Public Cloud Comes of Age

Application Performance Management (APM) Strategies
& Products for Production-Ready Cloud Ecosystems

By Julie Craig
An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) Research Report

December 2014

EMA™

*IT & DATA MANAGEMENT RESEARCH,
INDUSTRY ANALYSIS & CONSULTING*

Table of Contents

Executive Summary

During the economic disaster that defined the years between 2008 and 2012, time stood still for many companies. Licking the wounds inflicted by business reversals and decreases in revenues and stock prices, they survived by reducing costs, laying off staff, and drawing on existing cash.

Surprisingly, these same economic conditions proved to be a catalyst for technology vendors. During that time frame, many expressed optimism for the future, along with a desire to prepare for the time when the economy would improve. As a result, businesses in every industry are now finding themselves riding the biggest wave of innovation the technology industry has ever produced.

Cloud, new devices in a variety of form factors, "smart" products, and virtualization all grew to maturity, in part by focusing on their potential for cost savings. Social media rose to prominence as mobile devices connected mobile users worldwide with online businesses and one another. DevOps and Continuous Delivery, driven in part by Agile methodologies, became mainstream ways to "do more with less" as business leaders grasped the potential of software-driven business. Iterative, collaborative, and process-driven software development practices also made it possible to deliver software more reliably and at higher quality.

Today, IT organizations are seeking new ways to manage the fallout that always results from rapid, often unplanned change. Modern applications are part of today's "Extended Enterprise," in which applications can traverse multiple locations and spheres of control. Integrated applications are spanning on-premise and cloud, mobile, Internet of Things (IoT), and social media platforms, often connected by a host of custom code dubbed the "API Economy." From this perspective, modern applications are as much an echo of the past as the wave of the future.

Prior EMA studies have extensively researched cloud, DevOps, and Continuous Delivery. This is the first in a series of studies building on this foundation by focusing on the enterprise management implications of this wave of innovation as engulfs the Extended Enterprise.

This ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) research study approaches the Extended Enterprise from the manageability perspective. It includes results of a recent survey covering these topics and an Appendix listing enterprise management vendors who have self-identified as supporting performance monitoring and triage of public cloud applications. It is, in essence, an introductory evaluation of the ways in which companies are actively utilizing these technologies in production (or not), how they are managing them (or not), and their key challenges as they break new ground.

> Prior EMA studies have extensively researched cloud, DevOps, and Continuous Delivery. This is the first in a series of studies building on this foundation by focusing on the enterprise management implications of this wave of innovation as engulfs the Extended Enterprise.

Key Takeaways

1. **SaaS and IaaS adoption statistics** – Almost 70% of companies are delivering at least one production service via SaaS, and 55% are delivering at least one via IaaS. [see cloud adoption]

2. **SaaS and IaaS use cases** – Cloud-hosted APM products are now the second most common use case for production SaaS (38%), after Office Productivity applications (44%). Business applications such as ERP and CRM and Development/Testing software are the most common use cases for IaaS, tied at 44%. [see Figures 2 and 3]

3. **SaaS and IaaS usage as a percentage of the user population** – Despite broad adoption, the percentage of user populations currently served by production SaaS and IaaS is surprisingly small. Only 4% of respondents report SaaS applications supporting 90% or more of the users in the organization, with most supporting less than 20%. The IaaS numbers are quite similar. {see cloud adoption rates]

4. **Top IT challenges** – IT professionals overall cite "Incorporating new technologies into the existing ecosystem" as their top challenge (40%), followed by skills gaps and high cost of IT administration/support, tied with 36%. "Shadow IT," despite being at the high end of the hype cycle, is near the bottom of IT's list of concerns (18%). [see incorporating new technologies]

5. **Top Dev and Ops challenges** – In examining the top challenges of Dev and Ops teams, what is perhaps most striking is the amount of time Development, in particular, spends doing work that is not generally considered to be its core role. Development's top challenges are "software deployment" (36%) and "production support" (32%). One questions whether this is the best use of Development's time, particularly since code is a key factor in today's business growth. APM investments, as well as cross-training of Application Management and Infrastructure Engineering teams, can reduce the need to draw developers into production support, freeing them for more productive work. [see development personnel spending]

6. **Tools being used for public cloud monitoring** – IT organizations are now relying less on homegrown tools and more on commercial tools for monitoring public cloud–hosted and hybrid on-premise/cloud applications. They are turning to Application Management platforms/suites (32%), Real User Monitoring (RUM) (30%), and products doing browser injection (30%) instead of homegrown tools (23%). This is a definite change and a positive trend. [see use of homegrown tools]

7. **Top challenges of moving applications to the cloud** – Data migration is the top challenge, cited by 38%, although lack of skills, application migration, and keeping track of "what is hosted where" all tied for second place (31%). [see data migration]

8. **Cloud vendor selection criteria** – Data privacy is clearly the top concern when selecting a cloud vendor (42%), followed by migration support (37%) and the vendor's performance/availability history (34%). Since the survey respondents were North American, data location is not as much a concern as it might have been for European respondents. [see cloud vendor selection]

9. **Top tools purchases planned for 2015** – Surprisingly, OS and Desktop provisioning tools are the top purchasing priority for 2015 (28%) and Continuous Delivery a close second with 27% of respondents. OS/Desktop Provisioning as the number one choice is surprising because such tools have been in the market for decades. A drilldown into this finding reveals significant differences among executive (33%), middle management (41%), and line staff roles (15%). Tools supporting Continuous Delivery were the number two priority with broad agreement across roles. [see top tools purchases]

EMA

Research Process

The survey supporting this study was completed in October and November 2014. EMA's in-house survey team conducted the research, based on questions developed by EMA analysts in collaboration with vendor partners. Participants were screened via qualification questions designed to ensure that only those knowledgeable about all relevant survey topics were allowed to respond to the survey. Respondents were qualified based on a number of factors, such as knowledge of company and IT revenue/budgets, an active involvement in enterprise application delivery (either directly involved or in management roles), application-related technical knowledge, an understanding of their company's cloud strategy, etc.

Respondents spanned all IT-related roles and titles and represented virtually every industry and company size. Totaling more than 150 professionals, half were at the executive level, defined as "Director, VP, or C-level" personnel. Fifteen percent (15%) were middle managers, while 35% were "hands-on" engineers, developers, or other specialists. Ninety percent (90%) worked in IT organizations while 10% represented Line of Business (LOB) or LOB IT.

In terms of geography, 100% were from North American companies. They spanned all industries, but the largest constituencies worked in High Tech (Software), Finance, Manufacturing, and Retail industries, in that order. In terms of company size, 15% were from enterprises with 10,000 or more employees; 45% were from midsized companies of 1000 to 9999 employees; 25% were from companies with 500 to 999 employees; and the remainder were from smaller companies.

The data in Appendix A was gathered from enterprise management vendors self-identifying as supporting performance monitoring and triage of public cloud applications. Approximately 30 vendors were offered the opportunity to participate, with approximately ten taking advantage of the offer. Participation was free of charge.

Cloud as a Mainstay of the Extended Enterprise

There are multiple approaches to cloud discussions and important considerations and challenges associated with both private and public cloud. However, this particular study focuses on public cloud, specifically Software as a Service (SaaS), Infrastructure as a Service (IaaS), and "cloudy" extensions such as mobile applications and external integrations—all of which are outside IT's sphere of control.

With services such as these, the task incumbent on Application Performance Management (APM) vendors is to deliver visibility. So while IT may not have direct access to metrics from a SaaS platform, for example, it is still important to have insight into its performance. Without such visibility, transactions become opaque "black boxes" and troubleshooting becomes a process of trial and error.

Application performance management is far more challenging for public cloud hosted services than on-premise hosted services, particularly when services are "hybridized" or integrated. Virtually every APM solution relies, to some degree, on instrumentation. With externally hosted services, agents capable of delivering insight into application execution are obviously missing, as are log files, traps, and protocol metrics, all of which have traditionally supported troubleshooting and root cause analytics.

Regardless of the management challenges, cloud customers are already using SaaS and IaaS in production. They are also creating hybrid integrations across on-premise and public cloud, and a surprising number are integrating across multiple SaaS platforms.

