EBOOK

IT Infrastructure Stability: Building a Foundation for Agility in Business Apps

7 NetApp IT Business Apps Practitioners Share their Perspectives on the Blurring Line between Infrastructure and Applications

IT Infrastructure Stability: Building a Foundation for Agility in Business Apps

BLOGS

IT Infrastructure Stability: Building a Foundation for Agility in Business Apps

IT Infrastructure Stability + Business App Agility

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The new IT contributes to both innovation and agility in business.

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Like many organizations, NetApp initially looked to the cloud as a cure-all for cost-effective, scalable solutions . It can remove the limitations of an IT infrastructure which helps an organization more quickly respond to the marketplace.

But the cloud is not a panacea.

Legacy applications prevent us from fully utilizing the cloud because it isn't a viable option. We want to embrace the cloud where it makes the sense. This means leveraging the cloud for non-business-critical applications wherever possible, allowing us to focus our energy on improving core competencies that further the competitive edge of the business.

In this eBook, we describe NetApp IT's journey to find new, creative approaches to changing the roles, attitudes, processes, and technologies required to adopt a hybrid cloud model for both legacy and non-legacy applications. Our cloud journey begins with stabilizing our IT infrastructure. When the Business Apps team was able to stop fire-fighting service issues, it could devote more time to proactively addressing the needs of the business. As a result, IT stability has helped engender trust between the infrastructure and business application teams.

The result has been a foundation on which IT can work as a team to embrace the cloud, especially as it applies to legacy business applications. This in turn opens the door to identifying new ways to operate as a service broker and tap into the agility and flexibility offered by the cloud.

We invite you to read about our journey in a series of Business Apps blogs that describe the everyday value of IT stability in driving proactive change, advancing technology adoption to speed feature deployments, and designing a future where infrastructure-agnostic environments will remove the limitations found in the application development lifecycle today.

How You Can Make Downtime a Thing of the Past

LARA BRISCO, DIRECTOR, IT - SERVICE QUALITY & ENABLEMENT, NETAPP IT

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cDOT adoption has brought a stable infrastructure environment with no downtime.

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Managing IT applications operations for a global enterprise takes vigilance, persistence, and a knack for anticipating the unexpected. As a leader of Customer Success application support, business interruption due to downtime is my biggest concern. Our internal business users, external customers, and partners simply cannot afford disruptions; the consequences would be substantial.

I used to spend hours working with internal teams to prevent and address incidents. Negotiating change and managing disruptions distracted me from my primary, and more beneficial, role of service support strategy and development. I easily spent 15% of my time every day on change management, including reviewing proposed infrastructure changes, talking with change sponsors, and negotiating or escalating the change schedule. I also spent an additional 30% to 40% of my time managing service restoration activities, its resulting escalations and consequences.

My areas of focus changed for the better when our team in IT deployed NetApp® clustered Data ONTAP® (cDOT).

Reactive to Proactive

What changed? The predictable, consistent behavior of cDOT made a major difference for NetApp IT. The stabilization and nondisruptive operations that accompanied the adoption of cDOT had a significant impact on our customer success applications. It has been months since we had to plan application downtime because of storage changes. Today we spend less time managing business-critical downtime and devote more time to proactive application lifecycle management. We've seen a similar, domino effect on other teams supporting the technology stack. Network, compute, and database teams also spend less time in reactive mode.

Just as important was the adoption of a formal software lifecycle process for storage. Our First Application System Test (FAST) program uses a repeatable process for execution of all our cDOT upgrades. The rapid adoption of new releases translates to the ability to take advantage of new features almost immediately and address any issues. The combination of these changes delivered a stable storage environment in which we have complete confidence.

Stability Brings Trust

With stability, predictability, and data integrity comes trust. It is important for our organization, both with our users, customers and partners as well as our infrastructure team. As the types of storage issues we experienced and the amount of time spent addressing them were reduced, trust increased. As a result, the relationships among teams improved and the trust of our customers was strengthened. We are maturing our engagement with our business customers—now we speak less of issues and focus our discussions on further enabling business capabilities.

We spend much less time on fire-fighting and more on improving future services.

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With the adoption of cDOT by NetApp IT, I have been able to reallocate my time and focus on business priorities. I still review change requests every day, but against the backdrop of our matured relationship, the infrastructure team is aligned with business needs and does the due diligence before requesting approval. I validate them instead of negotiating or escalating the requests like I did in the past. Change management is now focused on proactive management review; it only takes about 5% of my time each week. I spend my freed up time talking to my team, other employees, and business customers about proactive changes that will introduce new and improved application support services.

