

For: CIOs

The Public Cloud Market Is Now In Hypergrowth

by Andrew Bartels, John R. Rymer, and James Staten, April 24, 2014

KEY TAKEAWAYS

The Public Cloud Market Will Rise To \$191 Billion By 2020 -- 20% More Than Our 2011 Sizing

Using a new market segmentation and sizing methodology, we project that global public cloud platform services will rise to \$44 billion by 2020, cloud business services will reach \$14 billion over this period, and cloud applications or software-as-a-service (SaaS) will hit \$131 billion.

Attractiveness Of Cloud Is Rising, But Barriers To Adoption Still Remain

Customers initially adopted cloud services to raise business agility at an efficient cost but increasingly seek to provide new functions for mobile users and modernize their applications portfolios. But concerns about security, integration, performance, and cost models remain.

Cloud Adoption Will Be A Complement To, Not A Replacement Of, On-Premises

Cloud will not take over the technology market but will become an increasingly large part of that market, especially as a complement to on-premises core transactional systems.

The Public Cloud Market Is Now In Hypergrowth

Sizing The Public Cloud Market, 2014 To 2020

by [Andrew Bartels](#), [John R. Rymer](#), and [James Staten](#)
with [Khalid Kark](#), Joanna Clark, and Dominique Whittaker

WHY READ THIS REPORT

Public cloud services continue to drive big changes in the markets for software, hardware, and IT outsourcing, while providing a foundation for age of the customer innovations. How much and when will cloud transform these markets? In this research, we project that the public cloud market will reach \$191 billion by 2020, from 2013's total of \$58 billion. Cloud applications, at \$133 billion in 2020, are leading this growth; cloud platforms will generate \$44 billion in revenue by 2020; and cloud business services will come in at \$14 billion. Much of this growth is initiated by line of business and marketing and strategy leads, but CIOs and their technology management organizations are increasingly expected to be driving these initiatives. For CIOs, the message is clear: "Shift into the driver seat, or others will."

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Forrester drew on financial reports and vendor briefings from more than 1,000 vendors providing cloud services and software as well as data from our Forrsights Software Surveys on cloud application adoption. Our forecasts are built on a proprietary model for projecting future purchases of cloud solutions based on historical trends and historical patterns of adoption and growth of new technologies.

Related Research Documents

[The Forrester Wave™: Enterprise Public Cloud Platforms, Q2 2013](#)

June 14, 2013

[Sizing The Cloud](#)

April 21, 2011

[Which Software Markets Will SaaS Disrupt?](#)

January 12, 2011



THE PUBLIC CLOUD MARKET IS GROWING FASTER THAN EARLIER PREDICTED

Cloud computing had just “crossed the chasm” when we published our last cloud market sizing model in early Q2 2011.¹ At that time, we projected that the public cloud market would reach \$160 billion by 2020.² We are now revisiting that forecast, utilizing a new sizing model that takes advantage of five years of actual vendor data. Our current forecast shows the public cloud market reaching \$191 billion by 2020, about 20% larger than our 2011 projection.

We have also tweaked our definition of the cloud market to reflect current market realities. In 2011, we divided the public cloud market into four segments, using definitions derived from existing technology taxonomies to give structure to this new and fast-changing market: infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), software-as-a-service (SaaS), and business-process-as-a-service (BaaS). While SaaS continues to be the largest part of the public cloud market, we have now split that into cloud applications and cloud business services (e.g., middleware offerings for integration services, database management services, file sharing services, and application services). We have also combined IaaS and PaaS into one category that we (and others) call public cloud platforms.³

For the three segments of the public cloud market, our forecast is as follows (see Figure 1):

- **The public cloud application market will shift toward replacement of existing systems.**
Cloud or SaaS applications will grow from \$52 billion in 2013 to \$133 billion by 2020. Cloud applications have been and will continue to be the largest portion of the public cloud market, representing more than four-fifths of cloud revenues in 2014 and an estimated two-thirds by 2020. Because much of the hypergrowth has already occurred, the compound annual growth rate (CAGR) for SaaS applications from 2013 to 2020 will be a somewhat modest 14%.⁴ So far, SaaS or cloud applications have grown primarily in the form of new categories of applications that complement existing core transactional applications. However, in sales force automation, customer relationship management (CRM), human resource management, and eProcurement, replacement of existing licensed software is becoming more common. This trend will spread to other application categories, providing a second front for SaaS growth from 2014 through 2018.
- **Public cloud platforms will rival traditional deployments, reaching \$44 billion in 2020.**
This category shifted into hypergrowth mode in 2012 and will grow at a CAGR of 38% from 2013 to 2020. The growth in use, maturity, and financial viability of public cloud platforms are proving their long-standing value as legitimate deployment options for enterprise systems and applications. Cloud platforms are ideal deployment options for elastic and transient workloads built in modern application architectures. As such, CIOs should start considering cloud as a core deployment option within their formal budgets.

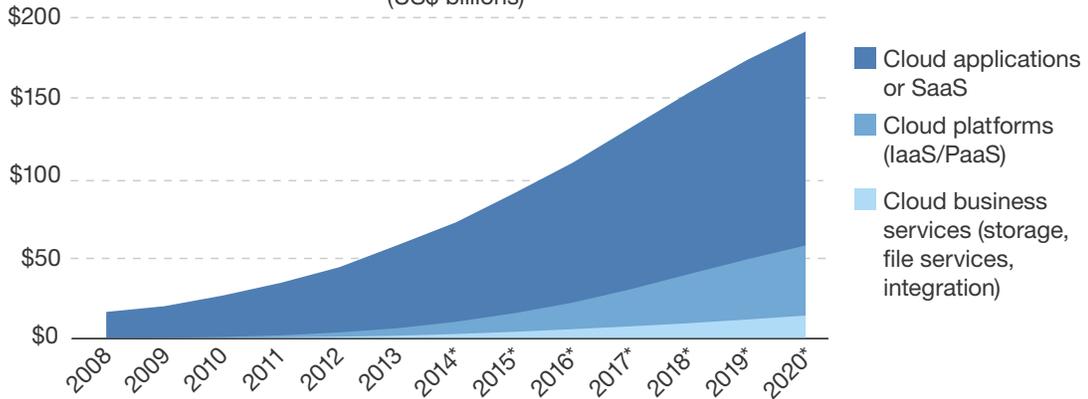
- **Public cloud business services will rival traditional middleware for systems of engagement.**

This segment will grow from \$4.7 billion in 2013 to \$14 billion in 2020. Hypergrowth began in the 2011-2012 period and will last through 2017 or 2018, with a resulting CAGR of 33% from 2013 to 2020. For applications and services built in an agile mode with modern architectures, cloud services empower developers by freeing them from the management and maintenance of these components and reduce overall deployment footprint and thus cost. As these services are consumable by-the-drink, they free organizations from the traditional licensing constraints that are misfits with elastic or transient applications. Vendors also manage and enhance them as often as daily, delivering new capabilities that can help a company keep pace with the changing desires of an empowered customer base.