Data is coming into the enterprise from other external sources as well. From this perspective, consumer mobile devices, partner applications, vehicles, etc. all become extensions of "the cloud" as well. Running off premise and essentially outside IT's sphere of control, they present many of the same management challenges as do SaaS and IaaS.

So while cloud services are already a mainstay for companies of all sizes, they are not without their challenges. The survey associated with this research assesses these challenges, and the following sections present the most intriguing findings.

As an additional note, EMA continues to speak with vendors capable of bridging the "public cloud" gap at some level. A sampling of these vendors, along with the capabilities they cover, is featured in Appendix A for the reader's use.

Real World Cloud: Adoption Rates and Use Cases

Cloud, both private and public, has now made its way into production at varying levels of adoption supporting a wide variety of applications and use cases. As Figure 1 shows, almost 70% of companies are delivering at least one production service via SaaS, and 55% are delivering at least one via IaaS. And, in what may be a surprise to many, between 45 and 50% of companies are already delivering hybrid applications spanning on-premise and public cloud or spanning mainframe and public cloud. This percentage has grown about 10% per year for the last three years and was approximately 35% in a similar EMA survey 12 months ago.

What is particularly intriguing about the hybrid cloud numbers is that they are an early indicator of the possibilities enabled by combining on- and off- premise software components. IoT, mobile, and social media data are becoming increasingly business-relevant over time and often must be analyzed in near real time. At the same time, the products and techniques necessary for collecting data and monitoring the multi-hop integrations underlying massive hybridization are not part of the incumbent toolsets of most companies.

> Between 45 and 50% of companies are already delivering hybrid applications spanning on-premise and public cloud or spanning mainframe and public cloud.

Cloud production usage has significantly increased over the past year. Approximately one year ago, SaaS adoption was 40% (as opposed to 67% shown in Figure 1 for 2014). IaaS adoption was 30% (versus 55% this year), and PaaS was 20% (versus 56% this year). So these numbers have grown considerably in the past year.

Which cloud application types is your company currently delivering as a production service?

Application type	Percentage
Applications hosted on private cloud	53%
Applications hosted by a Software as a Service (SaaS) provider	67%
Applications hosted by an Infrastructure as a Service (IaaS) provider	55%
Applications hosted by a Platform as a Service (PaaS) provider	56%
Hybrid applications spanning on-premise and public cloud	48%
Hybrid applications spanning mainframe and public cloud	46%

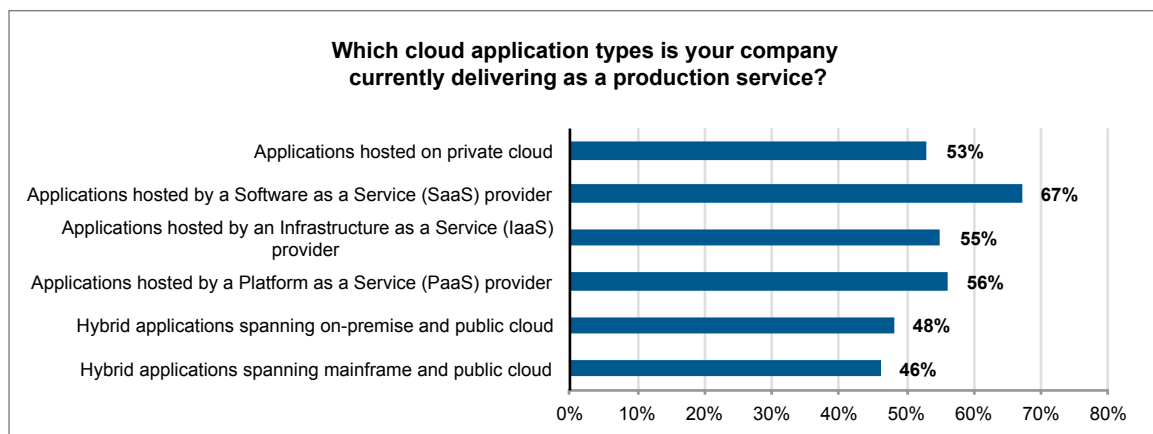Figure 1: Public cloud adoption

EMA™

Figures 2 and 3 reveal the most common use cases for both SaaS and IaaS. When considering these numbers, it is important to keep in mind that these figures show only the percentages of respondents reporting production use of SaaS and IaaS, respectively, and do not include all respondents in the survey.

As Figure 2 shows, cloud-hosted APM products are now the second most common use case for production SaaS, after Office Productivity applications. Most cloud-hosted APM solutions are delivered in a hybrid form factor, with the analytics and reporting hosted in the cloud and software agents behind the firewall. This significantly reduces the time, personnel, and expertise necessary to maintain a production-grade APM solution. It would seem that this is an ideal use case for SaaS delivery, as it provides easy access to a product type that has traditionally been expensive to purchase, deploy, and maintain—and has often been beyond the reach of smaller companies.

> Cloud-hosted APM products are now the second most common use case for production SaaS, after Office Productivity applications.

Which production application types does your company currently deliver via a Software as a Service (SaaS) provider?

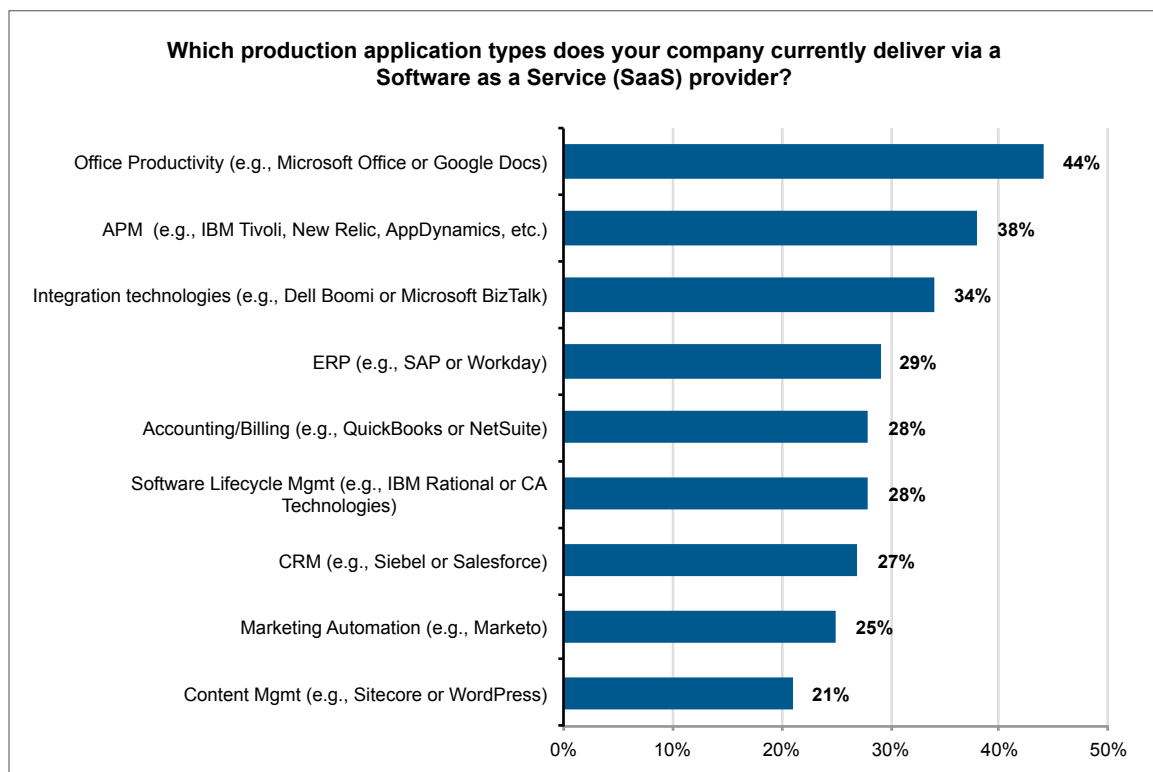| Application Type	Percentage
Office Productivity (e.g., Microsoft Office or Google Docs)	44%
APM (e.g., IBM Tivoli, New Relic, AppDynamics, etc.)	38%
Integration technologies (e.g., Dell Boomi or Microsoft BizTalk)	34%
ERP (e.g., SAP or Workday)	29%
Accounting/Billing (e.g., QuickBooks or NetSuite)	28%
Software Lifecycle Mgmt (e.g., IBM Rational or CA Technologies)	28%
CRM (e.g., Siebel or Salesforce)	27%
Marketing Automation (e.g., Marketo)	25%
Content Mgmt (e.g., Sitecore or WordPress)	21%

Figure 2: APM products second most popular with SaaS consumers, after Office Productivity

As Figure 3 shows, business applications such as ERP and CRM are the most common use cases for IaaS, tied with development and testing software. The fact that companies are confident enough to host their most sensitive software, customer information, and financial data "in the cloud" demonstrates a growing confidence in the security offered by cloud vendors.