Since the deployment of cDOT began 18 months ago, our worries about potential issues with our storage infrastructure have become a thing of the past. Since infrastructure issues no longer distract us, we can focus on achieving operational excellence. This means more time to proactively manage our applications and processes to better enable NetApp users, customers, and partners.

Lara Brisco, Director, IT - Service Quality & Enablement, NetApp IT

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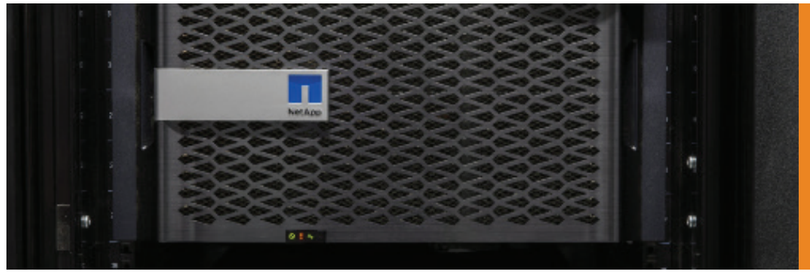

Using All Flash FAS to Improve Customer Satisfaction and Save Time

RANGA NATHAN, SR. MANAGER, IT CUSTOMER SUPPORT OPERATIONS TECHNOLOGY DELIVERY, NETAPP IT

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The AutoSupport (ASUP) ecosystem is NetApp's primary mechanism for receiving automated reports from our products installed at customer sites. These reports contain information about the configuration and status of these products, as well as information on any encountered error conditions.

The information in each ASUP file can be used in a variety of ways by the NetApp Customer Support, Product and Sales teams, and customers. Some of the uses for ASUP data are case resolution, system health checks, upgrade planning, metrics for product quality and usage, as well as to identify patterns in product issues.

The ASUP subsystem is designed to notify our team ("call home") whenever a system is operating abnormally, requesting help for failing or degraded subsystems, or failing hardware is detected. In many of these instances, our automated workflows enable us to address customer issues proactively, even before the customer becomes aware of the issue. Any delay in this processing affects our ability to quickly respond to customer issues.

The Challenge

The ASUP ecosystem is a sophisticated integration of customer site support, partner site support, the NetApp ASUP data warehouse (or ASUPDW), NetApp data centers, and many tools for facilitating customer relations management (CRM) and gathering business intelligence (BI) on behalf of NetApp Customer Success Services.

All-Flash FAS improved performance 50X under extreme conditions.

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An ASUP file is processed by 20 different application components before the processed data is available to users. Its process can be broadly classified into four areas—reception, ingestion, processing, and end-user access (real-time and reporting). During our six-hour peak workload window each weekend, we typically process thousands of ASUP files every minute. The ASUP files need to be available for viewing within five minutes and cases need to be created within two minutes of receipt. To make matters worse, both the size and the volume of ASUPs are doubling every year.

Our ASUP file ingestion process relies on simultaneous access to file system metadata and directory operations. Ingestion performance is sensitive to any competing workloads on the storage subsystem and frequently creates a backlog of unprocessed files. Manual intervention is needed to isolate the issue. To recover, we move unprocessed files out of

the live processing flow and process them in batches later. This manual workaround affects both our operational support costs and the quality of our customer service.

The Solution

Any storage layer change in this complex landscape would require months of planning. However, in this case, using NetApp® OnCommand® Insight, we were able to quickly identify competing workloads—ingestion and reporting. We made the decision to move the more critical ingestion workload to a new storage controller. With the non-disruptive capabilities of NetApp clustered Data ONTAP, we were able to add two new NetApp® All-Flash FAS storage controllers to our cluster.

Replacing spinning disks with flash has reduced overhead costs.

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Since most of the data in these volumes is temporary until the ASUP files are ingested, we were able to create new volumes on the new storage controller, and restart the reception and ingestion processes to use the new volumes. These controllers immediately eliminated intermittent disk latency issues during the ingest process. This entire migration effort from planning through implementation took us less than a week.

Measuring Success

Since moving to All-Flash FAS the backlog issue has been eliminated. Files are being processed smoothly and the need for batch processing files has been removed.

