Tech Outlook

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PROSYS
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Closing the App-Data Gap

Flash storage solutions from Nimble eliminate data delays that degrade application performance.

For most people, technology is all about the apps. From billing and payroll to inventory and email, we are reliant upon mushrooming numbers of business applications to perform essential tasks.

Virtualization has helped spawn the application-driven organization by allowing multiple apps to run on a single server. However, as organizations virtualize more workloads, they are finding that legacy storage architectures create performance bottlenecks that often result in slow or unusable applications.

"Mobile and cloud technologies have led to an explosion of new business-critical applications, and sizing storage for these applications has become a major challenge," said Michael Hritz, Business Development Manager, ProSys. "Even if you've provisioned the right amount of storage, the mechanical limitations of hard-disk drives create latency issues that interfere with application performance. That's a huge deal. If key applications become unavailable or unreliable, that's a chokepoint for the entire business."

According to research from Nimble Storage, 80 percent of U.S. business users say they regularly experience application delays that impact productivity because of the so-called "app-data gap" — storage latency that interrupts the delivery of data to applications. The firm estimates that companies may be losing as much as $7.5 billion of worker time annually due to these gaps.

Flash Appeal

Nimble Storage is eliminating the storage bottleneck with flash-based storage solutions that accelerate application response times and produce measurable operational and financial benefits. The firm's portfolio of hybrid and all-flash storage arrays minimize the mechanical limitations of spinning magnetic disks to create read/write response times that are exponentially

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faster than the best hard-disk drives (HDDs). In real-world implementations, customers have used Nimble arrays to reduce total cost of ownership by 50 percent or more and shrink the overall storage footprint by as much as 85 percent.

"The beauty of flash is that it resolves some of the most vexing storage problems that we've faced for years," said Hritz. "While processor clock rates have been getting faster all the time, the impact on storage performance has been minimal because seek times, operations per second and total bandwidth are limited by the speed of the disk. It creates a significant gap between the time an application seeks data and the moment that data is actually delivered."

Not all flash storage is created equal, however. Many solutions on the market today involve existing array designs and controller architectures that were optimized for disk and retrofitted for flash. This approach doesn't deliver the full capabilities of solid-state storage.

"That's one of the things that sets Nimble apart — their solutions are architected from the ground up with flash in mind," said Hritz. "They actually designed and patented an entirely new file system for the express purpose of using flash. It's not a bolt-on feature."

A New Approach

Nimble's patented flash-optimized file system, Cache Accelerated Sequential Layout (CASL), is a CPU-driven architecture that eliminates dependence on disk spindles. Along with accelerated read and write performance, CASL includes deduplication, compression, replication, snapshots, thin provisioning, advanced data protection and storage scaling capabilities.

CASL's capabilities are particularly evident in Nimble's Adaptive Flash hybrid array portfolio, which was the firm's exclusive market focus for several years. CASL is the cornerstone of a management platform that automates resource allocation to enable seamless distribution of data across flash and disk tiers.

This data distribution is problematic in other hybrid arrays. Typically, a caching algorithm tries to predict which data is most likely to be accessed by an application, and then decide whether that data should reside on flash or disk. A "cache miss" occurs if the algorithm guesses wrong and data is not on the flash tier when requested. The data then must be read from back-end storage, which dramatically increases latency for the operation and makes application performance unpredictable.

Adaptive Flash management skirts this issue through a dynamic caching strategy. All data is written to the flash tier first and then demoted as needed to the hard-disk tier. CASL uses 22 patented caching algorithms to evaluate and inspect data to determine data movement and to dramatically accelerate data reads.

Adding to the hybrid platform's versatility, Nimble offers an all-flash expansion shelf for customers who want to add SSDs without taking up disk drive slots. With the All-Flash Shelf (AFS), organizations can add an additional 12.8 TB of SSD capacity to a hybrid array.