Which production application types does your company currently deliver via an Infrastructure as a Service (IaaS) provider?

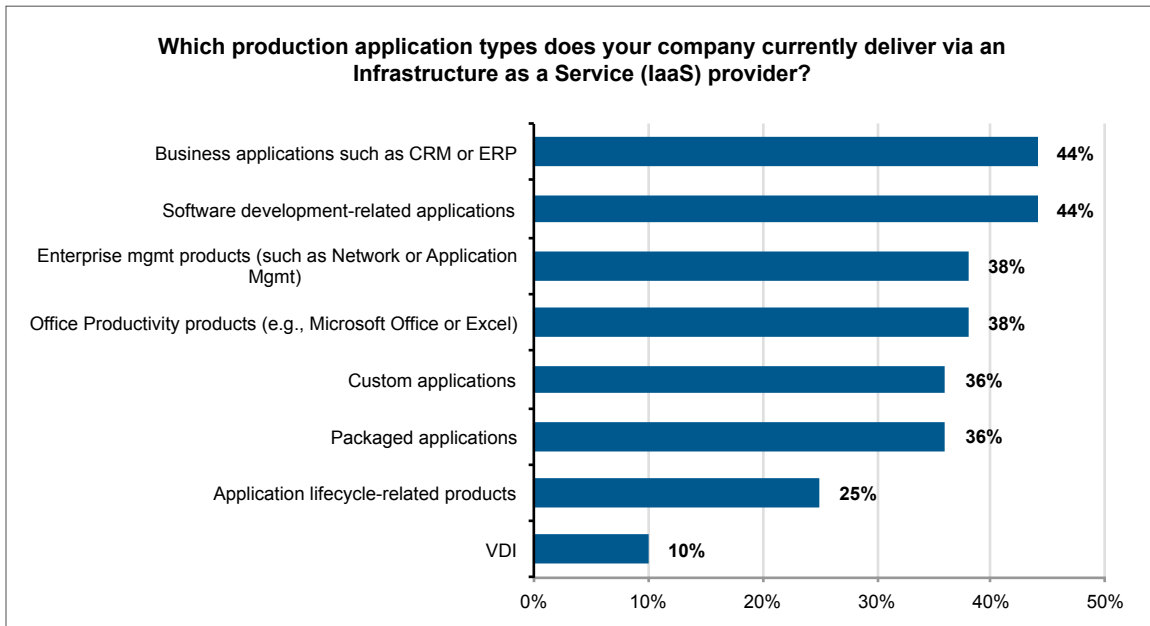| Application Type	Percentage
Business applications such as CRM or ERP	44%
Software development-related applications	44%
Enterprise mgmt products (such as Network or Application Mgmt)	38%
Office Productivity products (e.g., Microsoft Office or Excel)	38%
Custom applications	36%
Packaged applications	36%
Application lifecycle-related products	25%
VDI	10%

Figure 3: Business-facing ERP/CRM and software development leading IaaS use cases

Often, cloud adoption rates are interpreted to mean that, once adopted, a public cloud service is used companywide. However, the numbers say otherwise. While production cloud usage continues to grow overall, the actual number of users of these services within a given company remains smaller than expected.

Figures 4 and 5 show the percentage of organizations' user populations currently served by production SaaS and IaaS, respectively. The numbers are surprisingly small and indicate that cloud adoption is still often at a departmental level versus companywide. Only 4% of respondents report SaaS applications supporting 90% or more of the users in the organization, with most supporting less than 20%. The IaaS numbers are quite similar, as Figure 5 shows.

On a related note, of those companies currently using public cloud, 85% report cost savings. Approximately one-quarter report savings of 20 – 30% compared to on-premise, internally managed application delivery. Another one-quarter report savings of 10 – 20% with the remaining 50% spread across all percentages.

> Business applications such as ERP and CRM are the most common use cases for IaaS, tied with development and testing software. The fact that companies are confident enough to host their most sensitive software, customer information, and financial data "in the cloud" demonstrates a growing confidence in the security offered by cloud vendors.
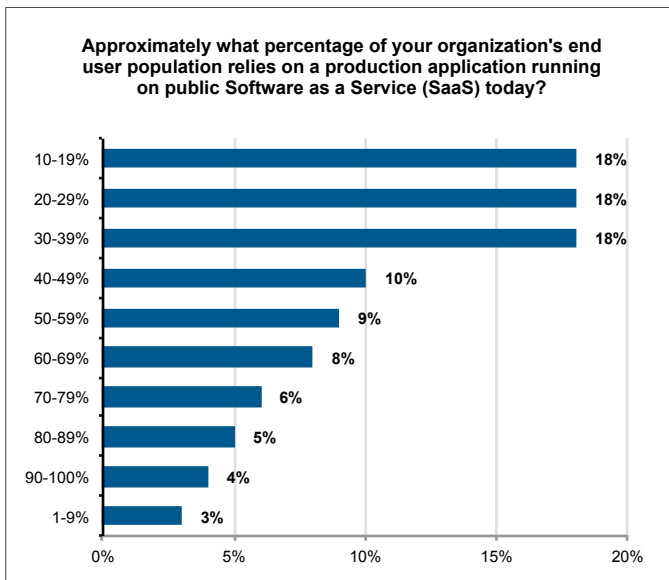
Figure 4: Percent of end users relying on production SaaS
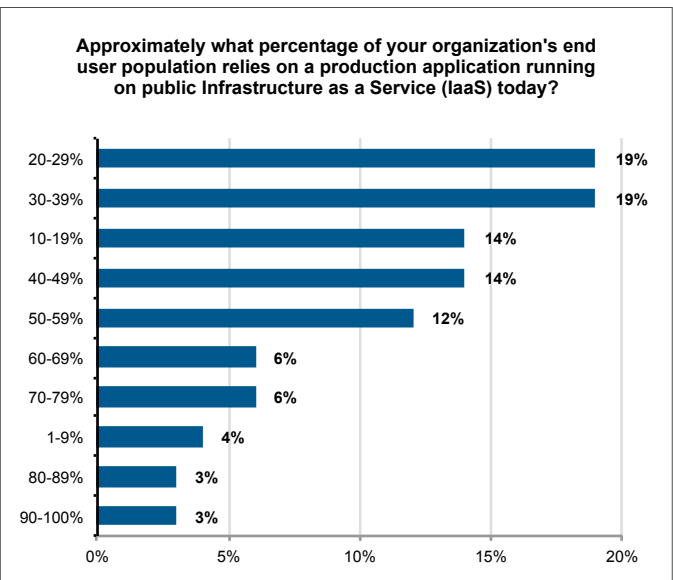
Figure 5: Percent of end users relying on production IaaS

Ecosystem Challenges

Incorporating New Technologies into Existing Environment a Top Challenge

While cloud usage continues to grow, IT professionals cite the requirement to incorporate other new technologies into the existing ecosystem as a top challenge. Figure 6 also shows that approximately 25% of respondents have specific concerns relating to IOT, and many are still struggling to find and allocate the "right" skills in the most budget-friendly way. It is also interesting to note that "shadow IT," despite being at the high end of the hype cycle, is apparently near the bottom of IT's list of concerns.