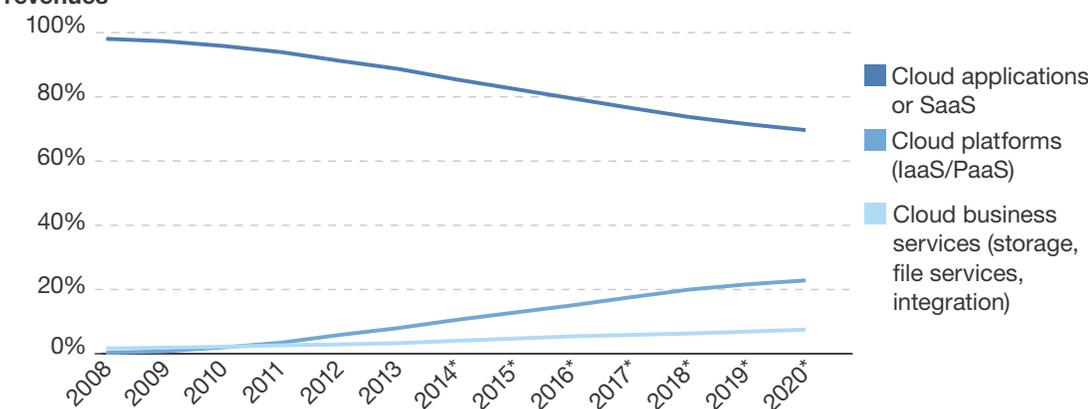
Figure 1 Summary Revenues For Cloud Platforms, Business Services, And Applications, 2008 To 2020

 The spreadsheet associated with this figure contains additional data.

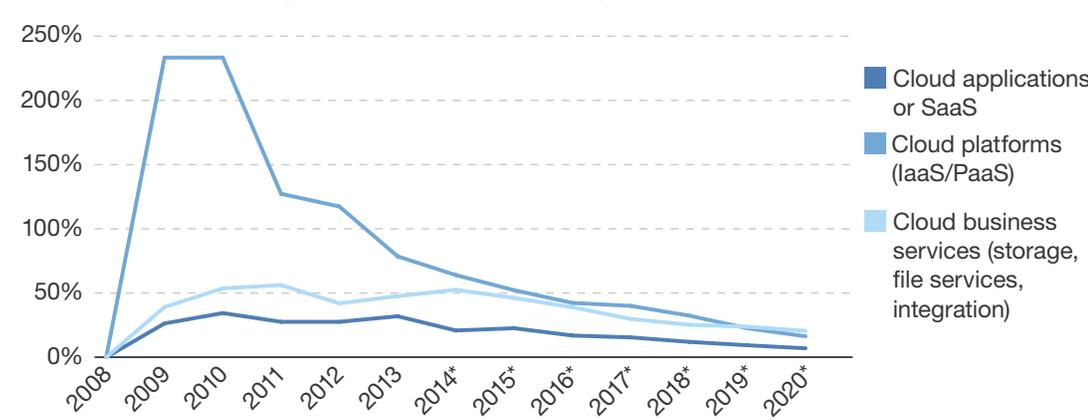
1-1 | Global public cloud purchases will rise from \$72 billion in 2014 to \$191 billion in 2020
(US\$ billions)



1-2 | Cloud SaaS applications will continue to represent more than two-thirds of public cloud revenues



1-3 | Cloud platform revenue growth will be fastest through 2018



*Forrester forecast

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Source: Forrester Research, Inc.

Behind Our New Forecast Lies Five Or More Years Of Vendor Data

A major change since 2011 is that we now have at least five years of actual data on revenues of public cloud vendors from 2008 to 2013. These include:

- **Cloud applications: Thousands of SaaS vendors now serve all cloud application categories.** We now track the revenues of several dozen vendors that publicly report revenues and deliver applications via an SaaS model as well as the SaaS subscription revenues of large vendors like Adobe, Autodesk, IBM, Microsoft, Oracle, and SAP and more than 100 private vendors.⁵ Their offerings span all five major packaged application categories: desktop and collaboration apps, information management apps, enterprise process apps, enterprise vertical industry apps, and middleware apps, including IT asset management, project portfolio management, and security management apps.
- **Cloud platforms: Existing vendors have well-established revenue track records.** Amazon Web Services (AWS), Microsoft, Rackspace, and other vendors of IaaS and/or PaaS don't break out the revenues of their cloud services but provide enough information about overall revenues and customer counts to construct reasonable estimates. This category, which includes providers associated with "infrastructure-as-a-service" and "platform-as-a-service," has gained significant enterprise traction. The convergence of these offerings has so transformed the overall hosting and outsourcing markets that almost every participant has a cloud platform offering today.⁶
- **Cloud business services: Three segments stand out as distinct markets.** Customers now purchase subscriptions to database, integration, and file management cloud services separately from SaaS and cloud platforms. In file management, Box and Dropbox have big customer bases; Dell (Boomi), IBM (Cast Iron), and Informatica have created a distinct cloud-based integration market; and AWS, Microsoft, and Xeround offer separately available database-as-a-service products.

Two Forecasting Assumptions Applied To The Cloud Market Sizing

With this richer historic and projected cloud revenue picture, we can use a forecasting model that extrapolates these growth rates. However, we don't make simple projections of growth. Instead, our forecast model is built around two principles:

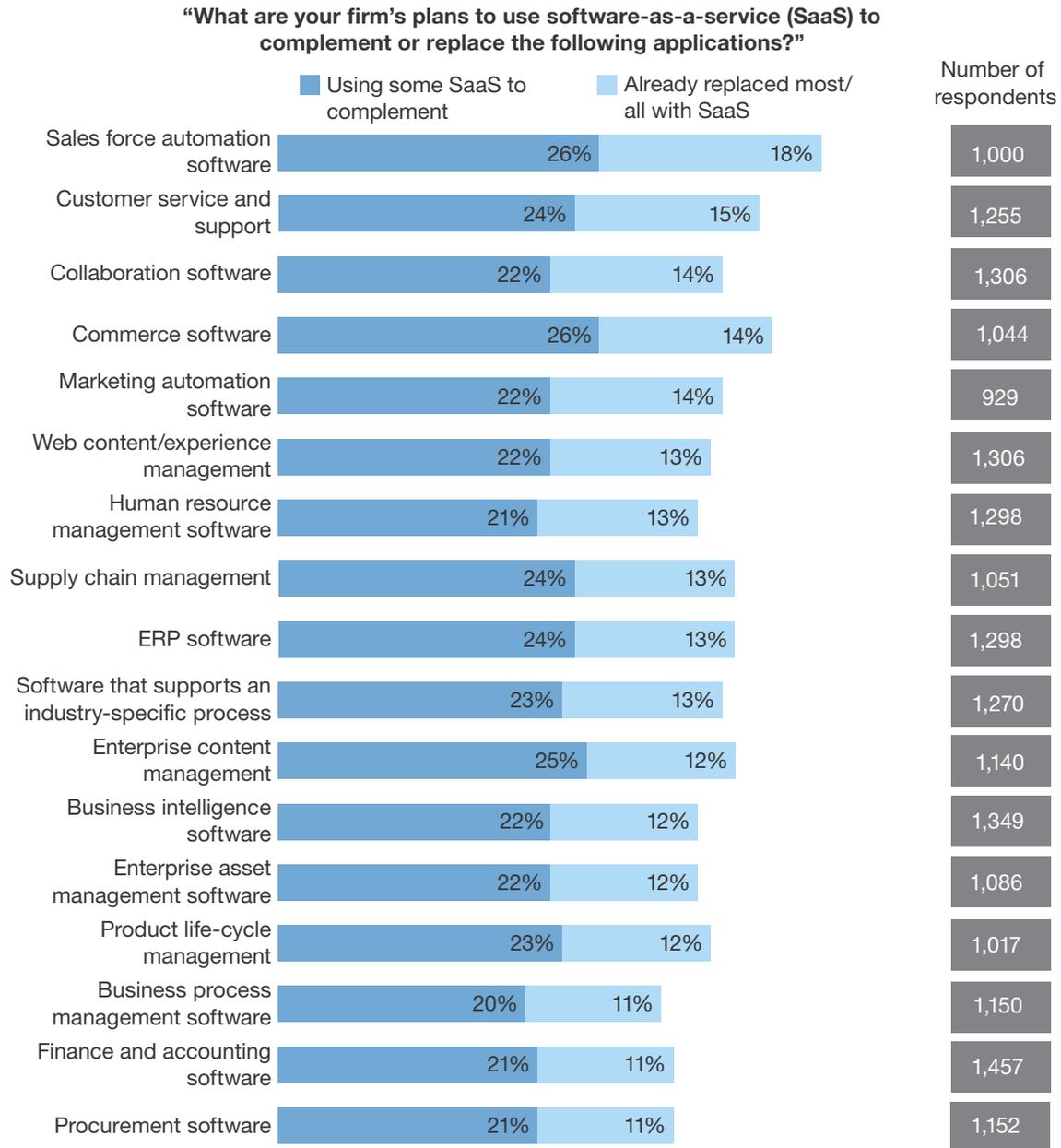
- **Cloud as complement has faster adoption than cloud as replacement.** Cloud offerings that complement but don't replace existing technology will have earlier and faster adoption than technologies that require firms to replace existing systems. Companies can experiment with the complementary technology for low-risk purposes without jeopardizing the safety and reliability of existing systems that support their business. Transition costs are also lower, because data and processes do not need to be converted from existing systems. Lastly, because complementary cloud software can often run independently of existing systems, business users are much freer

to buy these cloud offerings without the involvement of the CIO's organization (at least until integration and security considerations come to the fore), thereby expanding the potential market.⁷ As a result, our Forrsights Software Surveys have consistently found much higher rates of adoption of SaaS to complement existing systems than to replace them (see Figure 2).

- **Cloud software, like other new technologies, will go through hypergrowth phases.** Every significant new technology goes through a period of experimentation when a few early adopters try it out. After that, there's a period of accelerating adoption as word of the benefits of the technology spreads and fast followers jump on board and then a period of flattening adoption as the late adopters slowly decide that this new-fangled stuff is worth it after all (or else take a pass altogether). It is in the middle period that hypergrowth of 25%, 30%, or 40% or more regarding annual increases in vendor revenues (and client purchases) occurs. We used the existing growth paths for each cloud category to determine where each was on this hypergrowth trajectory and thus when it was likely to shift down to the growth rate typical of a mature technology.

Figure 2 Cloud As A Complement Has Higher Rates Of Adoption Than Cloud As A Replacement

 The spreadsheet associated with this figure contains additional data.



Base: North American and European software decision-makers who have implemented the specified software in firms with 20+ employees

Source: Forrsights Software Survey, Q4 2013

Source: Forrester Research, Inc.

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PUBLIC CLOUD APPLICATIONS: STABLE FEARS WILL PERMIT STRONG GROWTH

As noted earlier, public cloud applications are by far the largest part of the public cloud market, so it makes sense to start our analysis of three segments with public cloud applications. Like the other two segments, a special set of market dynamics, which play out differently within each of the two-dozen application categories that make up this market, drive cloud applications.

Market Dynamics: A Balance Between Fear And Greed Controls Adoption Of SaaS

From the start, competing forces of fear about trusting key corporate data and processes to a cloud provider and greed for cloud's benefits of fast and easy deployment, potentially lower costs, and unique features have governed adoption of SaaS.