Power of Analytics

Data velocity remained a top priority as Nimble developed its AF-Series Predictive Flash portfolio of all-flash arrays, which launched in February. The platform draws its name from the use of InfoSight, Nimble's groundbreaking data sciences-based approach to the storage lifecycle. InfoSight, in conjunction with CASL, enables application acceleration by using analytics to identify, diagnose and mitigate any factors impacting performance or latency in the storage environment.

The centralized InfoSight engine monitors all Nimble Storage assets collectively from the cloud, analyzing millions of data points every day to build a predictive model of the leading factors likely to impact performance or latency. InfoSight dashboards allow administrators to visualize what's happening across the application-to-storage stack and the impact of virtual machines on storage.

"InfoSight provides insight into performance challenges, including details specific to host or network challenges, flash to disk ratio, and CPU utilization," said Hritz. "It will automatically detect 90 percent of storage-related issues before they become apparent. That eliminates days or weeks spent manually collecting and analyzing data and keeps applications running at peak performance."

Another innovative feature of the Nimble product line is its Unified Flash Fabric, which allows customers to unify hybrid and all-flash arrays into one managed entity with common data services. Organizations can deploy this single architecture across their entire portfolio of applications to meet performance and cost targets.

"Flexibility and scalability are among the characteristics that have made Nimble arrays a good fit for some of our customers," said Hritz. "We've deployed Nimble solutions in situations where customers needed to speed applications, enable greater use of virtualization and simplify operations, and this platform has hit all those marks while also reducing the data center footprint and power, cooling and cabling requirements. Our customers say it has exceeded their expectations."

News Briefs

Users Remain Security Weak Link

Cybercriminals continue to exploit human nature as they rely upon familiar attacks such as phishing to launch increasing numbers of ransomware viruses, according to the Verizon 2016 Data Breach Investigations Report. Ransomware attacks are designed to encrypt the victim's key data until a ransom is paid.

This year's report highlights how human error still thwarts cybersecurity efforts. For instance, most attacks exploit known vulnerabilities that have never been patched — even though patches have been available for months or even years in many cases. Additionally, 63 percent of confirmed data breaches involve using weak, default or stolen passwords.

The report says most security incidents are the result of end-user errors, including improper disposal of company information, misconfiguration of IT systems, and lost and stolen assets such as laptops and smartphones. In fact, 26 percent of these errors involve people mistakenly sending sensitive information to the wrong person.

Flash Storage Gaining Momentum

IT organizations are embracing flash-optimized architectures as they continue to transform their storage infrastructures, according to a new report from 451 Research. In a survey of more than 1,000 IT professionals worldwide, nearly 90 percent said their organizations now have some form of flash-based storage installed in their data centers, while "all-flash" approaches are becoming increasingly standard to support transactional applications.

The most common method for deploying data center flash is as a tier in a hybrid SAN array that also uses hard-disk drives (HDDs). Fifty-one percent say they currently use this method and another 29 percent say they plan to do so in the next two years.

All-flash adoption is growing most rapidly, with 27 percent having deployed this technology already, and a further 28 percent planning to do so within the next two years. Top use cases for all-flash deployments are databases and virtual desktop infrastructure (VDI), while data analytics is expected to be a top use case within two years.

"Organizations of all sizes are looking to transform their storage infrastructures to drive both improved performance and efficiency, and flash-based approaches are at the heart of this transformation," said Simon Robinson, Research Vice President at 451. "While all-flash approaches have gained substantial momentum in recent years and will continue to grow in popularity, it's also clear that many prospective buyers still view these solutions as cost-prohibitive. We expect these barriers to erode over time, but most enterprise decision-makers will continue to use a blend of flash and HDD-based storage technologies for the foreseeable future."

Tech Outlook

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WebRTC Boosts UC

Open-source API enables browser-based voice, video and data communications.

With all major Internet browser players now on board, an open-source protocol that enables real-time voice, video and data communications through a browser is set to eliminate many of the barriers impeding widespread adoption of unified communications (UC).

