

# IT SOLUTIONS & STRATEGIES

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## Revolution in Retail

**HOW FUSIONSTORM IS  
HELPING RETAILERS  
TRANSFORM THE  
SHOPPING EXPERIENCE  
WITH TECHNOLOGY.**

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Looking for ways to appeal to consumers who have more choices than ever before, one of the world's most notable retailers chose FusionStorm to provide an array of services to help it reach today's tech-savvy shoppers. By leveraging its "IT Delivered" concept, FusionStorm has created an end-to-end solution encompassing advanced technologies and supporting infrastructure that is revolutionizing the retail experience.

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## IT Solutions and Strategies

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Editorial Correspondence:  
4941 S. 78th E. Ave., Tulsa, OK  
74145

800.726.7667 • Fax 918.270.7134

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### Mobility Driving Cloud Adoption

A new report suggests that remote/mobile connectivity has become the leading driver of cloud adoption in enterprise organizations. According to the Yankee Group survey, 48 percent of respondents cited connectivity as the top reason for deploying software as a service (SaaS) — a 92 percent increase over 2010.

With mobility as an impetus, 38 percent of enterprises project the deployment of over half of their applications on a cloud platform within three years compared to just 11 percent today.

“Mobility is the driving force to cloud adoption,” said George Hamilton, Yankee Group principal analyst and author of the survey report. “Despite worries that the cloud reality would not match the media hype, we’re seeing enterprises raise their spending and set their sights on cloud and mobile productivity.”

The report further says that the argument over public versus private cloud is dead. Adoption is up across the board, with private cloud still most widely deployed (63 percent) but public cloud and managed public cloud making gains (58 percent and 51 percent, respectively).

### Study Finds iPads Enhance Learning

Tablet computers are valuable tools when integrated into college and university classrooms, according to an Oklahoma State University study. During the fall 2010 semester, five sections of two courses on two campuses used the Apple iPad as part of a pilot program. The goal was to determine the impact the iPad would have on both students and faculty, and decide if it should be rolled out across the university at some point in the future.

According to OSU, student expenses went down in the classes featuring iPads since students were able to use cheaper electronic textbooks rather than hard copies. Moreover, the university found that if all the students’ textbooks were available electronically, they could save enough over two semesters to cover the cost of buying the iPad. Students also benefited greatly from Apple’s App Store, OSU found. They were able to find “thousands of educational software possibilities” in the App Store to help complement web-based tools they employed. Students also used Apple’s tablet as a “substitute for paper and pen.”

### FusionStorm Delivers IT Xpress DR-as-a-Service

FusionStorm recently announced the availability of IT Xpress DRaaS, an enterprise-ready DR-as-a-Service offering based on VMware vCenter™ Site Recovery Manager 5 and VMware vSphere® Replication technology. The new offering extends FusionStorm’s existing IT Xpress managed solutions, which the company has been delivering to customers since 2005. IT Xpress DRaaS is a key component of the company’s “Cloud Anywhere” initiative that delivers private or public cloud solutions how and where customers need them.

FusionStorm IT Xpress DRaaS is less complex, faster to implement and more affordable than legacy DR solutions, making it perfect for customers of all sizes and types. Provided completely as a service, there is no hardware or software to purchase, no data center space to acquire and no special skill sets required, and is compatible with applications running on VMware vSphere. It is especially well-suited to customers who do not have a second data center for disaster recovery.

FusionStorm, a SAS-70 Type II certified service provider, plans to launch IT Xpress DRaaS out of multiple data center locations in the U.S. and in Europe.

IT Xpress DRaaS provides flexible and customizable Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO) backed by FusionStorm’s SLA. It also features built-in, VM-optimized data replication based on VMware vSphere Replication technology, but can also be integrated with third-party data replication technologies such as EMC RecoverPoint. Automated failover and fail-back management and bi-annual (twice a year) DR failover testing is included as part of the service.

“DR is at the top of most company’s wish lists, but actually implementing DR has been complex and costly, even in fully virtualized environments. IT Xpress DRaaS solves this problem by delivering DR as a service for companies of all sizes”, says Chris Rogers, General Manager Managed Services for FusionStorm. “Thanks to VMware vCenter™ Site Recovery Manager 5 and our team of Cloud and DR experts at FusionStorm, affordable DR is now available to any company running applications on VMware virtual and cloud infrastructure.”

# VMware vCloud: Your route to cloud computing



VMware vCloud delivers a single way to run, manage, and secure your applications where you want them, when you want them. Through VMware's broad ecosystem of leading cloud service providers, you can get VMware Virtualized services ranging from on-demand, pay-as-you go infrastructure, to enterprise-class, production ready offerings. vCloud services and products give you the freedom to leverage the power of cloud computing while retaining flexibility and open standards to support your existing IT infrastructure.