Using hard drives, we saw 0.5ms latency under normal conditions, but that could reach up to 22ms latency under heavy load. Utilizing All-Flash FAS, we now see 0.09ms latency on average with no higher than 0.4ms latency under extreme load. This equates to a 50X performance improvement under extreme conditions, but, more importantly, it means consistent and predictable performance for our applications and services.

The storage team uses OnCommand Insight to monitor and analyze response times to ensure there are no bottlenecks, and ensure that our workloads are distributed across the storage layer.

Furthermore the replacement of spinning disks with Flash has reduced the power, space, and cooling requirements for this system in our data center. Power has been reduced from the 480 watts of a typical hard disk drive (HDD) shelf in a 4U form factor to 175 watts of a typical solid state drive (SSD) shelf in a smaller 2U form factor. The result is a 64% reduction in power and 50% reduction in space.

From the operations perspective, the biggest gain has been in time savings. By eliminating the resource intensive triage and recovery process, we have roughly eliminated the 100+ hours spent in each instance, totaling about 1,000+ hours over the last two to three years.

More importantly, customer support cases no longer suffer from a potential delay in processing. Support teams also have access to data without any delay. This translates to better productivity and an even better response for our customers when they seek product assistance.

Ranga Nathan, Sr. Manager, IT Customer Support Operations Technology Delivery, NetApp IT

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How NetApp IT Shortened Development Cycles Using FlexClone

GOPAL PARTHASARATHY, SR. MANAGER, ENTERPRISE APPLICATIONS, NETAPP IT

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FlexClone supports the rapid integration of new business functionalities.

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As the leader of the IT development group for NetApp's critical business applications, I walk a fine line between rapidly developing and deploying new business features while maintaining a reliable environment for our users. Our ability to rapidly deliver new business capabilities without compromising application stability directly impacts the overall success of NetApp's go-to-market efforts.

During the past few years, we have significantly improved our ability to introduce new business features into our core applications without negatively affecting our business application ecosystem. These changes have enabled a continuous software delivery cycle, improved our software quality, and expedited the schedule for delivery of new business capabilities—all while preserving the stability of our complex application ecosystem.

The Challenge: Speeding Development

Our business requirement is to implement new business capabilities in a six-week release cycle. To keep pace with the six-week release cycle, we have had to analyze and determine the most efficient way to test and implement new products, promotions, or business workflows that require development and integration work across all applications in the ecosystem. To meet this goal, our developers need to code, then iteratively test and integrate the changes before they are rolled out to the production environment. This requires an infrastructure that is fast, flexible, efficient, and capable of generating a copy of the production environment at the beginning of the release cycle.

To run parallel development and iterative test cycles, we require multiple application development and test environments. However, when databases are very large, they require a massive amount of storage for each database copy. In addition, traditional tools and approaches to copy databases require a large amount of system resources, while also taking hours or days to copy and refresh each of the systems from production data.

FlexClone to the Rescue

To address these challenges, we use NetApp® FlexClone® data provisioning technology. FlexClone creates virtual copies of our production data by using NetApp Snapshot® to make a baseline copy. Instead of requiring a full physical copy of the entire database, FlexClone only stores new or changed data blocks for each virtual copy. Data block tracking is transparent to the database and applications, so our

development teams see a full database while only consuming additional storage as they make changes to the application. In addition, since no data blocks need to be copied upon creation of the FlexClone, we can refresh our development databases in minutes, instead of days. These virtual copies are then used by multiple IT development teams collaborating in a global model for parallel development and testing.

FlexClone enables NetApp to meet the needs inherent in a continuous development cycle—balancing a rigorous process for development, testing, and implementation of new business features against the stability of a complex ecosystem and rapid delivery of new functionality. We have increased efficiency and collaboration, while avoiding risk and downtime by creating a structured process to clone and test enhancements, supporting multiple iterations of quality assurance (QA) and testing to avoid downtime. As a result, we can provide additional testing and QA cycles while accelerating our releases so we can quickly deliver new capabilities to our business customers.