Figure 6: "Incorporating new technologies" leads top IT concerns

Development Personnel Spending Significant Amounts of Time on Operational Tasks

In examining the top challenges of Dev and Ops teams, what is perhaps most striking is the amount of time each spends doing work that is not generally considered to be their core role. This is particularly true of Development teams, whose top challenges are "software deployment" (36%) and "production support" (32%).
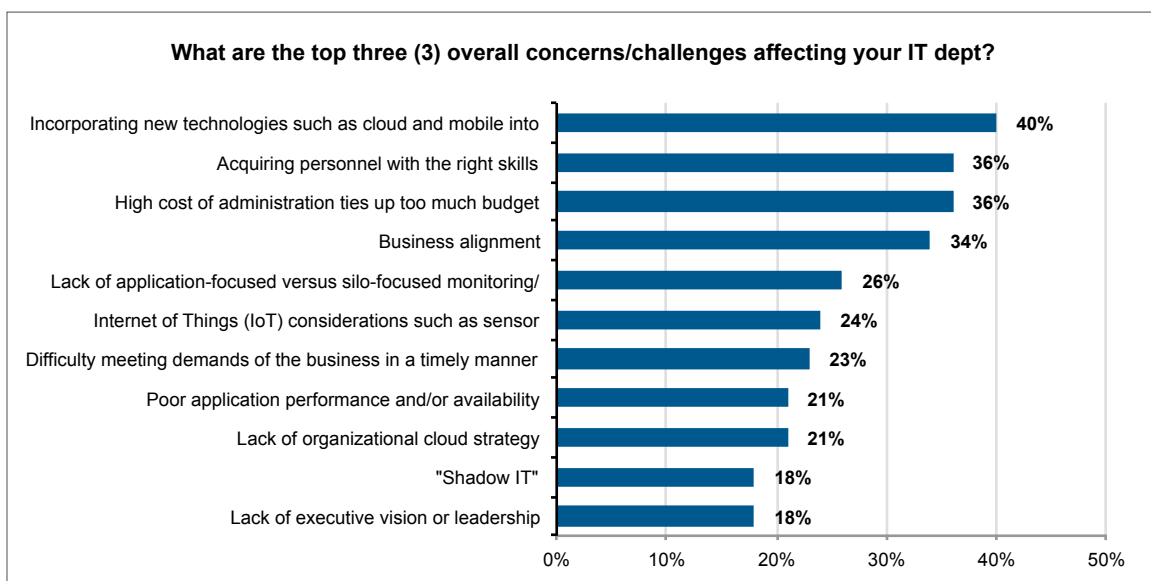
To the degree that cross-functionally trained Application Support (or DevOps) groups are part of Development teams, it may well be the case that software deployment and production support are legitimate tasks. However, as Application Support teams are frequently detached from either Dev or Ops as separate teams or direct reports to directors or CIOs, the amount of time Development spends on deployment and support (versus on actually coding) is, or should be, a major concern for top management.

In a business environment that is software driven, delivering new code should be a priority. Nevertheless, the findings of this survey reinforce prior EMA research[1] in finding that Development personnel are frequently drawn into production support. APM investments, as well as cross-training of Application Management and Infrastructure Engineering teams, can reduce the need to draw developers into production support, freeing them for more productive work.

Unlike Development, the top Ops challenges are actually legitimate Operations-related issues. Virtualization is the top challenge, with public cloud hosting coming in at number two. Clearly, managing large-scale virtual deployments in context with physical hosts is taking its toll, as is building skills to support the "march to the cloud."

Which are creating the biggest challenges for your Development team?

Challenge	%
Software deployment	36%
Production support	32%
Mobile applications	27%
High rates of change to production environments	27%
Virtualization	25%
Internet of Things (IoT)	23%
Integrating across heterogeneous applications and platforms	21%
Tracking requirements and artifacts across the lifecycle	21%
Continuous delivery of application code to production	21%
Public cloud hosting	16%
Interactions with Ops teams	16%

Figure 7: Top Development challenges

Which are creating the biggest challenges for your Operations team?

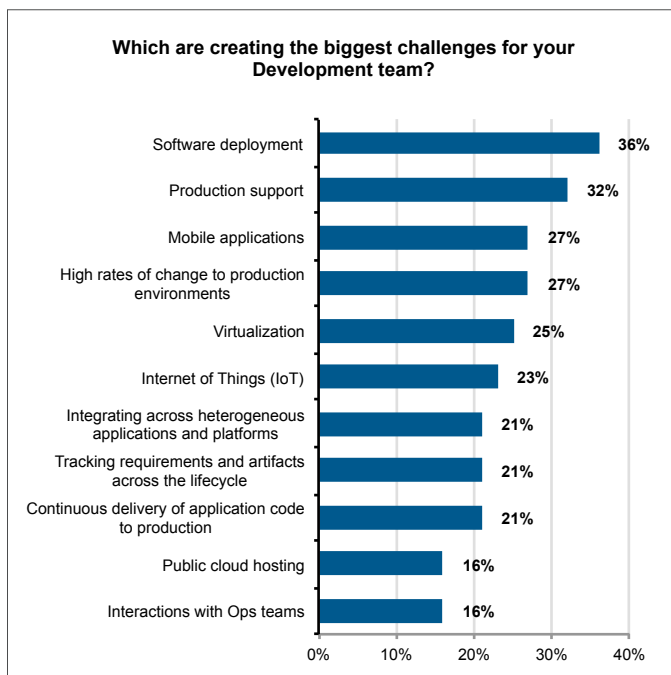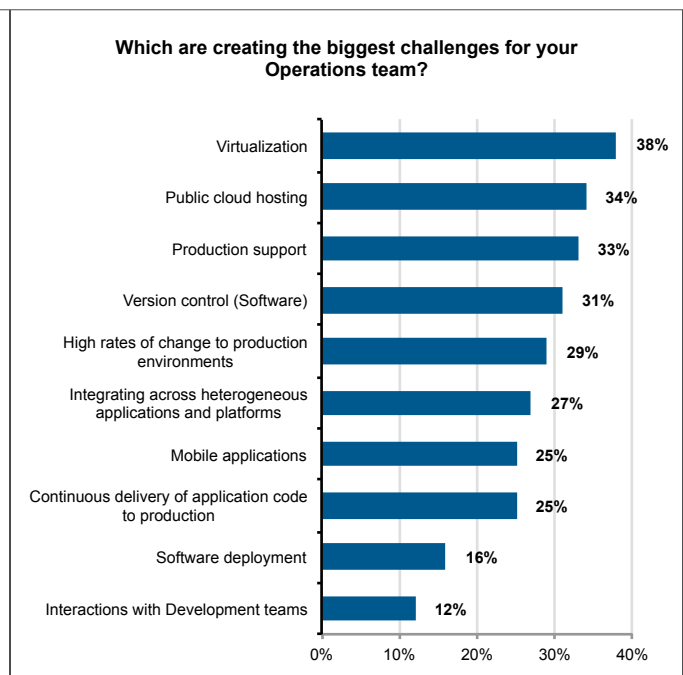| Challenge	%
Virtualization	38%
Public cloud hosting	34%
Production support	33%
Version control (Software)	31%
High rates of change to production environments	29%
Integrating across heterogeneous applications and platforms	27%
Mobile applications	25%
Continuous delivery of application code to production	25%
Software deployment	16%
Interactions with Development teams	12%

Figure 8: Top Operations challenges

[1] EMA, "Application Performance Management (APM) in the Age of Hybrid Cloud: Ten Key Findings," EMA research report, December 2013.

Use of Homegrown Tools for Cloud Monitoring Decreasing, Being Replaced by RUM and APM Platforms/Suites

One positive finding is the fact that IT organizations are relying less on homegrown tools and more on commercial tools for performance management. Previous EMA research studies found that early adopters of cloud services were heavily relying on homegrown tools, particularly to manage cloud and hybrid applications. As Figure 9 shows, more companies are now turning to Application Management platforms/suites, Real User Monitoring (RUM), and products doing browser injection as opposed to using homegrown tools. This is a definite change and a positive trend.

How is your organization currently monitoring/managing performance and availability of its public cloud-hosted (or hybrid on-premise/public cloud) applications?