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# Unified Communications Growth Forecast

**D**eployment of unified communications solutions is poised for growth as organizations build on a foundation of voice and data applications to include more video, collaboration and social communications tools, according to new research from CompTIA, the non-profit association for the IT industry. Unified communications seamlessly blends these communication tools within a single user interface to improve employee collaboration, productivity and customer service and boost the efficiency of the IT infrastructure.

Nearly half (49 percent) of the organizations surveyed for the new CompTIA study, “Unified Communications and Collaboration Market Trends,” said their expenditures on unified communications technologies will grow relatively faster than their overall IT budget over the next 12 months. Large firms (500 or more employees) are significantly more likely to increase their unified communications investment relative to the overall IT budget than the smallest of firms (1-49 employees), 64 percent vs. 35 percent.

“This likely reflects the complexity of communications at a large firm compared to a small firm,” said Tim Herbert, vice president, research, CompTIA. “More staff, more locations, more endpoints and possibly more IT systems make for a more complex communications landscape and a stronger desire to simplify through a unified communications strategy.”

Technology providers express similar positive sentiments about growth in unified communications adoption. Among IT firms with a unified communications practice, 31 percent expect significant growth in their practice over the next 12 months, while 59 percent expect modest growth. Few expect a drop-off in their unified communications business.

## Defining Unified Communications

While IT companies and their customers are bullish on the future of unified communications, the CompTIA study indicates that greater clarity about what constitutes unified communications is needed. Customers and their technology partners are fairly consistent when

“Voice and video are the components of a solution that will drive network upgrades since they consume the most bandwidth and must be handled properly to assure high quality.”

asked to define unified communications. For each group, core areas include email, web conferencing, unified messaging, videoconferencing, audio conferencing and IP communications. But despite the media attention on technologies such as social communication and location-based services, they are not yet strongly associated with unified communications, according to the study.

Additionally, fewer respondents have made the leap from viewing unified communications as an incremental improvement for interaction and sharing to higher-level, communications-enabled business processes. This is seen in the relatively lower numbers of respondents making a strong connection between unified communications with other enterprise systems such as customer relationship management tools.

Technology providers also have several hurdles to overcome with customers. These include price sensitivity, cited by 39 percent of respondents; reliability concerns, cited by 36 percent; security concerns, cited by 34 percent; and difficulty in quantifying return on investment, cited by 33 percent. In addition, 32

percent of respondents reported a general lack of understanding of unified communications products and services.

## All Together Now

Many of the technologies associated with unified communications are already widely adopted. For example, 64 percent of organizations surveyed use web conferencing, 58 percent use videoconferencing; 54 percent use collaboration applications or platforms and 51 percent use voice over IP (VoIP).

“The integration of all these elements is the hard part, tying all these things together,” said Seth Robinson, director, technology analysis, CompTIA. “Voice and data will still be important but more effort will be devoted to complement them by bringing more video, collaboration and social elements into the enterprise.”

Before this can happen, however, organizations must perform a network analysis to determine if their network can support the requirements for new solutions. Indeed, among companies in the CompTIA study that have installed a VoIP solution, 61 percent upgraded network equipment such as routers and switches and 51 percent upgraded infrastructure such as cabling and network drops.

“Voice and video are the components of a solution that will drive network upgrades since they consume the most bandwidth and must be handled properly to assure high quality,” Robinson explained.

Still, the rewards are worth the effort. As the reach and range of business processes continues to increase, involving interactions with partners, suppliers, customers and geographically dispersed teams, “siloeed” communications infrastructures will no longer meet business requirements. Unified communication services can help organizations improve employee productivity, augment business processes and foster innovation.

# Why Businesses Should Try Media Tablets

**M**edia tablets present a variety of new opportunities for business while supplementing traditional uses of notebooks and smartphones, according to Gartner, Inc. As a result, Gartner recommends that business IT leaders begin experimenting with media tablets without delay.

“The iPad, and the larger wave of media tablets, have captured the imagination of business leaders. Some companies have issued them to business and IT leaders in the spirit of exploration. Others see areas in which they can use media tablets to bring computing into settings that were not practical or were too cumbersome to use traditional approaches,” said David Willis, research vice president at Gartner. “For the consumer, the iPad brought a casual but rich experience into the living room, or the train, or while waiting in line at the bank. In turn, IT organizations are finding new places where tablets can deliver information and media in new ways.”

The impact of the media tablet in the eyes of the public is much greater than would be believed from the number of units shipped. Gartner expects media tablet shipments to be approximately 69 million in 2011, which is only a small fraction of the total number of application-capable mobile devices, such as smartphones. Yet already the impact of the device on other forms of computing is great.

## An Additional Tool

A media tablet is a device based on a touchscreen display whose primary focus is the consumption of media. The devices have screens with a diagonal dimension that is over five inches and may include screens that are as large as is practical for handheld use, roughly up to 15 inches. The media tablet runs a lightweight OS that is more limited



than, or a subset of, the traditional fully featured OS such as Windows.