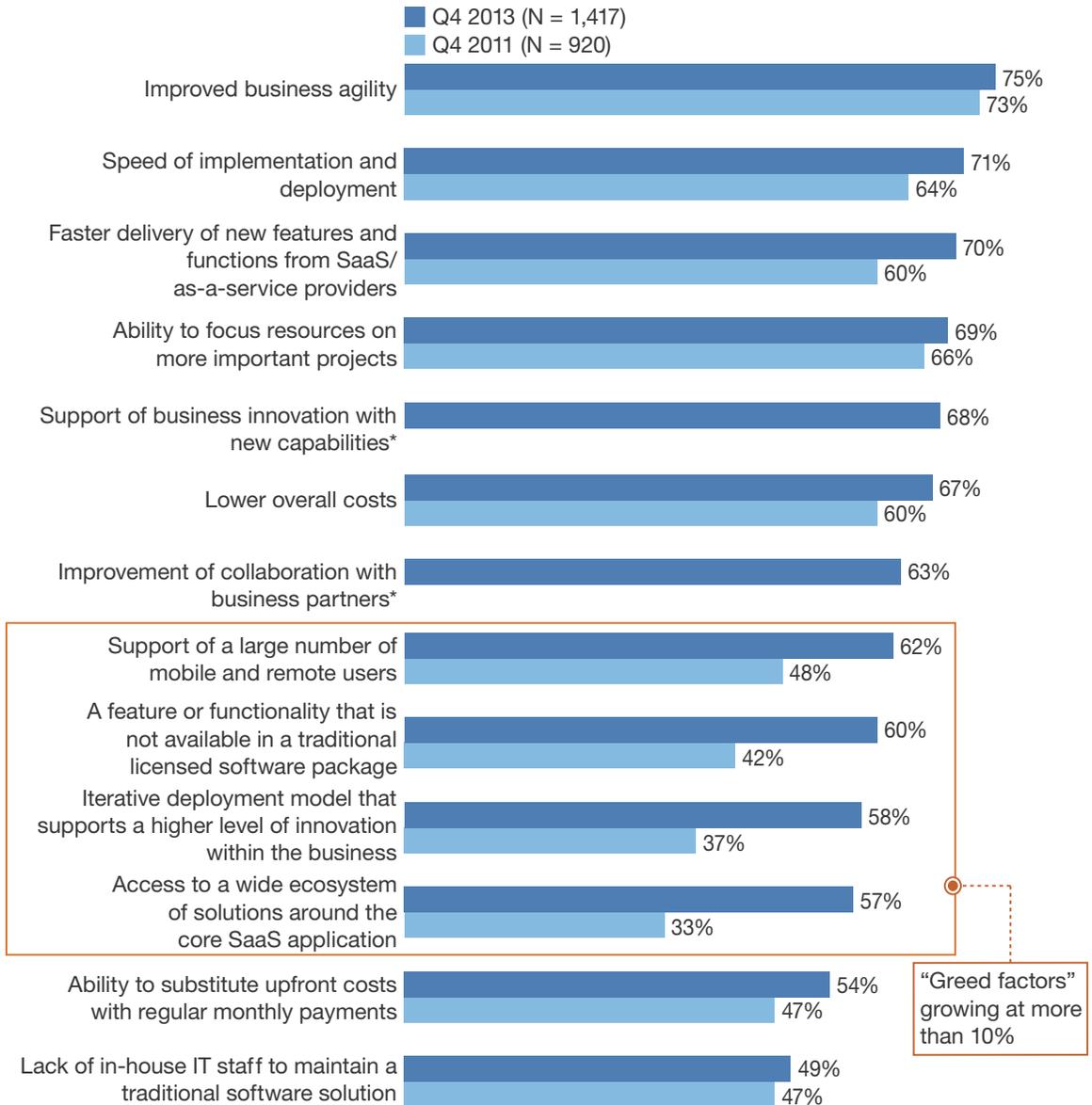
- **Fear factors stay the same.** Potential users of cloud applications or SaaS have been and continue to be concerned about various factors. These include the security of data entrusted to the SaaS vendor, integration of the SaaS app to other generally on-premises applications and systems, longer run costs and vendor lock-in, application performance, and inability to customize the app.
- **Greed factors continue to increase.** Business agility, faster implementation and deployment, faster delivery of new features and functions, and ability to focus internal resources on more important projects remain valid factors of greed. But other greed factors that were once minor considerations are now rising in importance. Supporting mobile and remote users, gaining features not available in licensed software packages, an iterative deployment model that supports innovation, and access to a wide ecosystem of solutions around the core SaaS application are some of these factors (see Figure 3).⁸

Figure 3 Perceived Benefits Of SaaS Have Risen; Concerns About SaaS Have Stayed The Same

 The spreadsheet associated with this figure contains additional data.

3-1 | Improved agility and speed of implementation and feature delivery still top benefits of SaaS

Percentage of firms that rated the following benefits as important in their firm's decision to use SaaS
(4 or 5 on a scale from 1 [not at all a factor] to 5 [very important factor])



Base: North American and European software decision-makers who are planning to use SaaS in firms with 20+ employees

Source: Forrsights Software Survey, Q4 2013; Forrsights Software Survey, Q4 2011

*No 2011 data

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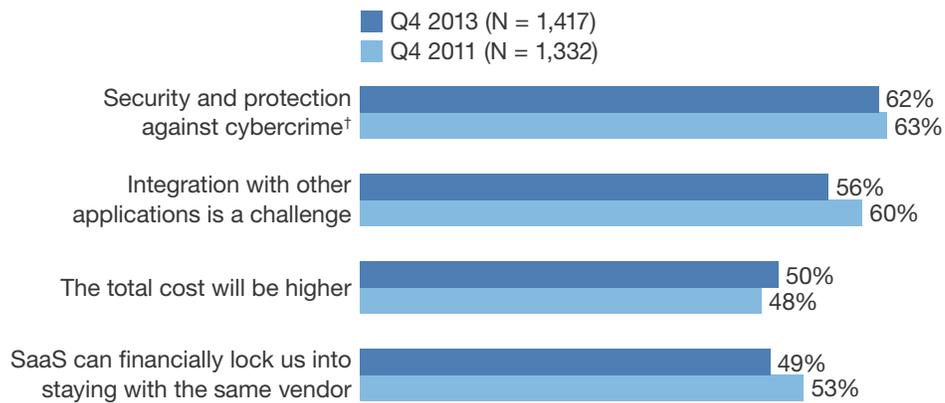
Source: Forrester Research, Inc.

Figure 3 Perceived SaaS Benefits Have Risen; Concerns About SaaS Have Stayed The Same (Cont.)

 The spreadsheet associated with this figure contains additional data.

3-2 | Security remains the top concern for SaaS

“How concerned is your firm with the following potential issues around using software-as-a-service (SaaS)?”
(4 or 5 on a scale of 1 [not at all concerned] to 5 [very concerned])



Base: North American and European software decision-makers in firms with 20+ employees who use or are planning to use SaaS

Source: Forrsights Software Survey, Q4 2013; Forrsights Software Survey, Q4 2011

†In Q4 2011, concern was “security and privacy issues are difficult to control.”

Note: Only top four answer choices are shown.

Key Forces Driving The Public Cloud Applications Market

Using this framework of greed factors and fear factors regarding SaaS, we have evaluated 25 major application categories and more than 100 specialized application categories to assess where SaaS has been gaining adoption in general, where it has done so as a complement to existing systems, where it has done so as replacements for these systems, and how these patterns will change in the future.⁹ The key forces driving this market are as follows (see Figure 4):

- **SaaS as a complement to existing apps will dominate through 2015.** In every category of applications, there are older applications that have provided the core transactional software and newer applications that complement these core applications (see Figure 5). From 2008 through 2013, revenues for the SaaS products that complement existing apps have been higher than revenues for SaaS replacement products. That pattern will hold through 2015.
- **SaaS as replacement will move beyond HRMS, CRM, and ePurchasing after 2016.** Salesforce.com has become widely acceptable as a replacement for on-premises CRM systems from Oracle and SAP. Workday is having the same impact on human resource management systems (HRMSes). Ariba, Basware, Coupa, Perfect Commerce, Proactis, SciQuest, and Verian (among others) are having success in selling eProcurement software as replacements for licensed (but often undeployed) on-premises software. Moreover, our Forrsights Software Survey, Q4 2013, saw a jump in the proportion of firms that said that they had replaced an existing system with an SaaS alternative (see Figure 6).¹⁰ By 2016, we project that spending on SaaS as a replacement will exceed spending on SaaS as a complement.
- **SaaS adoption will be greater in some application categories than in others.** SaaS adoption for business intelligence and vertical industry apps has been and will remain relatively low, due to worries about the security and performance of core operational transactions with SaaS. On the other hand, SaaS adoption for security applications and in CRM has generally been high, because considerations of rapid iteration of the apps to changing requirements, mobile access, and ease of use outweigh the lesser concerns about exposure of corporate data or reduced operational performance. That's why we expect that the share of total application revenues captured by SaaS subscription revenues will exceed or come close to a third for security and other middleware apps and for enterprise process apps, while SaaS subscription revenues in business intelligence and in vertically specific apps will remain below these levels through 2020.
- **Security considerations will be an inhibitor of SaaS adoption in Europe and Asia.** Even before the news hit of National Security Agency (NSA) monitoring of wireless and Internet traffic, European firms were somewhat more concerned about "compliance with local laws and concerns about access by foreign agencies" than US firms, and those European concerns have increased since our survey in Q4 2013. Private businesses in authoritarian countries like China, Russia, and Vietnam are nervous about using SaaS in these countries, due to the potential for government agencies to more easily access company data residing on the servers of their SaaS

providers. For these reasons, we estimate that more two-thirds of SaaS revenues currently come from US clients, with European and Asian clients being more cautious about how much and where they use SaaS.