Deployment complexity, proprietary technology and remote access demands are often cited as UC challenges. Web Real-Time Communication, or WebRTC, is an open-source application programming interface (API) that eases these challenges. When integrated with existing UC platforms, WebRTC-enabled browsers simplify communication between Internet-connected devices without requiring the installation of additional applications, plugins or extensions.

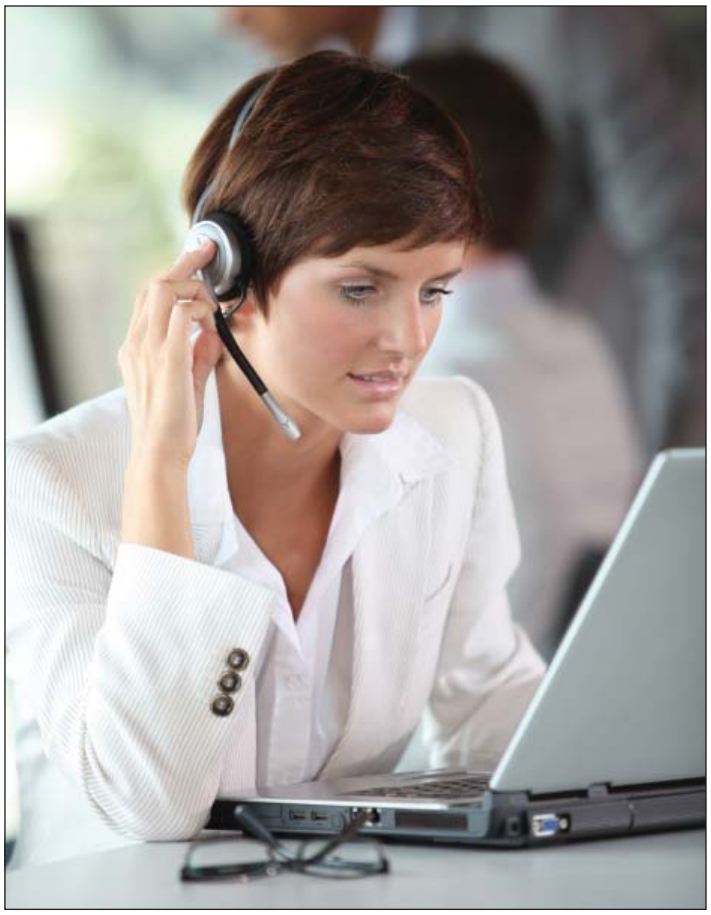
Launched by Google in 2011, the open-source WebRTC project is now managed by the World Wide Web Consortium (W3C) and is supported by most browsers, including Google Chrome, Mozilla Firefox, Opera and Microsoft Edge. Apple was a longtime holdout, but announced in April it is adding WebRTC support to the WebKit engine that powers its Safari browser.

Rapid Growth Expected

With the additional reach provided by Apple, analysts expect WebRTC usage to increase rapidly. Industry analyst and consulting firm Disruptive Analysis predicts that by 2019, there will be as many as 2.5 billion active users of embedded WebRTC communications worldwide, spanning consumer, enterprise and "Internet of Things" applications.

"WebRTC is the most important new communications technology of the decade," said Disruptive Analysis Director Dean Bubley. "It is already enabling developers to create a broad array of communications-enabled consumer and business applications. More than 6 billion devices will be WebRTC-capable within five years."

WebRTC addresses several pain points for UC customers by eliminating much of the hassle involved in integrating communications systems. As an open-source protocol, WebRTC delivers interoperability with most voice and video applications and devices to create a frictionless communication environment in which users can easily place voice and video calls as well as engage in multimedia screen sharing.



Enabling Collaboration

One of the earliest and most obvious use cases for WebRTC is for customer support via a click-to-call button. For example, Amazon's Mayday button enables Kindle Fire users to connect with support staff via a live video feed. It also gives support staff a full view of the user's tablet and the ability to manipulate the tablet.