Gartner has long maintained that media tablets are neither “better laptops,” nor “better smartphones,” but complement both. When compared with laptops, media tablets activate instantly, allowing a user to get right to what he or she needs, immediately, without long and frustrating startup times. They have exceptional battery life and are responsive, tactile and inviting. However, in a common mobile-worker scenario, employees may travel with a media tablet during the day, but then return to their laptops in the evening for heads-down data entry or content creation.

“Sales leaders are clamoring to adopt media tablets with their sales teams as a more engaging way to share sales collateral and promotional materials. And it won’t stop there: Next will come customer relationship management systems, and order entry and sales configuration applications. For sales managers, media tablets will be a natural platform for business analytics and performance dashboards,” said Willis.

“In other settings, the intimacy of using a media tablet supports more personal interactions. Doctors, nurses and medical technicians find they can sit down with a patient and help that patient understand a diagnosis, walk through a medical procedure and describe a therapy with them. Retail clerks can use tablets to display customized clothing for a customer. Conference attendees can take surveys on their own, with no training required. The opportunities are huge.”

## The Time Is Now

Just as media tablets won’t replace PCs, Gartner does not believe that they will replace mobile phones as voice devices, even in the smaller form factors. Nevertheless media tablets still have enormous potential in the workplace and present a variety of new opportunities for businesses.

At the same time, media tablets are requiring a new set of policies, technologies and skills for enterprises. Willis pointed out that companies that had already recognized the flood of consumer devices coming into business, and had figured out a way to leverage it rather than fight it, have been more prepared to support media tablets.

“CIOs are determined not to make the same mistakes they made with smartphones, which were often written off early as expensive and frivolous toys, or executive status symbols — which then left room for more inventive leaders who saw the competitive advantage that mobile applications would bring,” said Willis. “They are also more willing to see that they don’t need to supply and manage every device that employees use at work: Consumerization is here to stay, and moving very fast. If you can think of an application for tablets, your competition may well be thinking in the same way — and acting on it. It is time to explore the use of media tablets in business.”



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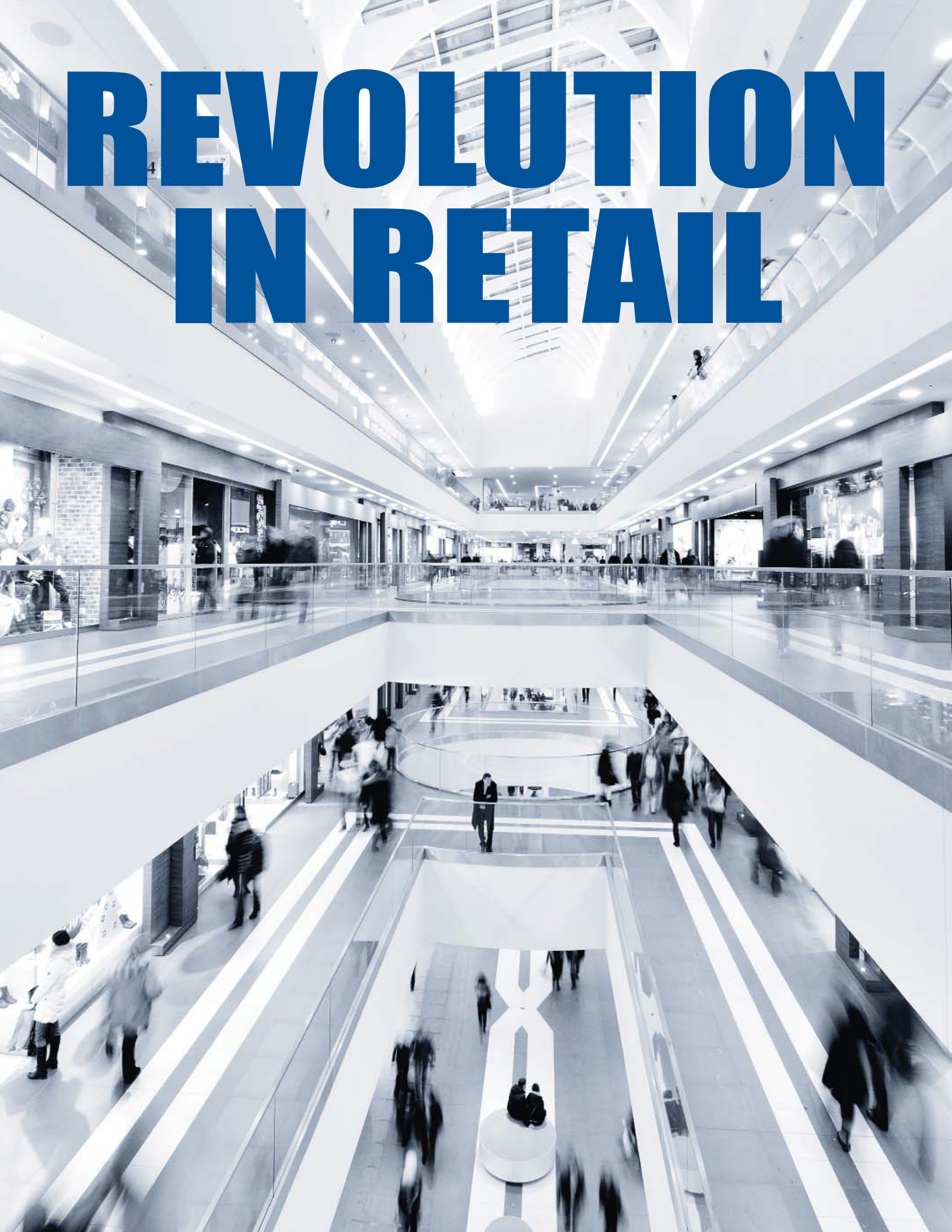
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# REVOLUTION IN RETAIL