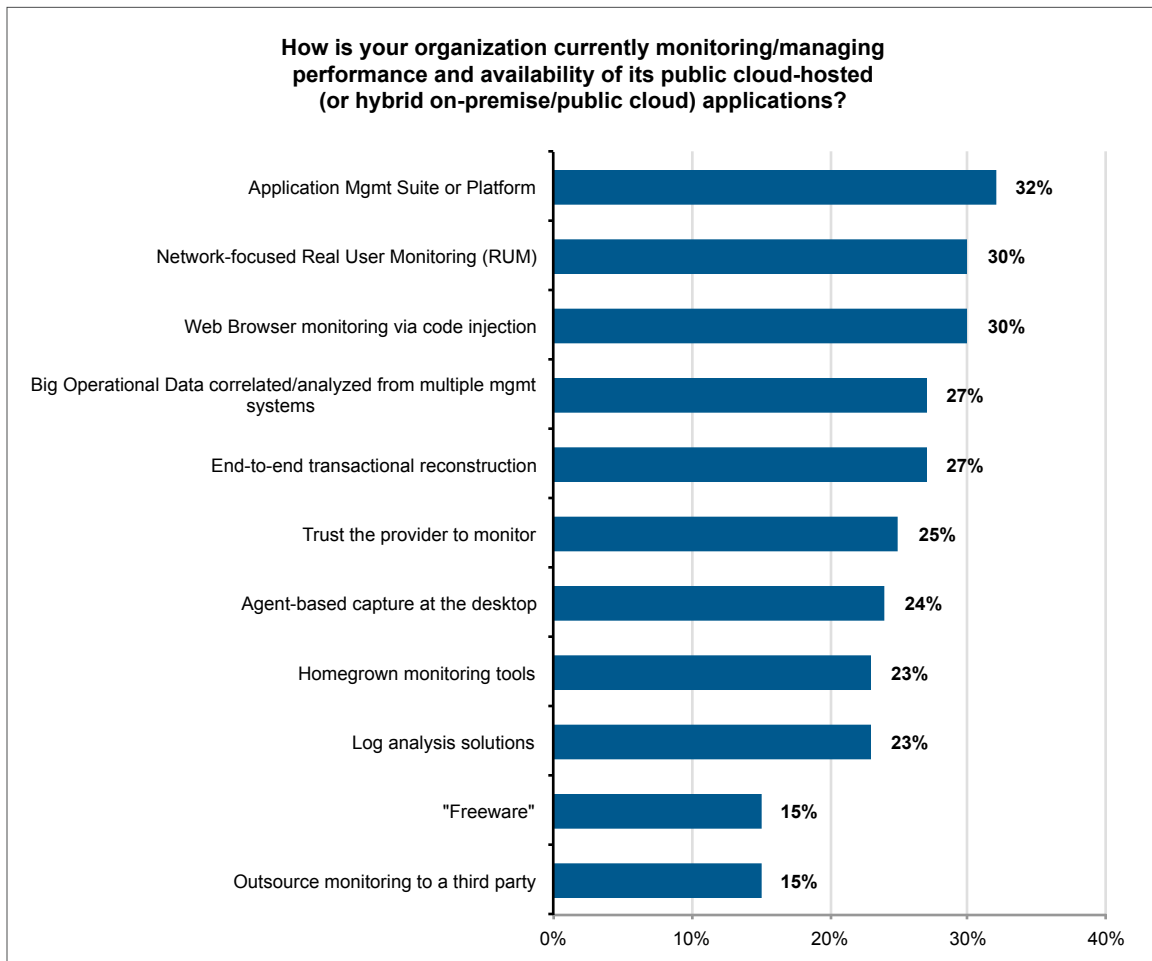| Category	Percent
Application Mgmt Suite or Platform	32%
Network-focused Real User Monitoring (RUM)	30%
Web Browser monitoring via code injection	30%
Big Operational Data correlated/analyzed from multiple mgmt systems	27%
End-to-end transactional reconstruction	27%
Trust the provider to monitor	25%
Agent-based capture at the desktop	24%
Homegrown monitoring tools	23%
Log analysis solutions	23%
"Freeware"	15%
Outsource monitoring to a third party	15%

Figure 9: Commercial tools replacing homegrown tools for cloud monitoring

EMA

Data Migration a Top Challenge in Moving Production Apps to the Cloud

Figure 10 shows the top challenges encountered by IT organizations when moving applications to the cloud. Data migration is the top challenge, although lack of skills, application migration, and keeping track of "what is hosted where" all tied for second place. It appears that, other than data migration, there is no single "smoking gun" challenge associated with cloud adoption. Instead, it is clear there are multiple issues to address as a company gains maturity in terms of cloud hosting.
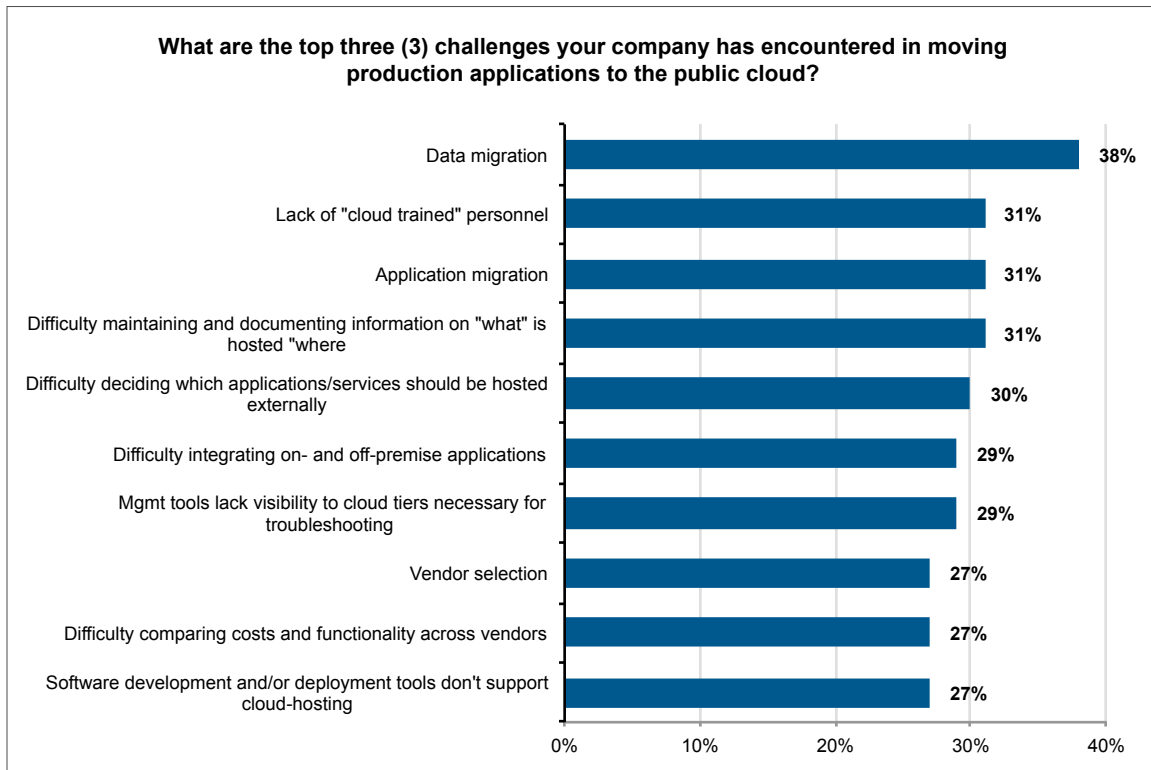
What are the top three (3) challenges your company has encountered in moving production applications to the public cloud?

Challenge	Percentage
Data migration	38%
Lack of "cloud trained" personnel	31%
Application migration	31%
Difficulty maintaining and documenting information on "what" is hosted "where	31%
Difficulty deciding which applications/services should be hosted externally	30%
Difficulty integrating on- and off-premise applications	29%
Mgmt tools lack visibility to cloud tiers necessary for troubleshooting	29%
Vendor selection	27%
Difficulty comparing costs and functionality across vendors	27%
Software development and/or deployment tools don't support cloud-hosting	27%

Figure 10: Data migration is the top challenge encountered in moving production apps to the cloud.

Cloud Vendor Selection Criteria

Figure 11 shows the key criteria IT organizations consider when selecting cloud vendors. Data privacy is clearly the top concern when selecting a cloud vendor, followed by migration support and the vendor's performance/availability history. Since the survey respondents were almost all from North America, data location is not as much a concern as it might have been with European respondents.

The emphasis on data privacy highlights the importance of cloud vendor security, which to date appears to have been stellar. It also highlights, perhaps, the need for legislation curbing U.S. government agencies' access to cloud data repositories. Failure to do so will clearly limit the growth of cloud services, which have already become big business both in U.S. markets and across the globe.