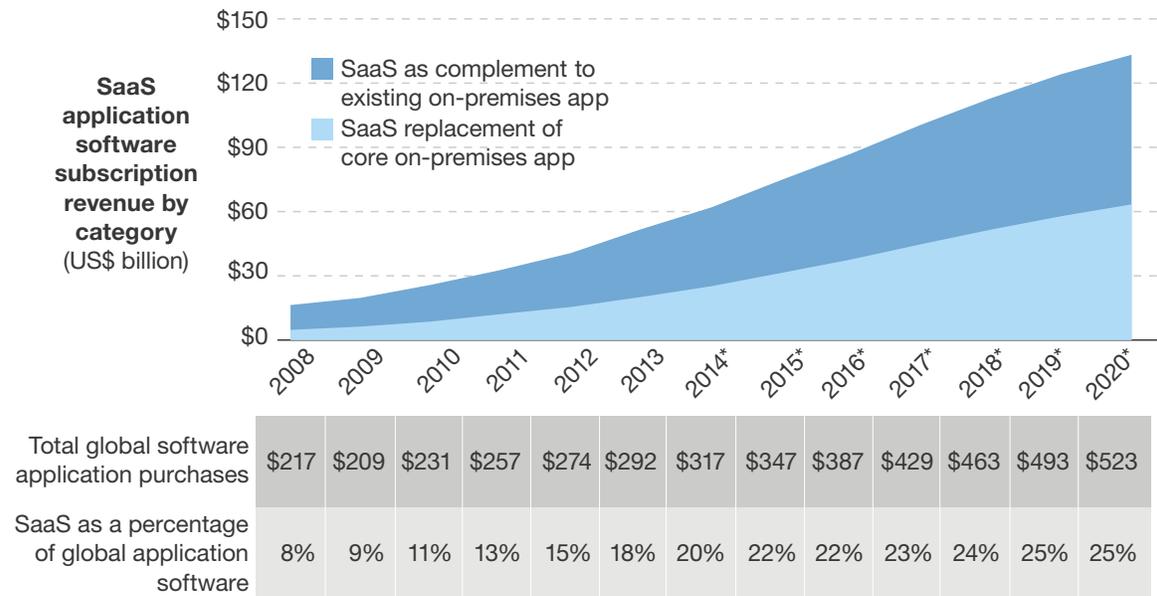
■ **Performance issues slow SaaS adoption in Africa, south Asia, and other emerging markets.**

SaaS requires highly reliable data networks to have the same level of performance as on-premises applications do. Countries in Africa, south Asia, and parts of Southeast Asia and Latin America lack these kinds of data networks, so SaaS adoption in these regions will lag behind SaaS adoption in the US and other developed countries.

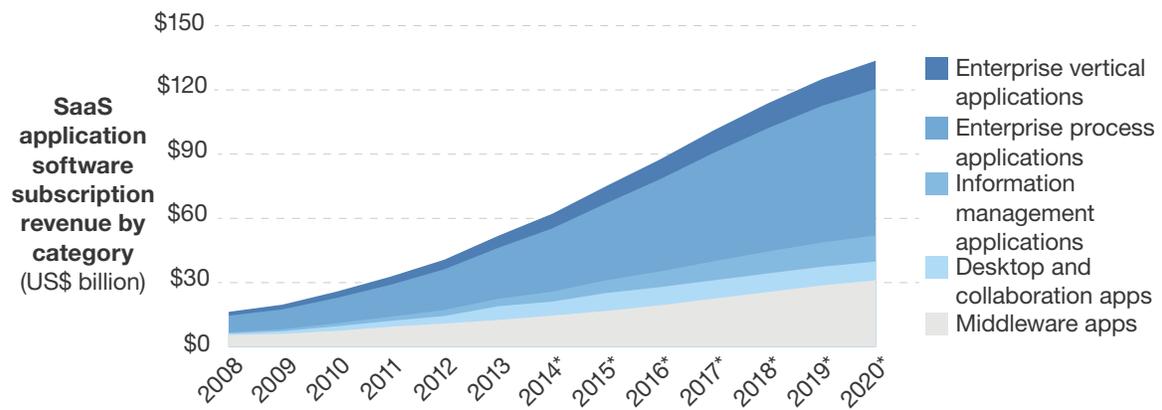
Figure 4 Cloud Applications Or Software-As-A-Service Market Sizing Results

 The spreadsheet associated with this figure contains additional data.

4-1 | Global cloud applications or SaaS market by replacement of and complement to existing applications



4-2 | Global cloud applications or SaaS market by major category of software



*Forrester forecast

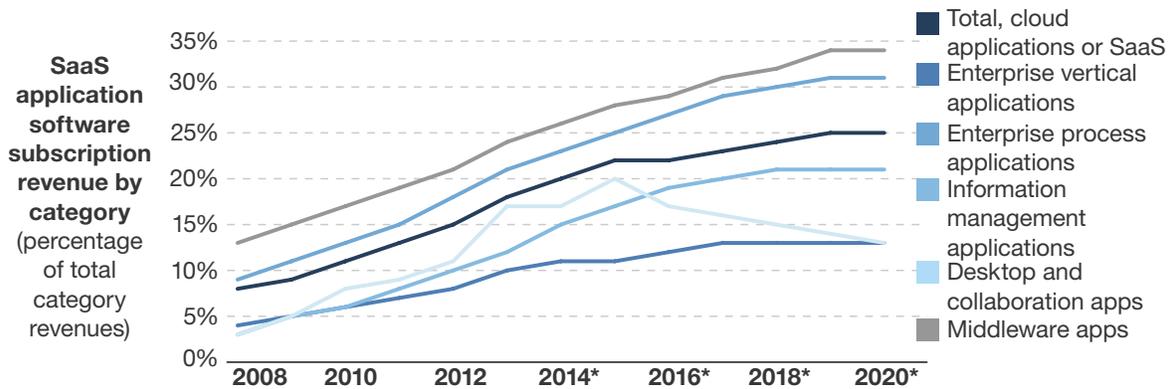
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Source: Forrester Research, Inc.