## FusionStorm's Retail Practice is helping retailers transform the shopping experience with state-of-the-art technologies, infrastructure and deployment services.

**T**he retail trade has changed dramatically over its 200-year history. The general stores of the 19th century provided necessities, and the department stores of the 20th century brought luxury and choice to the masses. Now 21st-century retailers are using technology to engage consumers on an entirely new level.

“Retailers are looking for ways to appeal to consumers who have more choices than ever before,” said Rob Sinclair, Business Development Manager for FusionStorm's Retail Practice. “Traditional growth strategies, such as opening new stores and adding product lines, do not have the impact they once had, given that e-commerce enables consumers to buy virtually anything anytime anywhere. To stay competitive, retailers need to more thoroughly engage today's highly connected shopper and stay connected with consumers' mobile preferences. Technology is revolutionizing retail.”

FusionStorm is helping to drive this revolution, providing an array of capabilities that enable retailers to reach today's tech-savvy consumers. FusionStorm has leveraged its IT Delivered concept to create an end-to-end solution encompassing advanced retail technologies and supporting infrastructure.

“Retail technology is evolving rapidly to keep pace with consumer expectations regarding the buying experience,” said Tony Balistreri, Vice President Partner Strategy, FusionStorm.



“These solutions require a robust data network and tight integration from the back office to the shop floor. FusionStorm is uniquely positioned to change the game in retail technology through its innovative approach to architecture, engineering and deployment.”

### Leading the Charge

According to the 21st Annual Retail Technology Study conducted by Gartner Research, retailers are seeking to utilize technology to provide interactive product information and inventory visibility, create a rich shopping experience that drives sales and brand loyalty, and leverage cross-channel technologies such as mobile commerce. In order to do so, retailers must bring together IP communications, wireless, digital sig-

nage, audio/visual and other advanced technologies in a seamless, easy-to-manage environment. Retailers need a technology partner with the breadth and depth of expertise and the agility to respond to this industry dynamic.

“That's why FusionStorm was selected to help one of the world's retail visionaries build out every new store from design through staging, logistics and deployment,” said Sinclair. “FusionStorm is the go-to leader for comprehensive retail solutions from the back office to the point of sale.”

FusionStorm works with each retailer to design an end-to-end technology solution — whether common to all stores or unique to each location. Once the design is complete, FusionStorm configures and tests the solution to ensure rapid, seamless deployment across the operation.

FusionStorm's expertise is ideally suited to retailers looking to retrofit existing stores with new technology with minimal impact on operations. The FusionStorm team can work during off hours and ensure that the technology works perfectly when the store reopens.

### Critical Components

Gartner found that most retailers have only basic IT infrastructures; those with advanced infrastructures reported critical limitations and lack of comprehensive integration. FusionStorm's legacy in systems integration and core infrastructure fills this gap and helps boost

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ROI by providing a robust platform for successful technology rollouts.

“Everything is supported by the IP data network — from communications to point of sale to audio/visual and other in-store technologies. These discrete systems can now be integrated into sophisticated custom environments. But you have to have that underlying infrastructure in place,” Sinclair said.

“In many ways, the infrastructure is even more critical than in e-commerce because it supports not only transaction processing but live customer engagement. You can’t get this wrong or the effect you’ve worked so hard to achieve is lost.”

This is particularly true with wireless. Retailers are moving away from the traditional “cash wrap” point of sale to a location-based purchasing environment. Wireless technologies with built-in intelligence analyze purchasing patterns and alert sales associates when a customer is ready to buy. Handheld equipment enables a seamless experience and faster transactions. Gartner forecasts strong levels of future growth in wireless point-of-sale solutions, with particular emphasis on tablets as the POS endpoint. FusionStorm’s advanced expertise in wireless is key to its leadership in the retail space.

“In my view, the cash register will not exist five years from now,” said FusionStorm President Daniel Serpico. “We’re seeing a new evolution, where wireless offers a faster, easier, more secure transaction for shoppers and diners. Think about it — at the store, at the restaurant, at the ballgame, handheld devices and wireless access is working its way into mainstream society and is definitely the way of the future.”