> Data privacy is clearly the top concern when selecting a cloud vendor, followed by migration support and the vendor's performance/ availability history.
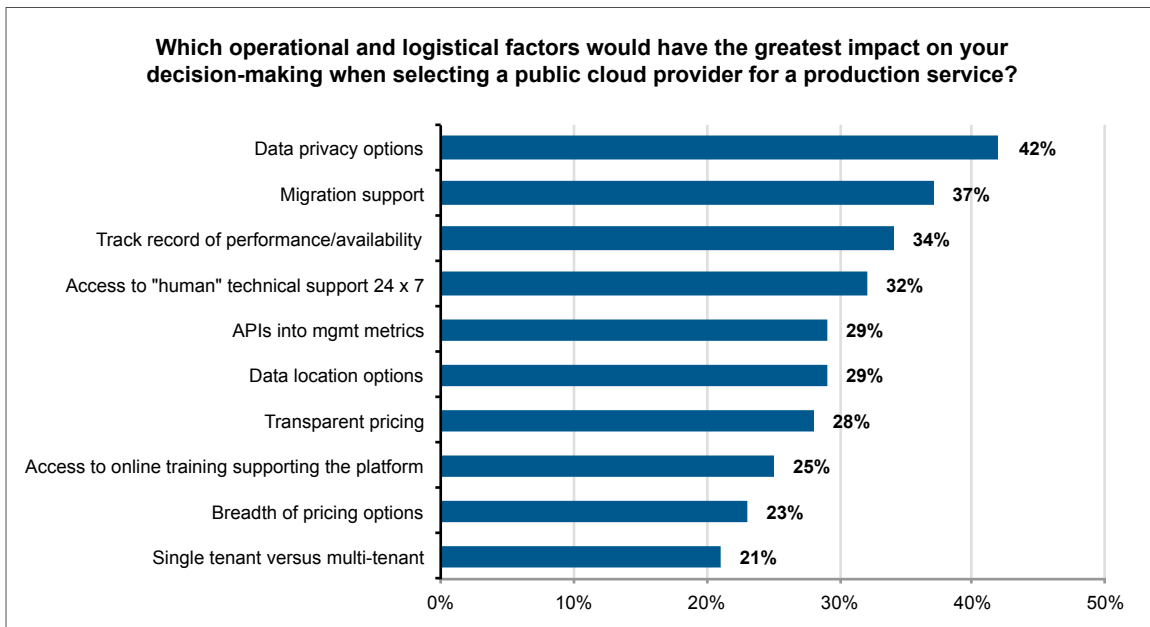
Which operational and logistical factors would have the greatest impact on your decision-making when selecting a public cloud provider for a production service?

Factor	Percentage
Data privacy options	42%
Migration support	37%
Track record of performance/availability	34%
Access to "human" technical support 24 x 7	32%
APIs into mgmt metrics	29%
Data location options	29%
Transparent pricing	28%
Access to online training supporting the platform	25%
Breadth of pricing options	23%
Single tenant versus multi-tenant	21%

Figure 11: Factors supporting cloud vendor selections

Top Tools Purchases Planned for 2015

Finally, Figure 12 highlights the key tools purchases planned for 2015. OS and Desktop provisioning tools lead the pack, an odd finding since such tools have been in the marketplace for many, many years. A drilldown into this finding reveals significant differences among executive, middle management, and line staff roles with management leading the charge. Thirty-three percent (33%) of top executives and 41% of middle managers selected this option, while only 15% of line staff did so. While it is difficult to draw conclusions in the face of such diverse responses, what is clear is that executives are very concerned about the resources currently being allocated to desktop support.

Tools supporting Continuous Delivery were the number two priority, and with broad agreement across roles. This finding is not surprising as prior EMA research[2] conducted approximately one year ago also identified Continuous Delivery as a key enterprise management investment planned for 2014.

It is also interesting to note that, in this case at least, the priorities for tools acquisitions are considerably different for high-level executives, middle managers, and line staff. OS and Desktop Provisioning investments are the number one priority for top execs, while Change Management tools are the top priority for middle managers. Configuration Management and Software Update/Patch Distribution tools tied as the top priorities of line staff.

To the degree that planned tools investments reflect the top concerns of each group, it appears that:

- A key concern for top execs is the amount of time being spent on desktop support.
- Middle managers see supporting high rates of change as a key challenge for their teams.
- Line staff are having difficulty keeping track of which infrastructure elements are supporting which applications (Configuration Management) and also see Software Updates as requiring too much of their time.

---

[2] EMA, "Application Performance Management (APM) in the Age of Hybrid Cloud: Ten Key Findings." EMA research report, December 2013.

EMA

On a final note (Figure 13), respondents were also asked about their preferred form factors for new tools acquisitions. An overwhelming percentage of respondents (65%) prefer SaaS or hybrid SaaS/on-premise form factors over 100% on-premise products. This is one major reason why SaaS-delivered APM products have seen rapid growth since their inception. Another reason is because SaaS delivery opens up production-grade APM products to smaller companies that may lack the resources to install, configure, and maintain on-premise APM solutions.
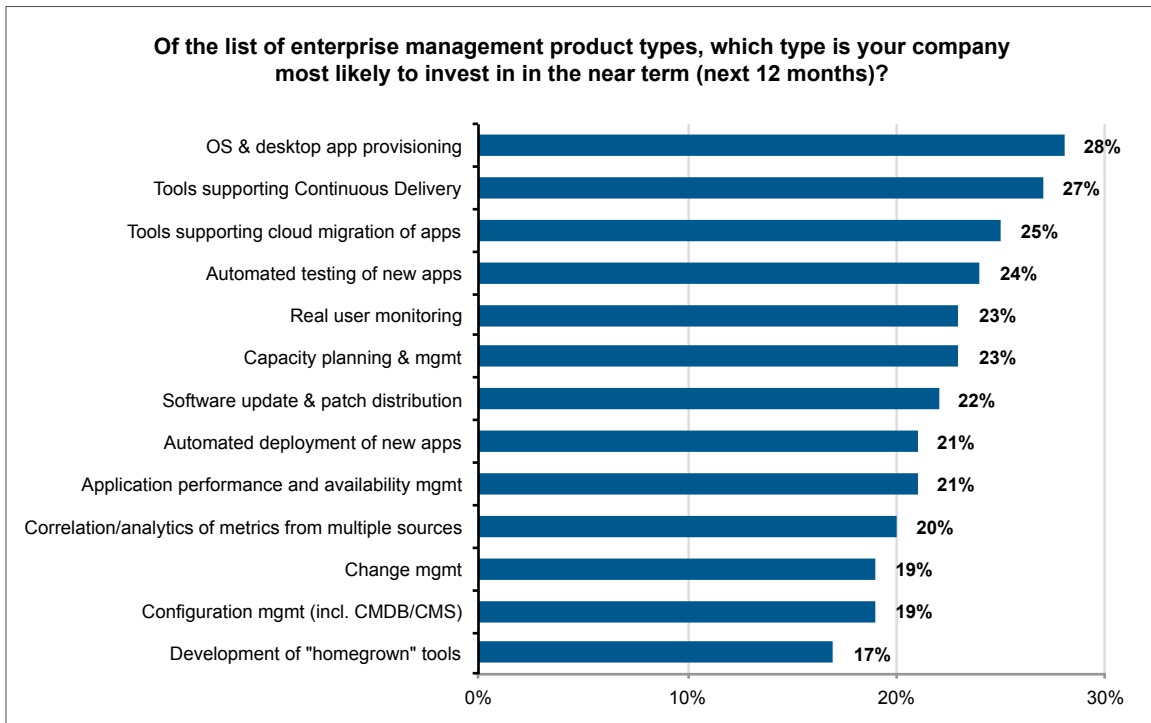
Of the list of enterprise management product types, which type is your company most likely to invest in in the near term (next 12 months)?

Category	Percentage
OS & desktop app provisioning	28%
Tools supporting Continuous Delivery	27%
Tools supporting cloud migration of apps	25%
Automated testing of new apps	24%
Real user monitoring	23%
Capacity planning & mgmt	23%
Software update & patch distribution	22%
Automated deployment of new apps	21%
Application performance and availability mgmt	21%
Correlation/analytics of metrics from multiple sources	20%
Change mgmt	19%
Configuration mgmt (incl. CMDB/CMS)	19%
Development of "homegrown" tools	17%

Figure 12: Top management tools investments planned for 2015

In general, which form factors does your company favor for its mgmt tools?