Even More Benefits

With the adoption of FlexClone, we can support a continuous development cycle and facilitate the rapid incorporation of new business functionalities. In addition, we have found FlexClone offers additional benefits including:

- Thin provisioning. Because each FlexClone-generated file, logical unit number (LUN) or volume is a virtual read/write copy of the original data, we save storage space. Our storage environment is 2TB to 3TB instead of the 60TB it would be without this feature.
- Scalability. Using NetApp clustered Data ONTAP, we can add next-generation technology, such as NetApp All Flash FAS, to a cluster at any time without any impact on the ecosystem or customers.
- Consistent point-in-time reporting. FlexClone creates consistent data replicas across all business systems that are extracted into our business intelligence warehouse for executive reporting twice a day. Traditional data protection products cannot support rapid generation and delivery of this information.

FlexClone supports a continuous development cycle.

CLICK TO TWEET

- Faster response. Because we can quickly create the copies, we can respond to business needs faster, including emergency bug fixes or critical enhancements.

With FlexClone, we easily manage our six-week development cycle, walking the fine line between delivery of new capabilities and application stability. Achieving this balance has a direct and positive impact on NetApp's go-to-market strategy.

Gopal Parthasarathy, Sr. Manager, Enterprise Applications, NetApp IT

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How a Highly Evolved CMDB Dramatically Improved IT Service Delivery

GAUTAM GANAPATHY, DIRECTOR, ENTERPRISE SERVICE MANAGEMENT & TOOLS, NETAPP IT

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A mature CMDB delivers a wealth of knowledge.

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What does the configuration management database (CMDB) mean in your organization? If you are like NetApp was a few years ago, it exists as a database for collecting and tracking information about physical assets in data centers. It's a good inventory tool, but we didn't use it for much more.

The real value of a CMDB comes when it's used as an application tool providing complete business service management. End-to-end service management has enormous ramifications. A mature CMDB with accurate relationships allows IT to see the business context of an application or storage cluster and ask the hard questions: How will a change improve the quality of IT service delivery? Which business capability is a new application supporting? Is the application duplicating the functionality of another system? What is the impact on storage operations?

About three years ago, the NetApp IT view of the CDMB changed significantly. The turning point came when IT began its migration to a single production data center in Oregon. The IT team realized an accurate, always up-to-date view of all IT assets was needed. Centrally managed and shared across the whole of IT, the CMDB would provide a consistent view of the compute and storage assets (both physical and virtual) that needed to move. It would also help identify the impact of the assets on data center power consumption, compute build processes, and physical asset tracking as well as on hosted applications and supported business processes. The CMDB was recognized as a tool that would fulfill this need.

A New Level of Maturity

We recognized early on that a simple, expanded inventory of assets was not the ultimate goal. The real power of the CMDB would come when the interrelationships between business services, applications, and infrastructure were well understood and documented. Clearly defined data ownership was the key to maintaining data accuracy and instilling confidence. Only with this could the CMDB become the single trusted data source for supporting all IT operations.

A single point of contact was appointed for central accountability; groups were assigned responsibilities within each layer. Formal processes for capturing, updating, and maintaining the integrity of the assets in the repository were adopted. Data Center Services was given responsibility for populating and maintaining all physical asset information. Business analysts, architects, and application owners contributed information on application profiles, business services, and

application relationships. IT began to systematically organize, specify, control, and track the configuration items in the CMDB repository.

ServiceNow® was leveraged to ingest relationships and mappings into the CMDB. Automation was implemented to tie logical compute assets to their hardware and the applications they hosted. Automated daily scans were employed to maintain virtual and physical machine data. We used OnCommand Insight to build the storage relationships. The end result was a CMDB that provides a fully integrated configuration mapping of assets from business services down to the lowest levels of IT infrastructure. In addition, the CMDB helps determine what business capabilities are being supported by cloud providers to improve problem resolution and change management.

Service Management Realized

The CMDB provides a fully integrated configuration mapping of assets --from business services through infrastructure.

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Although CMDB development was originally undertaken to manage our data center migration program, it has evolved into an invaluable and proven asset in other areas of IT service management including:

- Risk mitigation. The CMDB data helps better qualify the risks involved in changing infrastructure and storage assets as well as business applications The CMDB reveals both the direct impact and the indirect effects further upstream or downstream.
- Incident management. The CMDB data supports rapid incident response as well remediation investigation. Configuration item tie-ins to Splunk and Zenoss enable automated alerting and streamlined access to operational and performance data so issues can be identified, prioritized, and remediated before customers are affected.
- One-day provisioning. In collaboration with the Service Catalog, the CMDB supports automated server provisioning with a one-day service-level agreement (SLA) from order to delivery. This has reduced the resources expended on compute builds, driven up throughput volume, and sped up time to delivery from five days to under four hours.
- Improved communications. Cross-pollination of the CMDB configuration items with OnCommand Insight allows anyone in IT to access performance and capacity metrics, giving customers access to information at any time and freeing up admin time.