## Transforming the In-Store Experience

A key aspect of the high-tech revolution in retail involves breaking down the “digital wall” dividing in-store and online shopping. Digital signage is enabling retailers to create engaging in-store touchscreens where product comparisons, informational videos and product locations are displayed based upon customer inputs and demographic information. Real-time updates and promotions can have a measurable ROI based upon consumer purchases during a given digital signage promotion period.

According to Gartner’s study, retailers are showing strong levels of interest in the future use of digital signage, but actual implementation of the technology remains low.

That’s because retailers are encountering significant technical challenges that are preventing them from taking advantage of digital signage today. FusionStorm’s unique IT Delivered approach helps retailers overcome these challenges and gain the competitive advantages of this technology.

The data network is also being called upon to support sophisticated audio/visual solutions that enable retailers to connect with customers through compelling entertainment. Today’s fully managed solutions enable marketing and merchandising teams to deliver customized multimedia content granularly based upon location, time of day and other criteria.

“FusionStorm is the only technology integrator with proven expertise in the design, implementation and support of retail A/V environments as well as the underlying network infrastructure,” said Sinclair.

## Putting IT All Together

Retailers also face challenges in terms of space and time. Geographically dispersed stores that must remain open make technology rollouts logistically difficult.

FusionStorm delivers a unique value proposition for retailers seeking to rapidly and cost-effectively scale advanced technologies across multiple locations. FusionStorm’s Integration Center is a state-of-the-art warehouse facility, staffed by engineering and logistics specialists, that provides assembly, configuration, testing, inventory management and shipping services for plug-and-play installation of customized technology solutions anywhere in the world. FusionStorm’s Integration Center services are ideal for operating retail stores that cannot afford downtime for upgrades and new implementations.

“FusionStorm can rapidly complete deployments of standardized equipment in multiple locations globally. FusionStorm can also preconfigure and pre-stage fully customized solutions to create a kit to be deployed by local technicians at each location,” said Joe Baker, FusionStorm’s Director of Enterprise Services. “FusionStorm’s Integration Center is setting the standard for end-to-end rollouts of retail environments.”

The revolution in retail is putting a 21st-century spin on an age-old industry. FusionStorm is helping retailers transcend both the traditional and e-commerce shopping experience to engage customers with sophisticated new technologies.

“In my view, the cash register will not exist five years from now. We’re seeing a new evolution, where wireless offers a faster, easier, more secure transaction for shoppers and diners.”

# From Mashup to ‘Mashop’

Cisco retail survey reveals importance of offering ‘mashop’ experiences that ‘mash up’ the virtual and physical worlds for shoppers.

Consumers want a new way to shop, according to a recent Cisco survey. Research from the Cisco Internet Business Solutions Group (IBSG) and from Cisco’s retail marketing team finds that retailers must respond to technology-savvy consumers by combining web-like and in-store shopping experiences to create “mashops” in order to drive growth and build brand awareness. Mashops get their name because they “mash up” the virtual and physical worlds to create a new way to shop.

A mashop shopping experience combines the best of the physical and virtual worlds, allowing shoppers to receive the information and convenience of a web-based experience while at the same time being able to touch, feel and see the products they want to buy. For retailers, this combination promises to increase sales through conversions at the shelf edge as customers gain more access to product information and through more cross-channel sales.

Creating “mashop” experiences will lead retailers to introduce technologies such as interactive digital displays, video assistants, social networking technologies and Wi-Fi networks that enable shoppers to remain connected with trusted people and information while they are in the store.

Two distinct groups of technology-savvy shoppers have emerged: calculating shoppers and extreme shoppers. Calculating shoppers (56 percent of the general population) use the web to inform their buying decisions. Extreme shoppers (11 percent of the general population, with high representation from Generation Y) use the web and



smartphones to find the lowest possible price. And while extreme shoppers receive the most attention, the larger group of calculating shoppers has the greatest impact on retailers’ revenues and margins.

The behavior of shoppers overall is increasingly shaped by technology:

- Sixty-three percent use technology to find the lowest price.
- Forty-seven percent use technology to save time.
- Twenty-six percent use technology to find the best selection.
- Twenty-five percent use technology to find the highest-quality product.

- Sixty percent cite friends and family as the most important source of information for their buying decisions. Significantly, online reviews are more important than in-store employees, traditional media, and social networking.

Among calculating shoppers, approximately 56 percent always use the web to inform their buying decisions, and they are actively embracing new technologies to help them shop:

- Most prefer to research products online rather than speak with store staff.
- One in three use retailers’ Facebook pages and coupon-sharing sites.
- One in four use web-based group buying sites such as Groupon.

Calculating shoppers are looking for Internet-like experiences in the physical store environment and are using more technology to help them shop. By combining the two worlds, mashops encourage shoppers to upgrade their purchases and increase their shopping cart size when factors other than price influence their buying decisions.