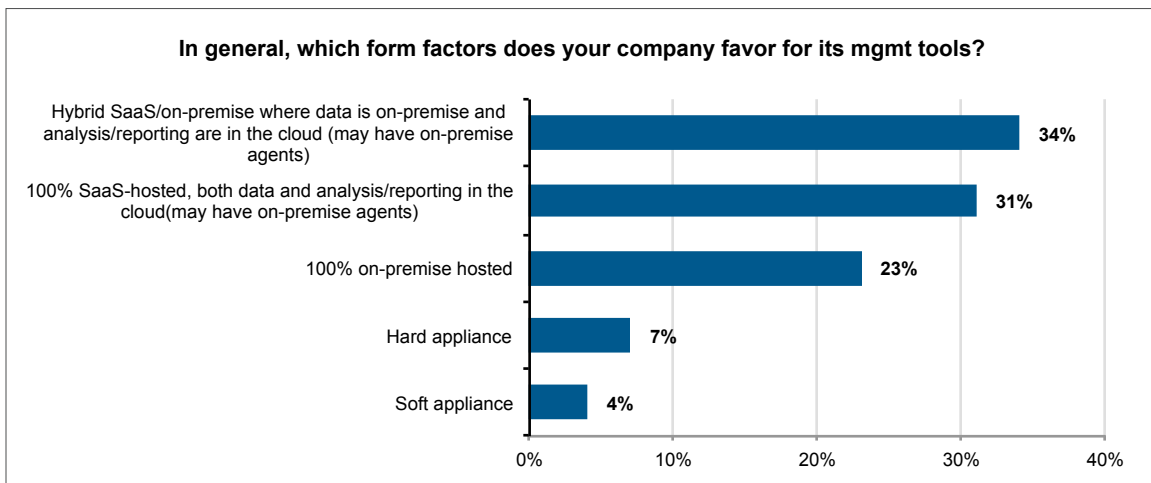| Category	Percentage
Hybrid SaaS/on-premise where data is on-premise and analysis/reporting are in the cloud (may have on-premise agents)	34%
100% SaaS-hosted, both data and analysis/reporting in the cloud(may have on-premise agents)	31%
100% on-premise hosted	23%
Hard appliance	7%
Soft appliance	4%

Figure 13: Preferred form factors for new management tool purchases

Summary

Every company's application ecosystem is different, and tools selections depend in part on the components making up that ecosystem. However, very few modern businesses are self-contained, software-wise. Almost every IT organization supports applications that interconnect with partners, customers, providers, or cloud services. While these integrations extend the application ecosystem beyond a company's own technology borders, monitoring performance and availability remains the responsibility of internal support teams.

The Extended Enterprise will continue to become more diverse and more business critical, as data from sources such as vehicle telematics, location tracking, and external mapping systems are increasingly fed into enterprise applications. Some such applications—such as those supporting real-time healthcare, aviation, and defense applications—directly impact the health and welfare of those engaged in everyday life. It's not too early to start thinking about these complex, real-time, human-critical systems, as they are already running in many companies.

From this perspective, approaching Application Management from an ecosystem perspective is no longer simply an IT Infrastructure Library (ITIL) or DevOps story. Today, the Extended Enterprise is already a reality and management tools should be selected with an eye towards enabling the interoperability and analytics necessary to manage the systems of the future.

Table 1 is an "at a glance" profile highlighting the capabilities of New Relic, the sponsor of this research. A SaaS-based APM and Analytics platform solution, New Relic is an example of the new breed of Cloud-hosted APM solutions which are gaining momentum as alternatives to on-premise-hosted APM solutions.

Additional detail on other vendors in this space are included in Appendix A.

New Relic Product Profile

Vendor Description of Product Functionality

Application Performance Monitoring and Management (APM): New Relic's software-as-a-service (SaaS)-based solution provides deep visibility into app performance, all the way from the end-user experience, through servers, across distributed applications, and down to the line of code.

SaaS-related Capabilities

New Relic's comprehensive SaaS-based solution provides one powerful interface for web applications and consolidates the performance monitoring data for any chosen technology in the customer environment.

New Relic APM-related Products

New Relic APM, New Relic Browser, New Relic Mobile, New Relic Synthetics, New Relic Platform

Links

- **"Try before you buy" link:** newrelic.com/signup
- **Company link:** www.newrelic.com

Lifecycle stages supported	
Software Design	
Software Development	X
Software Testing	X
Deploy/release	X
Production performance/availability management	X
Service Level Management/ongoing improvement	X

Types of services supported	
Software modernization	X
Migration of services to the cloud	X
Data access	
Cloud integration	
Software maintenance/support	X
Application topology/dependency mapping	X
Pre-deployment testing for cloud readiness	

Available form factors	
Product is entirely SaaS-based	X
SaaS-based with on-premise component	
Can be deployed on public IaaS	
Can be deployed on private cloud	X
On-premise hosted	

Types of applications monitored/managed	
Public Cloud IaaS	
Public Cloud PaaS	X
Public Cloud SaaS	X
Hybrid on-premise/public Cloud	X
On-premise, non-Cloud applications	X

Monitoring techniques and types of data collection	
Agent-based monitoring	X
Synthetic transactions	X
Endpoint (desktop, mobile device, etc.) monitoring	X
Real User (network-focused) monitoring (RUM)	X
Transaction tracing and "stitching" to deliver end-to-end execution visibility	X
Infrastructure instrumentation	X
Browser injection	X
Web server instrumentation	X
Java instrumentation	X
.NET instrumentation	X
Transaction tagging	X
Integration tier instrumentation	

Transaction/application types for which the product can derive tier-by-tier performance metrics for all monitored tiers	
Tiered transactions/applications spanning on-premise distributed infrastructure and public Cloud	X
Tiered transactions/applications spanning private and public Clouds	X
Tiered transactions/applications spanning on-premise distributed infrastructure, public Cloud, and mainframe	X

Supplemental data sources	
Protocols such as WMI, SNMP, HTTP/S, etc.	X
Network flow (port/tap, AppFlow, NetFlow, etc.)	
Third-party agents	
Log files	
Unstructured data	X
APIs (for public Cloud platforms)	X
Public cloud performance/availability gathered without APIs	
Automated discovery data	
CMDB/CMS data/metadata	

IaaS vendors supported via APIs or similar deep data collection	
Tata	
RightScale	
Amazon	X
HP	
IBM	X
VMware vCloud	

Table 1: New Relic APM and Analytics Platform capabilities

Appendix A: Cloud-ready APM Vendors and Capabilities

Vendor name	Name of APM solution	Names of any add-on or component products necessary to deliver the features cited	URL to additional info on the product(s) described
AppFirst	AppFirst	N/A	www.appfirst.com
CA Technologies	CA APM	CA APM, CA Mobile App Analytics, CA App Synthetic Monitor, CA Application Delivery Analysis, CA Cross Enterprise APM	www.ca.com/startattheend
Dynatrace	Dynatrace	Dynatrace Application Monitoring, Dynatrace Synthetic Monitoring, Dynatrace Data Center RUM	www.dynatrace.com/en/initiatives/cloud.html
Exoprise Systems, Inc.	Exoprise CloudReady®	N/A	www.exoprise.com
IBM	IBM Performance Management	IBM Performance Management sold as 3 purchasable capabilities IBM Monitoring IBM Application Performance Management IBM Application Diagnostics	ibmserviceengage.com
New Relic	New Relic APM	New Relic APM, New Relic Browser, New Relic Mobile, New Relic Synthetics, New Relic Platform	www.newrelic.com
Stackify	Stackify	Stackify Monitor Stackify Error & Logs Stackify APM (all optional or can work together as one Stackify platform)	www.stackify.com

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
1. Available Form Factors							
Product is entirely SaaS-based	X		X			X	X
SaaS-based with on-premise component		X	X	X	X		
Can be deployed on public IaaS	X	X	X	X	X		
Can be deployed on private cloud	X	X	X	X	X	X	
On-premise hosted	X	X	X		X		