The contact center is also seen as a prime use case for WebRTC by allowing easy escalation from online sales channels to the contact center. Customers can use a web page link to engage customer service through voice, video and file sharing. Simplified support communications and the use of high-definition voice and video not only improve the customer experience, but make contact center agents more effective as well. Because agents can take calls inside their browsers without the need for phone system integration, they can work from any location and any device. This also can reduce capital and operational costs for the organization.

Beyond the contact center, WebRTC improves employee collaboration through cross-platform file sharing and video conferencing. Multipoint sharing between different communication platforms has always been difficult because voice and video streaming applications are built on non-standard frameworks. That's not an issue with WebRTC, which allows users to collaborate using any device as long as a web browser is available.

Built-In Security

WebRTC also reduces the risk of technological issues that often disrupt a videoconference. Participants in a conference frequently are on disparate systems that use a variety of video encoding formats. Typically, these various media streams must be translated and converted to a common language — usually through the use of gateways. However, this is a resource-intensive process that can reduce video quality or add unacceptable latency.

WebRTC eliminates the need for transcoding between systems because the browser contains all the underlying codecs, encryption, bandwidth management and NAT/firewall traversal tools that are required. This not only simplifies the process but also lowers costs for both users and the providers of conferencing services.

Security is always a question with an emerging technology, and many wonder if an open-source, browser-based API is particularly vulnerable. However, most experts say WebRTC's browser-to-browser communication actually boosts security by eliminating the chance of users downloading malware-infected software and plugins.

Additionally, any data transferred via WebRTC is encrypted using Datagram Transport Layer Security (DTLS), which creates a secure signaling channel that cannot be tampered with. Audio and video data is encrypted with the Secure Real-Time Protocol (SRTP), which also enforces authentication to ensure message integrity. Other security features are designed specifically to enhance interoperability with VoIP systems. WebRTC-enabled VoIP systems encrypt signaling channels using WebSockets protocol over a Transport Layer Security (TLS) connection.

WebRTC remains a work in progress — the W3C classifies it as a working draft that can be updated at any time. Nevertheless, the API's ability to integrate with UC solutions and simplify cross-platform communication has already placed it into mainstream usage. In a recent Webtorials survey, 69 percent of respondents said they have either deployed WebRTC tools or have plans to do so in the near future. Ninety percent said they believe WebRTC may improve contact center services, and 67 percent view the technology as a potential solution to external video requirements.

Data Shakedown

Ransomware attacks becoming more frequent and more sophisticated.

Security researchers and law enforcement officials say ransomware attacks have reached epidemic proportions, with organizations of all sizes in both the public and private sectors increasingly impacted by this insidious type of malware that encrypts valuable digital files and demands a ransom to decrypt them.

The Federal Bureau of Investigation (FBI) reports that ransomware attacks increased dramatically in 2015 and are on track to grow even more in 2016. The Institute for Critical Infrastructure Technology (ICIT) concurs, claiming that "2016 is the year ransomware will wreak havoc on America's critical infrastructure."

The U.S. Computer Emergency Readiness Team (CERT) says there is not only an increase in the number of attacks, but also a proliferation of ransomware variants — by some accounts, there are now more than 120 separate families of the malware. While some strains, such as Locky and CryptoLocker, are controlled by crime organizations, others are being used by individuals who buy the service from an underground market. Infoblox reports a startling 3,500 percent increase in ransomware domains in the first quarter of 2016 compared to the last quarter of 2015.

"There has been a seismic shift in the ransomware threat, expanding from a few actors pulling off limited, small-dollar heists targeting consumers to industrial-scale, big-money attacks on all sizes and manner of organizations, including major enterprises," said Rod Rasmussen, vice president of cybersecurity at Infoblox. "The threat index shows cybercriminals rushing to take advantage of this opportunity."

How it Works

Ransomware simply puts a high-tech spin on the age-old art of the shakedown. Much like 17th-century highwaymen who prowled roadways and forced travelers to pay a "traveler's fee" to pass, cybercriminals use malware to extort money from organizations that rely heavily on their computer systems.