- More than 54 percent wanted to try a mashop-type service in the store. The majority of these, 73 percent, preferred access to mashop-type services using a touch screen at the shelf edge.

- Fifty-four percent wanted product and price comparisons and peer reviews on touch screens in the store.

- Forty-four percent wanted a virtual video adviser with web content on a large screen or tablet service in the store.

# New Lease on IT Life

**V**olatility in world financial markets is impacting IT spending. In tough economic times, budgets are under unprecedented pressure and access to bank funding is limited — particularly for small to midsize businesses (SMBs).

In a poll of 426 small-business owners, the Federal Reserve Bank of New York's Office of Community Affairs found that 63 percent of those SMBs that applied for a business line of credit from a bank were denied. This tightening of the money supply is having profoundly negative effects on IT initiatives.

According to a recent Wakefield Research survey of more than 500 SMB IT managers, 93 percent say their companies have placed cost concerns above the best IT solutions, leading 89 percent of those companies to experience IT-related problems. The top three IT problems reported by cost-conscious companies are low-performing hardware (46 percent), out-of-date hardware (37 percent) and unreliable hardware (23 percent), leading to suboptimal computing efficiency and an overall loss of productivity.

Under such conditions, the IT equipment leasing option becomes extremely attractive.

## Many Benefits

According to the Equipment Leasing and Finance Association, first-quarter financing by U.S. businesses for capital purchases increased 34.5 percent over the same period last year. Overall, business financing has increased 44 percent over the previous year.

That's because the operational, financial and strategic advantages of IT leasing are numerous. The ability to conserve capital, shift costs between capital and expense budgets, and access incremental capital are all important reasons to lease. Leasing also provides protection against obsolescence, helps

maintain technology refresh cycles and can shift the burden of environmentally friendly disposal to the lessor.

Of course, leasing is not a complete no-brainer. When considering technology leasing, it's important to look at the total cost of ownership (TCO) associated with the equipment. After all, the initial purchase price is generally less than half of that total cost. Maintenance, support, training, upgrades and the ultimate disposal of the equipment make up the remainder. As with any technology procurement decision, these factors impact the value of leasing.

## It All Adds Up

Unfortunately, the typical lease-versus-buy analysis remains a "spreadsheet" exercise that attempts to measure small differences in capital expenditures while glossing over TCO. By failing to integrate operational cost/performance data into lifecycle planning and "lease-versus-buy" models, IT organizations may be incurring a 20.5 percent cost premium to acquire, manage and decommission their IT equipment, according to IDC.

"Although many IT professionals recognize the opportunity shorter lifecycles present intuitively, most organizations continue to struggle with translating this into an analytic analysis," said Joseph C. Pucciarelli, program director for IDC's Technology Financing and Management Strategies.

On the other hand, leasing not only eliminates the up-front cash outlay but can also include provisions for complete lifecycle management. This reduces TCO and eases migrations and upgrades. A fixed monthly budget amount also gives the IT manager more flexibility when it comes to the deployment of new applications.

There are other solid financial reasons to lease IT equipment. Many leases include flexible end-of-term options that reduce the legal and environmental

costs associated with equipment disposal. There may also be tax benefits. When considering the entire IT lifecycle — procurement, deployment, support and disposal — the cost of leasing will likely be comparable to that of other financing options.

## Where's the Real Value?

Given the popularity of IT leasing, many technology providers now offer leasing services. A primary benefit of partnering with a technology provider rather than buying direct from a vendor is the ability to get best-of-breed equipment at competitive rates. This benefit extends to the leasing transaction.

Technology providers may be able to leverage volume purchasing and vendor relationships to garner special pricing and rebates. Customers who lease all of their equipment through the technology provider may thus be able to negotiate better deals than if they went direct.

More importantly, customers who lease from a technology provider benefit from a relationship with a partner who will keep their business, technology and financial needs in mind. The leasing business is a mature industry with very few differences in basic terms. Thus, the overall business relationship is a key consideration when choosing a leasing provider.

Companies lease IT equipment for different reasons. Smaller firms may be most interested in avoiding major cash outlays. IT managers at larger companies may need to keep equipment purchases out of their quarterly budgets. Either way, leasing helps the finance department by preserving capital and assisting in balance sheet management. It helps the IT department in standardizing platforms, planning regular equipment rotations and speeding new deployments. In today's volatile financial environment, that's a real win-win.

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# Streamlining Oracle Web Application Access Control

*F5 BIG-IP Access Policy Manager, in conjunction with Oracle Access Management, helps centralize web application authentication and authorization services, streamline access management, and reduce infrastructure costs.*

By **PETER SILVA**

*Technical Marketing Manager—Security, F5*

and **REY ONG**

*Sr. Product Manager, Oracle*

**M**any would say their lives have been transformed by the Internet; but most don't realize that most of the data we interact with daily is actually on the World Wide Web portion of the Internet. Ninety percent of the time when you open your browser, you are going to the Web. Web access management has never been more important to users, corporations, and web applications.

