INTUIT LEVERAGES RED HAT STORAGE FOR ALWAYS-AVAILABLE AND MASSIVELY SCALABLE STORAGE

Intuit needed a fast, reliable, and cost-effective storage solution for its TurboTax suite of tax preparation offerings. TurboTax is a Software-as-a-Service (SaaS) suite of offerings, so system responsiveness was a critical goal. To help ensure high availability, Intuit needed to replicate data between two datacenters. Intuit chose Red Hat Gluster Storage and got exactly what it needed, at a cost far lower than proprietary Gluster Storage systems.

SOFTWARE AND SERVICES

Red Hat® Gluster Storage, GlusterFS, Red Hat Consulting

HARDWARE

HP ProLiant DL170e G6 servers

Mountain View, CA

NORTH AMERICA + GLOBAL

TECHNOLOGY

CUSTOMER SINCE
2011

2013 INNOVATION AWARD WINNER

RED HAT INNOVATION AWARDS

"*Although going down a new path sometimes means taking risks, the rewards can be huge if you can deliver breakthroughs in performance and scalability while reducing costs. Red Hat enabled us to do that.*"

JEFF LUDWIG
DIRECTOR OF PRODUCT DEVELOPMENT, INTUIT TURBOTAX

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NEEDED A FAST, RELIABLE, AND COST-EFFECTIVE STORAGE SOLUTION TO MEET GROWING SAAS LINE OF BUSINESS

Intuit is one of the world's most recognized brands for delivering fully functioned, easy-to-use financial software to individual consumers, business professionals, and small businesses. One of the company's flagship products is TurboTax Online, a Software-as-a-Service (SaaS) offering that enables customers to complete and file their taxes online. Intuit serves more than 25 million customers during the tax season. Intuit already has 150-200 terabytes of customer information stored in its two datacenters, and that number grows by 15-20% annually.

Intuit needed to achieve a system performance level adequate for its peak periods, with replication architecture that could protect against localized or site-wide failures. "We also needed the solution to scale easily so that we could keep pace with our accelerating growth," said Jeff Ludwig, director of product development for Intuit TurboTax.

Intuit was seeking an innovative approach where it wouldn't be committed to a large, proprietary system that dictated what storage arrays and storage racks it had to use. As a result, Ludwig and his team began investigating the possibilities of open source software. "We needed a fast, scalable file system that could handle billions of small files," said Ludwig. In addition, the solution needed to provide fast synchronization between datacenters to meet Intuit's demanding storage replication service-level agreements (SLAs).

RED HAT GLUSTER STORAGE: A DISTRIBUTED FILE SYSTEM THAT EXPANDS AS NEEDED

Intuit selected Red Hat Gluster Storage because of its distributed file system that scales when its customers need it to.

"Red Hat worked with us the entire way as we designed and built our architectures, helping with best practices, design considerations and layout, performance testing, and migration," said Mohit Anchlia, an architect for Intuit's consumer financial applications.

Red Hat helped Intuit work through a number of architectural design challenges in particular.

"Using our original architecture, we were not able to keep up with the volume that we were replicating, and it wasn't clear what the bottleneck was," said Ludwig. "We worked closely with Red Hat engineering professionals to tune the code specifically to run in our environment, allowing us to have parallelized replication between datacenters and to meet our data availability SLAs."

This wasn't a typical support engagement, stressed Ludwig. "The Red Hat team understood the urgency and the complexity of the issue, and knew exactly what we needed to support our use case, where data is distributed across nodes."

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MOHIT ANCHLIA
ARCHITECT, INTUIT TURBOTAX

The final implementation includes two sites, each with 38 Red Hat Gluster Storage 2.0 storage nodes. The nodes are HP ProLiant DL170e G6 servers, each with 2x Xeon L5640 2.27 GHz central processing units (CPUs) with hyper-threading – to achieve 24 total logical CPUs – and 48 GB of memory. Each server has 7 TB of local disk connected to a smart array controller in a redundant array of independent disks (RAID) 10 configuration, for a total of 3.5 TB of data space per node.

Each 3.5 TB of node storage is formatted with the XFS file system and included as a GlusterFS volume brick. The volume uses a replica 2 configuration, for a total of 66.5 TB of usable storage per cluster (3.5 TB times 19 replica pairs).

Each site hosts a primary production volume, which application servers write to via the GlusterFS FUSE native client. The production volume at each site is replicated to a slave volume on the opposite site using xsync geo-replication. Production standards require a 30-minute SLA for all site replication.

KEEPING A BUSINESS-CRITICAL APPLICATION AVAILABLE AND RESPONSIVE – AT A SIGNIFICANTLY LOWER COST

Red Hat Gluster Storage allows Intuit to react and expand quickly in response to the demands of the fast-moving consumer tax market. The product also offers a considerably lower total cost of ownership than proprietary systems, thereby increasing Intuit's return on investment for the initiative. The cost per terabyte of storage dropped by a factor of 16 to 1.

"The Red Hat technical account teams were highly professional, helping us implement the solution within the required timeframe," said Anchlia. "Our customers are very latency-sensitive, and expect immediate response when they make a request of the application. Ultimately, they benefit enormously from both the responsiveness and quality of our TurboTax Online application."

Given Intuit's cycles for business and peak activity, it cannot afford to go offline (or even slow down). "It's absolutely unacceptable for our application to be down in tax season. If it is, we make the news," said Ludwig. "The final architecture of Red Hat Gluster Storage means there are no single points of failure and it provides high availability all the time."

Intuit partnered with Red Hat Global Support Services to use a Red Hat Gluster Storage technical account manager (TAM). The TAM was key in coordinating Red Hat support, business, and engineering resources to meet Intuit's needs.

"Our TAM completely understood our architecture and our challenges, and gave us recommendations for best practices within that context," said Anchlia.

Red Hat support recommended that Intuit should remove data that didn't belong in the database, and to place it in the file system. "That enabled us to have high availability for our application across multiple datacenters, and we managed to do this at a cost that wouldn't have been possible if we'd used a pure database solution."

In addition, Red Hat's knowledge of an emerging area of technology – big data – was invaluable.

"Red Hat understands that so-called big data solutions are different than standard file system layouts," said Ludwig. "Practices that can easily work for small amounts of data can fall apart with big data sets, so it's important to plan early and test often."

A lot of companies are talking about ways to solve big data problems. Intuit, however, needed to move ahead with cutting-edge technology while others were still in the planning stage – nothing less than a flagship application was at stake. "Although going down a new path sometimes means taking risks, the rewards can be huge if you can deliver breakthroughs in performance and scalability while reducing costs," he said. "Red Hat enabled us to do that."
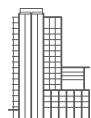
ABOUT RED HAT

Red Hat is the world's leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 70 offices spanning the globe, empowering its customers' businesses.

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