data, Hedvig, INFINIDAT, Nimble Storage and Tegile.

The long-term effect of hyperconverged infrastructure or storage on the storage market is not yet clear. HCI has developed relatively rapidly over the last few years, and the technology has moved beyond the education phase and into the ramp-up phase, in terms of customer deployments. The flexibility and ease of use of HCI is encouraging its uses for virtual and container workloads, although sales are still small relative to traditional IT infrastructure. While the initial charge of HCI was led by well-funded startups, such as Maxta, Nutanix, SimpliVity and Pivot3, nearly all of the infrastructure behemoths – Cisco, Dell-EMC, HDS, IBM and HPE – have entered the market.

SWOT ANALYSIS

STRENGTHS

Tintri's storage system is developing from a virtualization-friendly into a cloud-friendly platform.

WEAKNESSES

The Tintri product stores data only for virtualized servers and desktops.

OPPORTUNITIES

Enterprises and service providers are set to increase their usage of large, highly automated cloud-like infrastructures, in which Tintri's strengths are best exploited.

THREATS

In the midrange market for non-cloud deployments, Tintri's strengths are being eroded by increasingly competitive hybrid and all-flash versions of incumbent providers' legacy storage systems, and HCI presents a longer-term threat.