Users have been confirming their digital identities against a user database for over a decade, particularly in work domain environments and financial web applications. Nearly all public portal sites that offer any sort of customization require users to enter a user name and password to access information. Controlling web application access, web application security, and web application authentication is critical to IT infrastructures. Web application security is paramount to protecting the invaluable data that resides on web servers and their back-end databases.

This can include an enterprise's financial data, personal data, human resources information, intellectual property, competitive information, customer data, and more. Organizations must secure web applications by carefully controlling and monitoring who accesses what types of information and when, to protect sensitive data and adhere to regulatory compliance mandates.

Oracle Access Manager (OAM) provides an identity management and access control system that can be shared by all your applications. The result is a centralized and automated single sign-on (SSO) solution for managing who has access to what information across your entire IT infrastructure.

## **Business Requirement: Identity and Access Management**

Identity and Access Management (IAM) is a user-provisioning system that manages data access. It seeks to authenticate users and approve system resources for

use. The goal of IAM is to provide contextual access to the right users at the right time, but also to protect corporate resources. IAM comprises authentication, authorization, user management, and a central user database.

Authentication confirms that a user is who they say they are; it validates their authenticity. A user name and password is the most common way to authenticate a user. Authorization determines whether the user has permission to access particular internal asset by checking the user's request against a specific policy.

For instance, organizations can use role- or group-based attributes to determine whether to grant access. User management is essentially the overall process of managing user identities, from adding and deleting users to users' profiles and passwords. It also determines what permissions are available to the user. The central user database is the single authoritative repository that stores and delivers identity information. It contains the current user identities and their affiliation with the different systems. Identity management technology is essential for maintaining regulatory compliance pertaining to data access and management.

In today's rapidly evolving business environment, organizations need to implement IAM solutions that are scalable, highly secure, and cost-effective. One way to achieve this is to remove access management decisions from within an application and instead apply IAM to simplify user authentication, consolidate infrastructure, and reduce costs.

Oracle Access Manager (OAM), part of Oracle's identity and access management platform, provides identity and access control for Oracle and non-Oracle applications. OAM includes these components:

- **Directory Server:** an LDAP database that contains all the required user information.
- **OAM Policy Manager:** the policy administration interface that determines who will have access to what resources and how they will be authenticated.
- **OAM Access Server:** the policy decision point.
- **OAM WebGate:** the software agent running on the actual web servers or web access proxies that inspects each user request and enforces the policy.

## **Web Application Access Today**

OAM Access Server, OAM Policy Manager, and Directory Server provide the backend policy infrastructure to classify users and resources and set policies for access permissions. Together, these components make up Oracle Access Manager. A typical OAM enterprise deployment consists of (1), the LDAP-based Oracle Internet Directory, which contains the users; (2), OAM Access Server and OAM Policy Manager, which set the policy and grant organized access to the web

resources that reside on the Oracle web servers; and (3), WebGate, the piece of software that runs on and controls access to the web servers.

Users who want to access a web resource have to be authenticated and validated through the WebGate first. The WebGate agent, which is running on a web server, intercepts each client request and compares it to a policy to determine whether the user has permission to access the requested URL. The WebGate agent is the Oracle software component that runs on F5 BIG-IP Access Policy Manager (APM) and provides the same functionality of WebGate.

Traditionally, organizations have had three options to provide access control to web applications. In the first option, the access control decisions are written into the web application code by the developers. This is both costly and difficult to maintain. It is not easily repeatable, the access decisions are decentralized, and it is typically much less secure than other options. In this situation, the access control decisions are enforced by the web application developers and might not take into account various potential context scenarios, such as the user's device, where the user is located, the network type, and whether the device adheres to the corporate security policy. Organizations should consider all of these context scenarios when determining access rights.

The second option involves deploying a software agent on each web server. Using agents can be difficult and costly to administer and maintain. They don't always work with every application or operating system, and they can decrease web application performance. Loading a WebGate on every web server can be a challenge since there are number of different applications, server types, and operating systems. It would be prohibitively time-consuming to update each agent on each server. Similar to option one, the access decisions are decentralized and less secure.

The third option involves deploying a tier of specialized access proxy servers, or a web application management proxy, in front of each web server. The proxy tier can be difficult to manage and expensive to maintain, especially for high availability.

You would need a pair of servers for every Oracle application to maintain high availability. As new proxy servers are required for new web servers, this option does not scale well. It adds a whole layer of infrastructure, including the basic data center costs of power, cooling, and maintenance when many companies are looking to consolidate and control costs.