Ransomware is typically distributed via phishing emails with malicious links or attachments. Opening the attachment or clicking the link launches the malware, which shuts off system recovery mechanisms and uses strong encryption to "lock" all the files it can find. Once this process is complete, a dialog box appears notifying the victim that the data is locked and demanding that a

ransom be paid, usually with bitcoins because of the anonymity this virtual currency provides.

Ransomware attacks are not only proliferating, they're becoming more sophisticated. While email remains the dominant delivery system, newer attacks now bypass the need for an individual to click on a link. They do this by seeding legitimate websites with malicious code, taking advantage of unpatched software on end-user computers. In addition, mobile devices are increasingly targeted.

Many ransomware attacks are launched by hackers in Russia and Eastern Europe. According to a new report, the typical "ransomware boss" in Russia earns roughly $90,000 per year — 13 times the average current wage in Russia. The report from Flashpoint, titled "Inside an Organized Russian Ransomware Campaign," is based on a five-month study of a ransomware organization. The report identifies the healthcare industry as a priority target of the organization.

"Ransomware is clearly paying for Russian cybercriminals. As Ransomware as a Service campaigns become more widespread and accessible to even low-level cybercriminals, such attacks may result in difficult situations for individuals and corporations not yet ready to deal with these new waves of attacks," said Vitali Kremez, Cybercrime Intelligence Analyst, Flashpoint. "Corporations and users are unfortunately faced with a commensurately greater challenge of effectively protecting their data and operations from being held ransom, with no guarantee that sending a ransom payment will result in return of the stolen data."

Taking Precautions

In fact, the FBI recommends not paying a ransom, noting that criminals have no real incentive to actually deliver a decryption key. In addition, the Bureau says paying the ransom only emboldens criminals and most likely serves to fund other illegal activities.

Firewalls and other cybersecurity tools do a poor job of detecting ransomware. Once the ransomware is launched, there is little you can do — a recent backup is your best hope of recovering your files without paying the ransom.

However, individual users can avoid infection through common sense and vigilance. Organizations must educate their employees about the dangers of downloading or opening any email attachment unless they are completely confident of its source. Systems should be configured to block the download of executable files without permission. Data should be backed up regularly, and backups kept offline or protected so that the malware cannot encrypt the files (so-called "cold" backup).

"There's no one method or tool that will completely protect you or your organization from a ransomware attack," said FBI Cyber Division Assistant Director James Trainor. "But contingency and remediation planning is crucial to business recovery and continuity — and these plans should be tested regularly."

Preventing Ransomware

The FBI has issued the following suggestions for dealing with the threat of ransomware. While the tips are primarily aimed at organizations and their employees, some are also applicable to individual users.

- Make sure employees are aware of ransomware and of their critical roles in protecting the organization's data.
- Patch operating systems, software, and firmware on digital devices (which may be made easier through a centralized patch management system).
- Ensure antivirus and anti-malware solutions are set to automatically update and conduct regular scans.
- Manage the use of privileged accounts—no users should be assigned administrative access unless absolutely needed, and only use administrator accounts when necessary.
- Configure access controls, including file, directory and network share permissions, appropriately. If users only need to read specific information, they don't need write-access to those files or directories.
- Disable macro scripts from Office files transmitted over email.
- Implement software restriction policies or other controls to prevent programs from executing from common ransomware locations (e.g. temporary folders supporting popular Internet browsers, compression/decompression programs).
- Back up data regularly and verify the integrity of those backups regularly.
- Secure your backups. Make sure they aren't connected to the computers and networks they are backing up.

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Data Velocity DELIVERED

We all expect data to be available instantly. Immediate access to data is essential for enterprises to maintain competitive edge. The Nimble Storage Predictive Flash Platform combines flash storage with predictive analytics to deliver data velocity.

These all-flash arrays feature InfoSight predictive analytics tools to ensure continuous application uptime by predicting and preventing issues across the application-to-storage stack.

With Predictive Flash, you can dramatically improve database response times and accelerate application development projects. You'll increase database consolidation, simplify management and reduce software license costs, leading to a higher business ROI.

Contact your ProSys representative to learn more.

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