Mapping the Future

What began as a traditional data repository for physical assets has evolved to a mature CMDB that now serves as a platform for IT transformation. By delivering end-to-end service management, IT has gained a wealth of knowledge that helps drive improvements in service delivery and support of business goals. The CMDB has laid a robust foundation for NetApp's future by providing a business context to decisions related to incident resolution, change management and IT investments, both in and out of the cloud.

Gautam Ganapathy, Director, Enterprise Service Management & Tools, NetApp IT

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The Benefits of a Stable IT Infrastructure

ROBERT STUMPF, GO-TO-MARKET & PRODUCT OPERATIONS IT DELIVERY, NETAPP IT

IT Infrastructure Stability + Business App Agility

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With my responsibility for IT development for NetApp's sales/go-to-market strategy, I am constantly searching for ways to speed up our release cycles to deliver new business functionality. And yet, all changes must be evaluated carefully with an eye toward minimizing outages, maintaining quality, and properly leveraging limited resources. The pressure is especially intense because business-critical applications are the lifeblood of the company. Like others, our company depends on these systems to give us a competitive edge in the marketplace. Our daily challenge within IT is to maximize current application performance while closely monitoring emerging technology trends that could improve our execution.

One of the underlying aspects to this success is the stability of our IT infrastructure. Hiccups in infrastructure performance don't just affect the front lines of IT. Any major service interruption affects the entire IT management chain. Incident resolution may require calling on resources at all levels to explain to our business counterparts what happened, when and how the issue will be resolved and what permanent changes will follow so that it doesn't happen again. Addressing these issues takes a tremendous amount of time and effort; it also keeps us looking at the past instead of the future. For most IT shops this cause-and-effect cycle is the norm.

We are no longer looking in the rear view mirror thanks to a stable IT environment.

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This past year, I've seen firsthand how NetApp IT has broken out of this cycle. Following a multi-year effort across all disciplines, our IT infrastructure has stabilized to the point where we are no longer experiencing major service disruptions related to our storage infrastructure. Priority or P1 calls at 3 a.m. are a thing of the past. Today infrastructure upgrades happen in the background with no noticeable effect on our applications. Our IT infrastructure has gone quiet in a good way.

A stable IT infrastructure delivers a tremendous benefit to the management of business-critical applications. The most immediate impact is in time. I used to spend 15 percent to 20 percent of my time reacting to issues. Now I can devote that time to building my relationships with my business customers to understand their future needs and capabilities. I can explore what's down the road and find new, innovative ways for IT to help the business get there.

Becoming More Agile

A stable IT infrastructure has also given me time to focus on one of the IT's biggest challenges: evolving to a more agile, flexible environment. This environment is one where we invest in technologies that give us a competitive advantage, and standardize our legacy and traditional systems to reduce costs and increase efficiency.

We are on a journey with two parallel paths. We are transitioning traditional, non-competitive business applications to proven, off-the-shelf platforms that require minimal customization. At the same time, we are investing heavily in developing the applications that will give NetApp a clear competitive edge. That means we must evaluate emerging technologies while we find ways to maintain and standardize our resource-intensive legacy apps.

For example, we are consolidating our customer support web site onto one platform. Currently, a service change has to be coded and tested in multiple languages because it involves multiple applications. This process is both time- and resource-intensive.

A stable IT platform enables us to evolve to a more agile, flexible environment for biz apps.

CLICK TO TWEET

By unifying systems and processes across the business, we can streamline the development cycle to drive substantial efficiency gains. Being on a single platform eliminates data inconsistencies and allows us to refresh our sub-production ecosystems more easily, reducing the number of potential issues that arise. Long term, we gain agility and the ability to adopt new technologies much faster.

Why is speed so important to IT? Technology is evolving even more quickly now than in the past. Companies that can embrace new technologies faster will be able to leverage and benefit from the new capabilities sooner. This translates to a competitive advantage. Second, by standardizing our technology we can consolidate the skills required to manage the technology, which in turn enables us to scale our resources faster. This allows us to adapt to change more quickly than we can today. IT has now moved from being a passive contributor to playing a strategic role in moving NetApp forward.