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
2. Types of applications monitored							
Public Cloud IaaS	X	X	X	X	X	X	X
Public Cloud PaaS	X	X	X	X	X	X	X
Public Cloud SaaS	X	X	X	X	X[1]	X	X
Hybrid on-premise/public Cloud	X	X	X	X	X	X	X
On-premise, non-Cloud applications	X	X	X	X	X	X	X

Additional pertinent details
AppFirst: Any application running on a host either physical or virtual, regardless of location, including cloud providers such Engine Yard, OpenStack, Cloud Foundry, etc.
Dynatrace: Dynatrace also has integration with Cloud Foundry and Microsoft Azure PaaS.
IBM: [1] Level of visibility depends on the app

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
3. Monitoring/data collection capabilities included							
Agent-based monitoring	X	X	X	X	X	X	X
Synthetic transactions		X	X	X	X	X	
Endpoint (desktop, mobile device, etc.) monitoring		X	X		X	X	
Real User (network-focused) monitoring (RUM)		X	X		X	X	
Transaction tracing and "stitching" to deliver end-to-end execution visibility	X	X	X	X	X	X	
Infrastructure instrumentation		X	X	X	X	X	
Browser injection		X			X	X	
Web server instrumentation		X	X		X	X	X
Java instrumentation		X	X		X	X	
.NET instrumentation		X	X		X	X	X
Transaction tagging		X	X		X	X	
Integration tier instrumentation		X	X	X			

Additional pertinent details
Exoprise: CloudReady aggregates data from all customer-deployed monitoring points and enables customers to access this "crowd sourced" aggregate data to identify performance trends and anomalies, AND perform root cause analysis end-to-end from the user access location, through the ISP networks, to the cloud service provider.
IBM: Agentless monitoring via standard interfaces such as JDBC, SNMP, JMX, CIM, ssh, WMI, Perfmon, etc.
Stackify: Custom metrics, application performance, log and error monitoring

EMA

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
4. Supplemental data sources leveraged by the solution							
Protocols such as WMI, SNMP, HTTP/S, etc.	X	X		X	X[1]	X	X
Network flow (port/tap, AppFlow, NetFlow, etc.)	X	X	X	X			
Third-party agents	X	X	X		X[2]		
Log files	X	X	X	X	X		X
Unstructured data	X	X			X	X	
APIs (for public Cloud platforms)	X	X	X	X	X[3]	X	X
Public cloud performance/availability gathered without APIs	X	X	X	X	X[4]		X
Automated discovery data	X	X		X	X		X
CMDB/CMS data/metadata	X						X

Additional pertinent details
AppFirst: statsd, JMX
IBM: [1] SNMP, JMX, ssh, SOAP, CIM, WMI, perfmon, JDBC, EIF, ICMP, HTTP/HTTPS
[2] Depends on how they send data
[3] Requires custom agent using Agent Builder
[4] Can monitor OS, applications, middleware, etc. that are running on a public cloud
Stackify: Errors, custom metrics, DB queries, webpage monitoring

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
5. Transaction/application types for which product delivers tier-by-tier performance metrics for all monitored tiers							
Tiered transactions/applications spanning on-premise distributed infrastructure and public Cloud	X	X	X	X	X	X	
Tiered transactions/applications spanning private and public Clouds	X	X	X	X	X	X	
Tiered transactions/applications spanning on-premise distributed infrastructure, public Cloud, and mainframe	X	X	X		X	X	
Transactions traversing multiple SaaS services (such as NetSuite and SugarCRM, for example)		X	X	X	X[1]		
Multi-hop transactions/applications spanning multiple partners/ providers		X	X		X[2]		

Additional pertinent details
IBM: [1] Support for J2EE, .NET, MQ, IBM Message Broker, IBM BPM, Datapower, Tuxedo
[2] Response time only
IBM Other: Transactions traversing J2EE, .NET, MQ, IBM Message Broker, IBM BPM, Datapower, or Tuxedo application servers/ middleware whether public cloud or on-premise

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
6. SaaS vendors supported by APIs or similar deep data collection							
Salesforce				X			
Microsoft		X	X	X			X
IBM			X	X	X[1]		
Intacct				X			
Workday				X			
Zoho				X			
SugarCRM				X			
NetSuite				X			
Google				X			

Additional pertinent details
AppFirst: AppDynamics, New Relic
CA Technologies: Customers can use CA APIs to monitor any 3rd party API or any SaaS vendor's business processes.
Exoprise: CloudReady can monitor virtually any web site or application, and provides API-based monitoring for other cloud apps including Exchange Online and Gmail.
IBM: [1] Products supported include SmartCloud Control Desk, BlueMix

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
7. IaaS vendors supported by APIs or similar deep data collection							
Tata							
RightScale							
Amazon	X	X	X	X	X	X	X
HP							
IBM			X		X[1]	X	
VMware vCloud			X	X			

Additional pertinent details
AppFirst: Microsoft Azure
Exoprise: Microsoft Azure
IBM: [1] PureApp, SoftLayer
Stackify: Microsoft Azure, Rackspace

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
8. Troubleshooting capabilities for applications/transactions accessing a SaaS service							
Quantification of time spent at each relevant (LAN, WAN, on-premise, and/or SaaS-provider) tier	X	X	X	X	X		
Trending comparisons of current versus "average" time spent at cloud tier		X	X	X	X		X
Quantification of time spent on CDN		X	X	X			
Breakout quantification of time spent at each provider tier for SaaS to SaaS integrations		X	X	X			
Quantification of time spent on carrier links, broken out by carrier		X		X			

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
9.Troubleshooting capabilities for applications/transactions accessing an IaaS service							
Quantification of time spent at each relevant (LAN, WAN, on-premise, and/or IaaS-provider) tier	X	X		X	X		
Trending comparisons of current versus "average" time spent at cloud tier		X	X	X	X		X
Quantification of time spent on CDN		X	X	X	X		
Performance comparisons of same application hosted on multiple IaaS providers	X	X	X		X		X
Performance comparisons of same application hosted on multiple instances from a single IaaS provider	X	X	X		X		X
Quantification of time spent on carrier links, broken out by carrier		X		X			

	AppFirst	CA	Dynatrace	Exoprise	IBM	New Relic	Stackify
10. Can the product quantify the time spent in IaaS-hosted virtual machines? If so, please check the VMs covered.							
Microsoft Hyper-V	X	X	X		X		
Citrix Xen	X	X			X		
VMware	X	X	X		X		
Red Hat	X	X	X		X		
Oracle	X	X			X		
Other						X*	

Additional pertinent details
AppFirst: Our collector is strictly agnostic. Therefore we can collect this information regardless of the VM vendor.
CA Technologies: IBM LPAR, IBM HACMP
*New Relic: Joyent VMs

11. Please list any additional cloud-related product highlights which were not covered above (100 words or less).
AppFirst: Can run on any physical or virtual host, including those that run cloud infrastructures, to provide multi-level visibility to the cloud provider and to end users
Dynatrace: Dynatrace APM can be deployed into AWS cloud applications via either BYOL (bring your own license) or elastic, consumption-based models. Dynatrace also has integration with Cloud Foundry and Microsoft Azure PaaS.
Exoprise: Exoprise CloudReady is an APM solution optimized for organizations using public cloud apps and services. Combining synthetic transaction monitoring, network path diagnostics, and crowd-sourced data analytics, CloudReady gives IT teams real-time, end-to-end insight into the health and performance of the full service delivery chain connecting users to the cloud service provider data centers and back.
IBM: The IBM Performance Management SaaS solution includes integration with SaaS-based IBM SmartCloud Control Desk, integration with on-premise Omnibus, e-mail forwarding, ability to automatically discover and provision monitoring for new VMs on Amazon EC2
New Relic: New Relic's comprehensive SaaS-based solution provides one powerful interface for web applications and consolidates the performance monitoring data for any chosen technology in the customer environment.
Stackify: Combines multiple tools to provide a picture on application health. Combines application performance management, application monitoring, server monitoring, smart error & log management, custom app metrics. Secure access to app troubleshooting information for DevOps and developers.

About Enterprise Management Associates, Inc.

Corporate Headquarters:
1995 North 57th Court, Suite 120
Boulder, CO 80301
Phone: +1 303.543.9500
Fax: +1 303.543.7687
www.enterprisemanagement.com
3063.121514