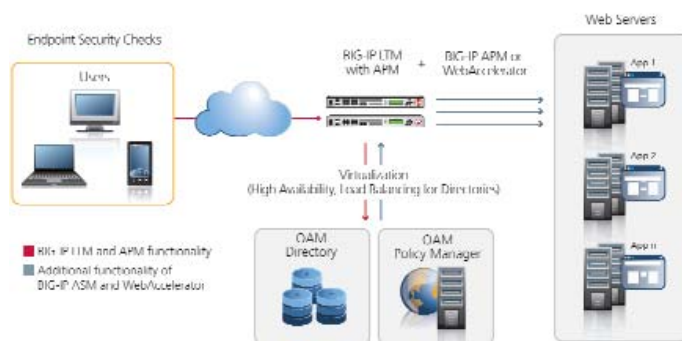
There is now a new, superior solution: Integrate BIG-IP APM with Oracle Access Manager (OAM) to avoid having to build or maintain a proxy tier, dramatically reducing capital and operating expenses. BIG-IP APM runs as a module on BIG-IP Local Traffic Manager™ (LTM). In all, this solution provides superior performance, security, and reliability.

## Unified Access Integration

BIG-IP APM works in concert with your existing identity management systems to control access to web applications. BIG-IP APM can provide network-based identity management and control client web access by performing client inspections, so your organization can ensure that only users with appropriate security profiles on approved devices are allowed access to your business-critical resources. To improve response time and scale performance, BIG-IP APM can cache credentials and provide SSO capability. These policies are created using the Visual Policy Editor, F5's easy-to-use graphical interface. BIG-IP APM also includes software components and features from the OAM platform to make integration with Oracle applications easy and hassle-free.

F5 and Oracle's partnership includes the WebGate software functionality with BIG-IP APM. The BIG-IP device is connected to the OAM server. When a user tries to access a website, BIG-IP can now facilitate/function as the WebGate proxy tier, and it queries OAM and Oracle Internet Directory (OID) to authenticate and validate the user, then sets the session cookie for the user. If the user is valid, BIG-IP forwards the request to the actual web server. This functionality can eliminate an entire tier of infrastructure, which saves on hardware, software, maintenance, and operation costs, along with any electrical, rack space, and basic data center costs.

You can obtain a license for the BIG-IP APM module, which runs on BIG-IP LTM, and then enable a host of additional functionality to enhance your Oracle deployment. For example, you could enable BIG-IP Application Security Manager™ (ASM) to provide web application firewall services. Or, to enhance user experience over the WAN, you could enable web acceleration software.



### Richer application delivery with BIG-IP LTM and BIG-IP APM

The F5 and Oracle integration offers a unified access and authorization solution that simplifies access to Oracle applications. By consolidating authentication, authorization, and accounting and policy control onto BIG-IP devices, organizations can reduce their deployment complexity, increase business agility, and satisfy regulatory compliance requirements such as Sarbanes-Oxley and HIPAA.

A BIG-IP APM and OAM integration is a preferable alternative to the three traditional options. By using this integration, organizations can replace their entire proxy tier and WebGate with BIG-IP APM, which includes the WebGate functionality and runs on high-performance software on BIG-IP LTM. This results in numerous benefits for enterprises.

First, organizations will realize a significant savings in both capital and operational expenditures when they eliminate the entire proxy tier, which requires dedicated hardware and software in addition to IT administrator resources. One F5 customer estimated their organization could save \$2 million with this solution.

The BIG-IP platform can handle a large number of users and high traffic volumes for better performance, and it provides superior scalability and high availability for/to web applications. This solution simplifies the infrastructure as BIG-IP products may already be in the organization's network performing load balancing.

An organization simply needs to add the BIG-IP APM module license to BIG-IP LTM and perform a few minutes of configuration to meet their application access control requirements.

There are several additional benefits that an organization can take advantage of when using the BIG-IP platform. BIG-IP APM can perform pre-logout endpoint host inspections such as verifying the client's anti-virus or firewall software. The BIG-IP platform provides load balancing for web appli-

cations, and an organization can use it to provide both high availability and load balancing for all of OAM's services.

Adding BIG-IP ASM, a web application firewall, as part of your BIG-IP security profile can help protect web applications against layer 7 malicious attacks.

Finally, BIG-IP WebAccelerator™ provides intelligent caching and compression to give users the feeling of instant response and LAN-like performance, and it helps deliver those web applications as fast as possible. This is especially beneficial for remote users, branch offices, or clients that are connected to slow or high latency links. Most important, in conjunction with Oracle, all of this can be achieved with one investment in F5, on one platform.

## Conclusion

Web applications deliver critical data to users every day. F5 BIG-IP APM, running on BIG-IP LTM, in conjunction with Oracle Access Manager helps centralize web application authentication and authorization services, streamline access management, and reduce infrastructure costs. BIG-IP APM can reduce TCO, lower deployment risk, and streamline operational efficiencies for customers along with providing a single point of enforcement to simplify auditing and control changes in configuring application access settings. The F5 and Oracle integration is a unified access and authorization solution that simplifies access to Oracle applications on a single platform to ensure they are fast, available, and secure.

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