My life has changed significantly from a few months ago, thanks to the stability of our storage environment. I am no longer looking in the rear-view mirror but at the road ahead. For IT applications directors such as myself, the ability to directly help the business move forward to meet the challenges of the future is the most interesting and important aspect of our jobs.

Robert Stumpf, Go-to-Market & Product Operations IT Delivery, NetApp IT

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Why Tomorrow's Business Apps Won't Need to Worry About Their IT Infrastructure

MIKE CAPENER, VP, BUSINESS APPLICATIONS, NETAPP IT

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Last year was the 30th anniversary of the movie *Back to the Future*, and many times throughout my IT career, I've felt a little bit like Marty McFly--stuck in the past while waiting for the future. That's because back before distributed processing became all the rage (and the "cloud" was just something that got in the way of a sunny day), there was a "one-stop-shop" development platform that used a dumb terminal where you had little thought of the supporting infrastructure and other "middleware." It was as close to a pure platform-as-a-service (PaaS) as there was. Fast forward two decades. We now have cloud computing and converged systems and I'm still trying to find that perfect development platform that was as easy to use.

As we move into the "future" e.g. 2016, for the first time, I see an opportunity to move into a "one stop shop" environment that will enable Business Apps to stop worrying about its infrastructure. The convergence of three trends is making this possible: First, the evolution of our IT infrastructure to a service broker approach that focuses on the delivery not of technology, but on business services. Second, the long-term stability of our IT infrastructure, which is characterized by continuous nondisruptive operations. Third, a hybrid cloud strategy that enables IT to move applications in and out of the cloud and keep control of our data.

An infrastructure-agnostic IT environment is coming soon to Business Apps.

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When taken together, these trends are a major step toward the dream environment for Business Apps—one that's infrastructure-agnostic and eliminates many of the bottlenecks that hamper the Business Apps team's ability to be flexible and agile. We will be able to focus on what we do best—developing and delivering applications to help the business reach its goals without worrying about the underlying technology.

What does this new infrastructure-agnostic environment look like? I see these three attributes:

- Complete elasticity and scalability in our load and test environments, followed by the same for the application development environment.
- Platform-as-a-Service (PaaS) for delivering complete ecosystems.
- Ability to leverage the cloud for business continuity.

Today I'll talk about the first step, load and test, and address PaaS and business continuity in the future.

Load and Test Environment

Like most IT shops, we have been constrained by finite sources for integration and load performance testing. We have one shared, integrated stage (pre-production) environment for all our development activities. Sharing one environment among all projects requires diligent and precise coordination (or sumo-suits and cage fighting). The flexibility and speed with which we can complete projects is limited to how fast we can move projects through load and test.

The combination of a long-term stable IT infrastructure and the almost instant scalability of hybrid cloud resources would remove the bottleneck presented by a single stage environment. The infrastructure team could leverage cloud resources to create multiple load and test environments so we could test multiple projects simultaneously. We could flex projects in and out of the cloud as needed and eliminate scheduling, downtime, and other conflicts over tight resources.

The best part for us? We no longer need to be experts in the cloud or technology. Instead, we would depend on the infrastructure team to deliver the best option to meet our requirements in the given timeframes. We would stop caring about where the capacity is located (cloud, on-premises, or hybrid), only that it is available when we need it and that we control the data. This infrastructure-agnostic approach gives us both agility and flexibility and the ability to focus on functionality, not infrastructure.

The next natural step would be to apply this scalable environment to the other major bottleneck in Business Apps—application development. By utilizing elastic, scalable environments for both development and load and test, the two biggest hurdles in the Apps world would be eliminated and dramatically transform the speed of our delivery.

We can flex Biz Apps projects in and out of the cloud as needed, avoiding bottlenecks.

CLICK TO TWEET

Mike Capener, VP, Business Applications, NetApp IT

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How Platform-as-a-Service (PaaS) Environments Will Change the Future of Business Apps

MIKE CAPENER, VP, BUSINESS APPLICATIONS, NETAPP IT

Previously I talked about how I feel like Marty McFly in the movie *Back to the Future*. With recent trends within IT, we are returning to where we have already been—a "one stop" compute environment reminiscent of one that existed 30 years ago. We are evolving to an environment that combines hardware and software into one package but with new technologies. This time, however, I think it's here to stay and will have a significant impact on Business Apps.