Figure 4 Cloud Applications Or Software-As-A-Service Market Sizing Results (Cont.)

 The spreadsheet associated with this figure contains additional data.

4-3 | Cloud applications or SaaS market shares will rise to more than 30% in some software categories



4-4 | Growth rates for global SaaS market by major category of software

SaaS application software subscription revenue by category
(Percentage change from prior year)

	'08	'09	'10	'11	'12	'13	'14*	'15*	'16*	'17*	'18*	'19*	'20*
Middleware apps	N/A	10%	23%	26%	16%	15%	16%	15%	16%	16%	14%	12%	8%
Desktop and collaboration apps	N/A	82%	72%	28%	29%	84%	1%	28%	1%	1%	1%	1%	0%
Information management applications	N/A	63%	52%	41%	43%	23%	32%	28%	23%	21%	15%	11%	7%
Enterprise process applications	N/A	20%	27%	26%	27%	25%	24%	22%	20%	18%	14%	11%	8%
Enterprise vertical applications	N/A	21%	35%	28%	19%	26%	21%	17%	16%	14%	10%	8%	6%
Total, cloud apps or SaaS	N/A	21%	31%	27%	24%	27%	20%	21%	17%	16%	12%	10%	7%

Crossover year
Hypergrowth period

*Forrester forecast

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Source: Forrester Research, Inc.

Figure 5 Complementary SaaS Apps Versus Replacement SaaS Apps

 The spreadsheet associated with this figure contains additional data.

Application category	Existing apps to be replaced by SaaS	Complementary SaaS apps
Human resource management	Core human resource management and payroll systems	Talent management, recruitment management, learning management
Financial management	General ledger, accounts payable, accounts receivable	Expense management, budgeting and planning
ePurchasing	eProcurement, eSourcing, eInvoicing	Spend analysis, supplier risk and performance management, services procurement, contract life-cycle management
CRM	Sales force automation, billing, configuration, pricing and quoting, customer service and support management	Marketing automation, revenue and pricing management, field service management, enterprise marketing management, social media platforms
Business intelligence	OLAP, reporting, dashboards, business performance analytics	Predictive analytics, location-based analytics, advanced visualization, streaming analytics, process analytics
SCM	Warehouse management, vendor-managed inventory, supply chain planning	Advanced inventory optimization, advanced supply chain planning and scheduling, demand forecasting and planning
Desktop and collaboration	Word/Excel/Powerpoint, email, messaging, and calendaring	Videoconferencing, social media, mobile access, secure collaboration

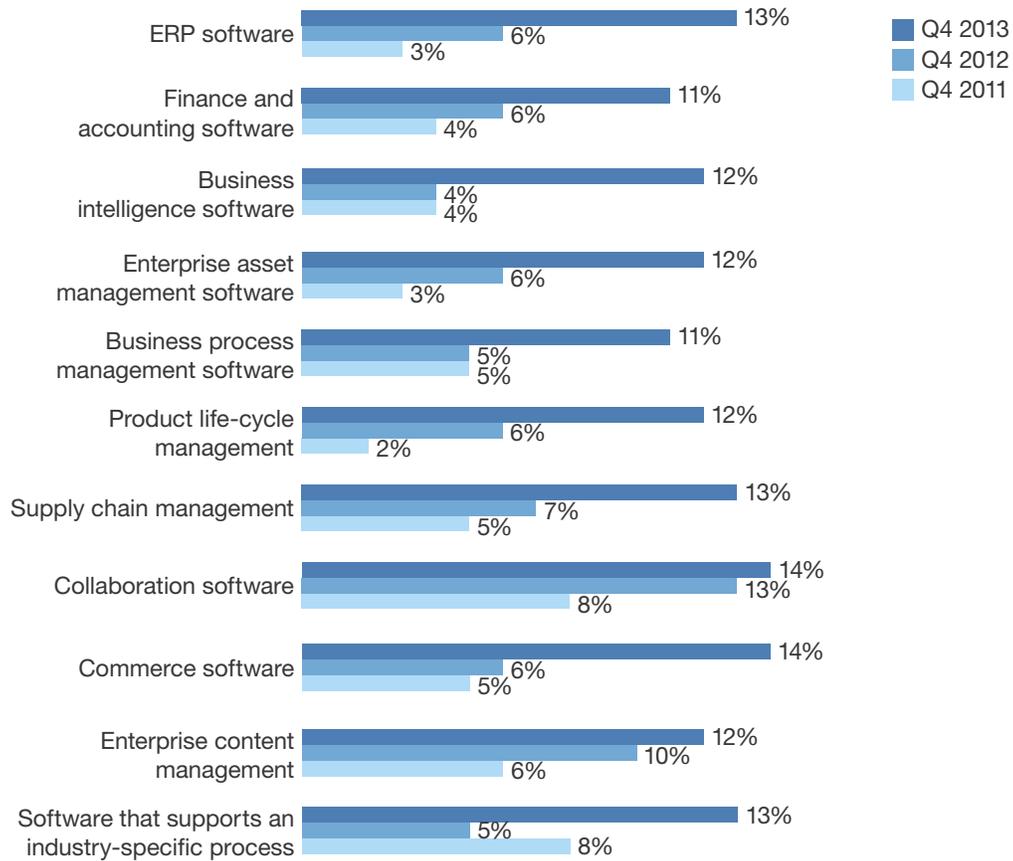
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Source: Forrester Research, Inc.

Figure 6 Cloud As A Replacement Application Is Rising

 The spreadsheet associated with this figure contains additional data.

Percentage of firms reporting that they had already replaced most/all of their existing applications with SaaS



Base: North American and European software decision-makers who have implemented the specified software in firms with 20+ employees

Source: Forrsights Software Survey, Q4 2013; Forrsights Software Survey, Q4 2012; Forrsights Software Survey, Q4 2011

Note: Only answer choices that remained exactly the same in 2011, 2012, and 2013 are shown.

PUBLIC CLOUD PLATFORMS EMPOWER DEVELOPERS

The outlook for the public cloud platform market is positive as the reported and modeled revenue growth patterns for the leading cloud platform providers suggest strong growth for the market through the forecast period, with a slowing pace toward the end.

Market Dynamics: Developer Empowerment Pushes Platforms Into The Mainstream

Forrester's Business Technographics® surveys have shown strong annual growth in enterprise adoption of public cloud platforms with clearly high expected growth in outlying years. The breadth of applications being deployed on these hosted services grows annually as well, and there are close correlations between new areas of application investment by enterprises and their deployment onto cloud platforms.

