Case Study

Building the future, together

Tata Consultancy Services collaborates with NetApp Storage to build a Futuristic Cloud Solution

Key Highlights

Industry
IT consulting services

The Challenge
Expand IT infrastructure to meet growing business needs

The Solution
Leverage a NetApp unified storage platform for a private cloud that supports business

Benefits
• Greater reliability and flexibility of systems in the cloud
• Rapid provisioning of cloned environments
• Improved storage utilization and system performance

Customer Profile
Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled, infrastructure, engineering and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development.

TCS operates in 44 countries and has 199 branches across the world. TCS has been recognized by Forbes as one of the World's Most Innovative Companies.

TCS addresses the IT requirements of SMB segment in India through its Strategic Business Unit – iON providing end-to-end business solutions. iON, set up in 2008, caters to the needs of multiple industry segments with best practices gained through TCS' global experience, domestic market reach, skills, know-how and delivery capabilities.

The Challenge
Redefine IT for better agility and a promising future
TCS was looking for a scalable storage solution that provided both NAS and SAN environments. Managing NAS and SAN Infrastructure without compromising on flexibility, efficiency and manageability was going to be a challenge. TCS also recognized that the storage infrastructure would become a competitive differentiator in the emerging India cloud marketplace. They aimed at delivering capacity, performance, availability, security and rich data services on a unified storage infrastructure that would encourage Indian enterprises to adopt the cloud.

TCS concluded that NetApp had a proven and truly unified solution to address their objectives, through unified NetApp storage platform.

The Solution
Streamlined, highly responsive private cloud built on NetApp, Cisco, HPE and VMware
TCS built a dynamic cloud platform catering to more than 50+ distinct customers with separate needs for PaaS and IaaS. This platform caters to a wide variety of workloads, which include mission critical and performance intensive applications, such as SAP and Microsoft Exchange. Besides these, they also service a wide spectrum of customer environments, some of which are financial inclusion platform, mobile wallet platform, and cheque truncation system.

TCS standardized its storage on NetApp storage solutions. The cloud platform deploys two NetApp FAS HA-pair systems (FAS6280A and FAS3250) in their

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primary data center and their disaster recovery site. These systems together provide more than 750 TB of storage capacity to a VMware vSphere virtualized environment. The platform runs on Cisco® Unified Computing System™ (UCS™) blade servers and HP C7000 chassis-based blade servers. Networking fabric includes Cisco Core 6509 series core switches along with Cisco Nexus series switches, Cisco edge routers, MPLS firewalls and Cisco ASA firewalls. TCS uses NetApp management software- NetApp Virtual Storage Console for managing storage from VMware vCenter and NetApp OnCommand that includes SnapManager suite to manage mission-critical systems, including ERP systems, Microsoft applications, SQL Servers and Oracle databases. The TCS cloud infrastructure is spread across two locations in India. TCS extensively uses SnapMirror for critical workloads to ensure 100% data security and availability. In addition, NetApp provides multiprotocol flexibility that helps simplify client systems in a heterogeneous environment and improves performance.

"NetApp unified storage integrates seamlessly into our virtualized infrastructure and supports all protocols. Built-in data de-duplication and thin provisioning helps us use our storage space efficiently as well as enhances operational efficiency. It is a one-stop solution for all our requirements in setting up a greenfield platform," points Mahesh Menon, Head – India Cloud Platform, Tata Consultancy Services.

Building an Innovative and Futuristic Infrastructure
The combination of NetApp features, namely SnapShot and FlexClone is the cornerstone of some of TCS' most effective innovations.

"Cloning Environments in Data Centers" (patent pending for TCS) is an approach to cloning complete n-tier application environments within a data-center. This invention resulted because of TCS' need to create a customer sandbox instance for the iON Business Unit. They needed to clone their production environment with more than 150 live servers and several terabytes of data and they needed this to be refreshed from production on demand. This approach strings together various technologies, such as SnapShot, FlexClone, VMware, MySQL and JBoss to create a fully orchestrated operation that is just another "cronjob" today. Several production clones in the iON platform that require data refreshes from production on demand are refreshed using a slight variation of the patent pending approach described previously.

NetApp SnapManager for Exchange and SAP suite has helped TCS to truly deliver uninterrupted services while still catering to regular backups. A SnapManager-like utility has also been developed to deliver similar online hot backups for the large installed base of MySQL. This utility is also used to re-seed and re-build MySQL slaves at periodic intervals.

Business Benefits
NetApp NFS (CIFS) Namespace feature in CDOT is the core building-block in the soon to be deployed "Active-Active Datacenter" initiative at iON.

NetApp technologies, such as RAID-DP, de-duplication, thin provisioning, Snapshot, SnapMirror and FlexClone have been woven into innovative solutions and these have brought in benefits and efficiencies previously unimaginable.

Rapid build of cloned environments
Using a combination of various approaches to cloning application environments, TCS has created an iON feature that is unique and unheard of in the industry. Using an online DR instance, iON end-customers can login to a DR Clone instance and be assured that data is indeed available at the DR site. In a market scenario where cloud services are yet to be embraced due to data security concerns, this feature is priceless to the business. These innovative solutions are routinely being used to create and maintain dozens of environments. In addition to providing innovative solutions, the efficiency gains have been staggering.

Easily scalable architecture
NetApp makes it easy to scale, provision new storage or reallocate storage as per needs of the client. This helps better utilization of storage without disturbing an existing client set up. "With NetApp supporting a VMware environment, we are able to rapidly set up business environments, set up new servers and new storage online without disrupting existing customers. This is very critical for a cloud service provider to make sure that one customer does not negatively impact another customer," says Mahesh.

Improved reliability of services
Availability, reliability and flexibility of the services have improved with NetApp SnapMirror. Besides, it is also leveraged to spread customer loads across the two sites. TCS has developed scripts which work directly with the controllers in replicating appropriate data across the sites. With NetApp in a virtualized environment, TCS has been able to improve the uptime of their critical services. NetApp Snapshot technology helps them create point-in-time copies of file systems, to achieve nearly instantaneous data recovery of critical data in the event of any disaster.

Reduced costs by reducing overall storage requirements
Three NetApp technologies—de duplication, thin provisioning, and snapshots provide more storage capacity at the same cost.

Solution Components
NetApp Products
Three NetApp technologies—de duplication, thin provisioning, and snapshots provide more storage capacity at the same cost.

2 x NetApp FAS6280A (Primary and Secondary)

2 x NetApp FAS3250 (Primary and Secondary)

NetApp Snapshot

NetApp Virtual Storage Console

NetApp SnapManager for Exchange and SAP

NetApp SnapMirror

NetApp FlexClone

NetApp de duplication, thin provisioning, and SnapRestore® technologies

Protocols

NAS (CIFS) and SAN (FC), iSCSI

Environment

VMware vSphere 5.0, Cisco UCS, HP Blade System, MS Exchange, MySQL, Oracle, SAP