My earlier conversation discussed the impact of the first stop on this journey: leveraging cloud resources for load and test and application development. Today, I want to talk about the next step in this journey: Platform-as-a-Service (PaaS).

PaaS Comes to Life

Today, when Business Apps wants a development or testing environment, we usually have to specify the hardware and software. But what if we could order a complete environment based on functional requirements and not on technology with just a few clicks? That's what PaaS is all about.

PaaS will enable Business Apps to choose its functional requirements from a menu of options already created by the infrastructure team. Business Apps would have access to ecosystems that were created automatically using on-premises, cloud resources, or a combination of resources tailored to the application requirements. This eliminates the inevitable time delays associated with developing these environments on an ad-hoc basis. Business Apps could finally get out of the infrastructure business.

> *With PaaS, we can order a complete development or test environment from a menu of options.*
>
> CLICK TO TWEET

Taking this one step further, we could apply the power of PaaS to shadow IT and deliver a complete ecosystem to business customers in the early stages of a project. Who is better qualified than business customers to play with an application at that stage? Both the business and IT benefit from this symbiotic approach. IT would help foster innovation in our customers' natural environment but within our parameters and standards. The standards would act as bumper guards to ensure the application could be easily transferred back to IT when the time is right.

The benefits of an infrastructure-agnostic environment don't stop there. Moving beyond our data center environment to the cloud as the primary platform for delivery of critical services in the event of an outage is a powerful incentive to the Business Apps team. It enables us to think

The hybrid cloud offers dramatic new opportunities for Business Apps to be more agile.

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beyond our current capabilities to a time when application configurations and footprints sit in the cloud, accessible as needed. This removes one of the biggest worries of any global Business Apps team—keeping applications up and running.

Imagining the Future of Business Apps

Business Apps is on a journey into a world where the convergence of a stable IT infrastructure, service delivery mindset, and hybrid cloud mindset is offering dramatic new opportunities for business agility. We hope to be propelled into a future that we glimpsed in the past. The new IT environment contributes to both innovation and agility in the business, which speaks to the very core of NetApp's success. Unfortunately we don't have Doc Brown's DeLorean to get us their instantly, but we are building the infrastructure-agnostic environment that promises to get us to that future someday.

Mike Capener, VP, Business Applications, NetApp IT

Share your thoughts with us on Twitter: *@NetAppIT*

IT Infrastructure Stability: Building a Foundation for Agility in Business Apps

*Armed with the right strategy, IT can help the business **win** in the marketplace.*

CLICK TO TWEET

For organizations like NetApp with legacy, non-cloud aware applications, decisions about the future of IT are complicated. However, we recognize that. IT has to be lean and clean when prioritizing and delivering functionality that will create a clear competitive advantage. To achieve this requires an IT infrastructure that acts as a stable, always-on utility that is available to the business 24x7. Without a stable IT infrastructure, IT can't be agile in responding to business needs which directly hampers future success.

These trends are playing out in NetApp IT's operations everyday:

- Cloud is a catalyst that demands new, creative approaches to managing IT;
- IT must serve as a utility that is always on and available to business users;
- IT must be able to quickly embrace and deliver the latest technology to meet changing business requirements; and
- Infrastructure and business apps must function as a united entity to support the business.

What these blogs describe isn't a future state. It is here today. IT stability is the foundation; only when it is achieved can IT develop the agility required to help each part of the business respond at a lightning fast pace to the marketplace. We believe those IT organizations that don't adapt to this new model will find themselves quickly falling behind.

Authors

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As Director of Enterprise Service Management and Tools, Gautam directs the NetApp service management strategy, including planning and support of the ServiceNow platform, the configuration management database (CMDB), and its integration with the automation and monitoring tools at NetApp.

ROBERT STUMPF

As director of NetApp's Go-to-Market IT strategy, Robert directs the IT development team responsible for the Idea-to-Quote and Install-to-Support service areas, which span the field operations, global marketing, and customer support functions.

MIKE CAPENER

As VP of Business Applications, Mike is responsible for enterprise business analytics and business application solution management and delivery across NetApp. His team works closely with their global IT peers and business partners, with focus on end-to- end planning, execution and delivery of business capabilities, in support of our overall IT roadmap.

Refer to the Interoperability Matrix Tool (IMT) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.

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