- **Key growth market capabilities.** Cloud platforms have proven to be ideal locations to deploy web, mobile, and big data applications. While their base capabilities are well suited to these uses, they are ensuring that they remain preferred platforms by offering unique services for these markets. The leading cloud platforms offer mobile back-ends-as-a-service, managed NoSQL and MapReduce environments and content delivery networks, as well as DNS and caching services.
- **Broad developer appeal and empowerment.** IaaS cloud platforms initially required both deep programming and operational skills to deploy and manage your applications. Today, developers with nearly any skill set can find a cloud platform that matches their capabilities and experience level. The developer segment we call "rapid developers" can leverage clouds with fully visual development and deployment with no environment configuration needed. The segment we call "coders" can deploy Java applications straight to the cloud from Visual Studio or Eclipse. And the "DevOps pro" segment can deeply configure virtual resources to achieve specific performance, scale, and availability requirements where needed.¹¹

Key Forces Driving The Public Cloud Platform Market

While cloud platforms started out as great places for developer experimentation, they have quickly grown into critical production environments for systems of engagement, batch applications, and backup and disaster recovery.¹² Their unique economic models and abstracted and automated services make them well suited for a growing portfolio of agile modern applications. The key drivers of their growth in the market are (see Figure 7):

- **Maturity and breadth of applicability.** Cloud platforms are increasingly delivering higher availability, performance, and security, making them viable candidates for an increasing number of production applications. Multiple cloud platforms including AWS, Microsoft Windows Azure, Rackspace Cloud, and VMware Hybrid Cloud Service now have certifications or similar proof points supporting their implementation of operational and security procedures for handling

credit card, healthcare, financial, and US government data. And at least the first three vendors all have public reference customers that are deploying applications with high service-level agreements in performance and security.

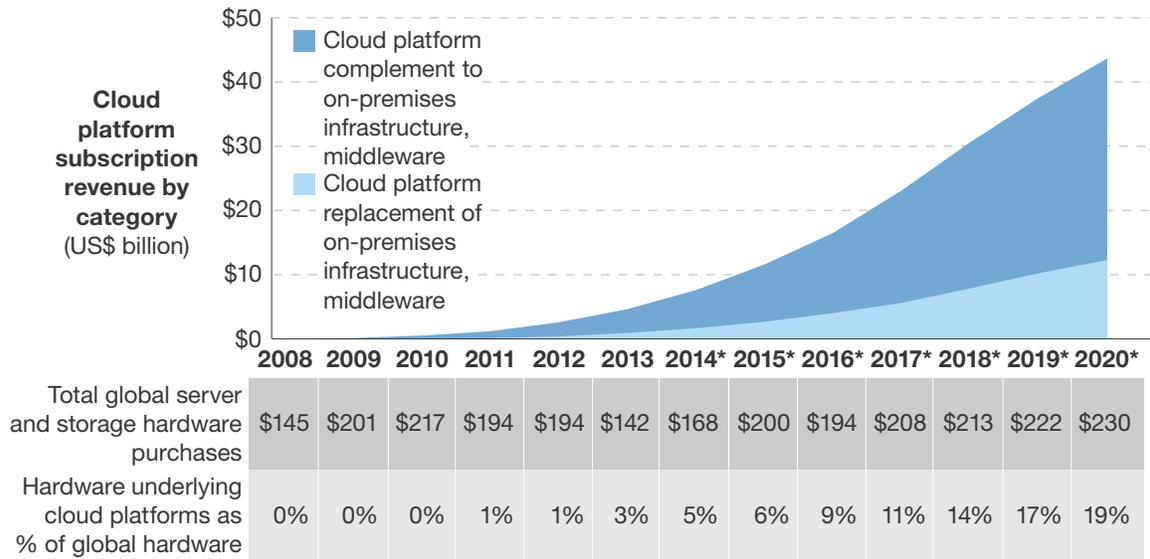
- **Commercial ecosystem support and growth.** As cloud platforms mature, they drive an ecosystem of third-party applications, service providers, integrators, and resellers that support the platform in order to engage and profit from the customers frequenting the platforms. AWS, for example, has an ecosystem including more than 1,500 independent software vendors (ISVs), management and monitoring tools, integrators, and solution providers, including several born on the cloud that have gained millions in revenue purely from the AWS customer base.
- **Geographic expansion.** Despite the common belief that the cloud is everywhere at once, we all know location matters, and cloud services are expanding rapidly to provide local points of presence in the major geographies. AWS and Microsoft now have data center footprints for their cloud platforms in all major continents and are rapidly adding facilities in specific major market countries where the demand justifies such moves. Both firms have recently opened cloud data centers in China, Australia, and South America.
- **Vertical market specificity.** While the promise of a healthcare-specific cloud remains an alluring dream, the major cloud platforms have already taken steps to address specific vertical market needs both within their standard offerings and by providing unique implementations where necessary. The leading cloud providers have now earned compliance certifications for the financial services, healthcare, US federal government, credit card processing, and motion picture industries. AWS has gone so far as to establish a government-only cloud data center for the US federal community.

All this growth and maturity shows that public cloud platforms should now be considered by CIOs as a full-fledged option within their deployment portfolio. While these environments may not be broadly applicable, they are proving not only viable but also ideal for applications with elastic or transient use patterns.¹³

Figure 7 Cloud Platform Sizing Results (Infrastructure-As-A-Service And Platform-As-A-Service)

 The spreadsheet associated with this figure contains additional data.

7-1 | Global cloud platform purchases



7-2 | Global cloud platform purchase growth assumptions

Assumed growth rates	2008-2010			Crossover year		Hypergrowth period							
	2008	2009	2010	2011	2012	2013	2014*	2015*	2016*	2017*	2018*	2019*	2020*
Cloud platform replacement of on-premises infrastructure, middleware	N/A	N/A	733%	355%	226%	138%	80%	60%	50%	40%	40%	30%	20%
Cloud platform complement to on-premises infrastructure, middleware	N/A	227%	223%	115%	105%	68%	60%	50%	40%	40%	30%	20%	15%

Forward-growth assumptions:
Only 25% of developers are using a cloud platform today; surveys show high satisfaction and a shift to cloud as standard for systems of engagement workloads. It should rise to 50% of developers by 2020.

*Forrester forecast

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Source: Forrester Research, Inc.

THREE CLOUD BUSINESS SERVICES STAND OUT

The business services segment is much smaller than the cloud applications and cloud platforms segments. This fact is puzzling, given the great excitement among application developers about the prospect of picking and choosing among best-of-breed application services easily accessible via application programming interfaces (APIs) and running in public clouds. Our forecast strongly suggests that only a small number of application- and platform-independent services will generate substantial revenues as standalone markets by 2020. Two factors will blunt the potential of this “cloud business services” segment:

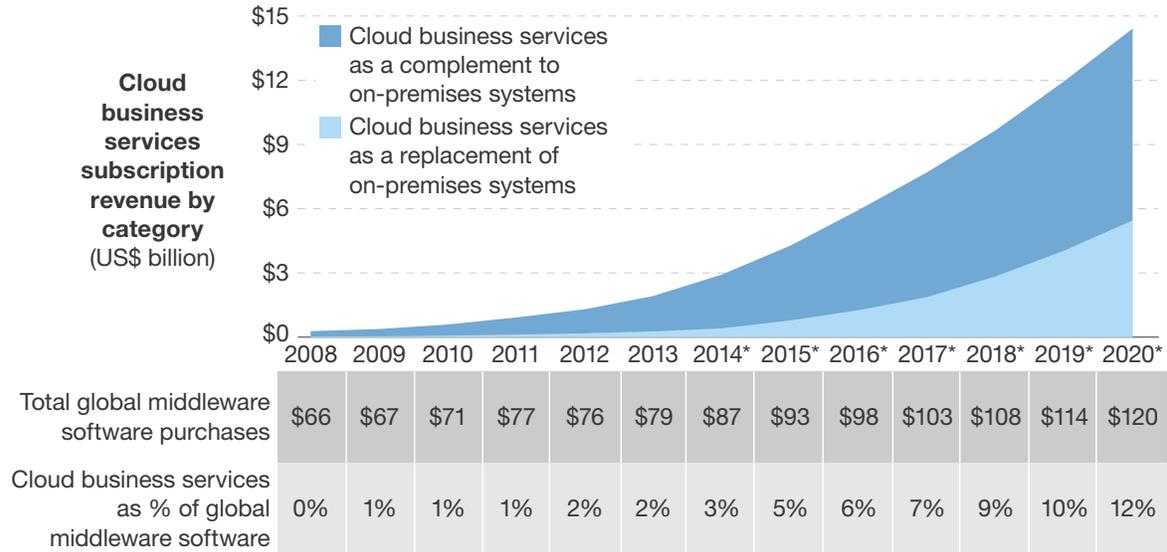
- **Many developers will adopt applications, not individual services.** Rather than build up a commerce solution from discrete catalog, payment, billing, and other services, developers will use a suite or SaaS offerings that integrate those services for them. Why? Time-to-market will trump the potential benefits of using best-of-breed components.
- **Many developers will choose services that platform vendors offer.** AWS, Google, and Microsoft’s platforms now contain dozens of discrete services with many more on the way. The resulting platform suites will continue to attract a substantial portion of the spending that might otherwise go to independent service providers.

We expected to find emerging but robust markets for a dozen or so cloud services, but we found only three: database, file management, and integration. Each of these is a distinct market independent from SaaS and cloud platform services. We rounded out our forecast with a “miscellaneous” category to capture revenue from billing, disaster recovery, testing, and desktop-as-a-service, each of which is a nascent market facing uncertain future growth (see Figure 8).

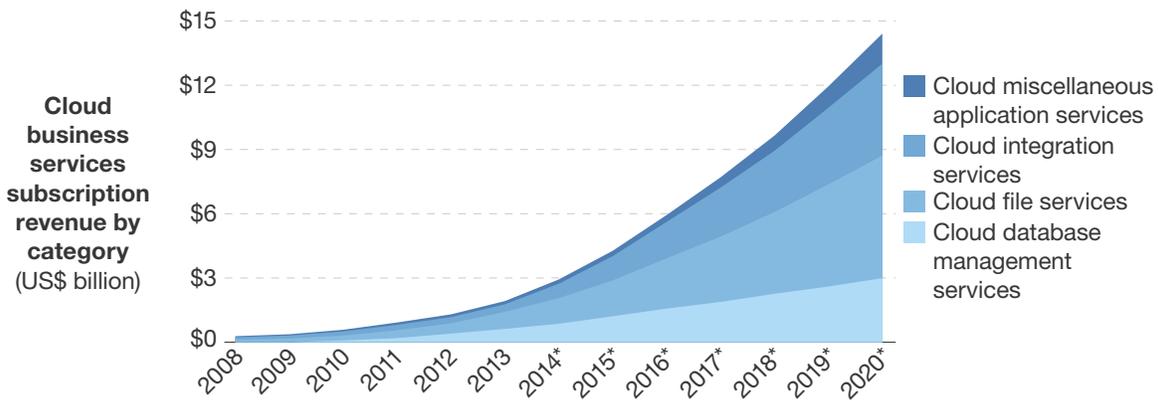
Figure 8 Cloud Business Services Market Sizing Results

 The spreadsheet associated with this figure contains additional data.

8-1 | Global cloud business services purchases



8-2 | Global cloud business services by category



*Forrester forecast

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Source: Forrester Research, Inc.

Key Forces Driving The Public Cloud Business Services Market

Each of these four cloud business service segments has distinct growth dynamics:

- **Easy technology access for new apps will fuel cloud database growth.** New applications, some of which address brand-new business needs, are driving the database-as-a-service segment.¹⁴ Cloud database services are attractive for relational database and data warehousing projects that aren't worth the cost and hassle of using on-premises enterprise databases. And developers working with new sources of data like clickstreams and sensor readings tend to go to NoSQL cloud databases first for convenience and elastic scaling.

Starting in 2014, however, we expect to see a steady rise in use of database-as-a-service that cuts into usage of on-premises databases. This deepening cannibalization of on-premises database revenues is inevitable as both comfort with cloud databases and their advantages for time-to-market and scaling expand. We don't ever expect on-premises databases to go away, but we do expect cloud alternatives to make a sizable dent in their future market potential. Overall, cloud database management services will rise from \$0.6 billion in 2013 to \$3 billion in 2020.

- **Cloud file management will grow along with content volumes.** The amount of content — documents, photos, videos, posts, profiles, and digital conversations — in the world doubles about every two years — and most of it is stored in files.¹⁵ Box, Dropbox, Google Drive, Microsoft OneDrive, and similar file storage, sharing, and sync services will grow along with these information volumes.¹⁶ Dropbox, the biggest of these services, is already generating more than \$200 million per year, largely from sales to individuals. As enterprises begin to use these services in earnest (after a slow start), we expect zooming growth in revenues from cloud file services, from \$0.8 billion in 2013 to \$5.7 billion by 2020.

- **Cloud integration services' growth is hooked to SaaS adoption.** No application is an island. Enterprises' initial adoption of SaaS fueled demand for cloud-based integration services; continued SaaS uptake cements strong growth rates for this segment. Cloud-based integration products are more attractive than conventional integration solutions for these scenarios because they themselves offer the self-service convenience and scaling of cloud services. Cloud-based integration services also incorporate features that simplify creation of many integration applications, compared with older integration solutions, as well as on-premises/cloud hybrid applications.¹⁷ As a result, cloud integration services will increase from \$0.4 billion in 2013 to \$4.3 billion in 2020.

- **Other cloud business services face uncertain futures as standalone markets.** In our research, we evaluated billing-, backup/disaster recovery-, testing-, and desktop-as-a-service revenues. Each of these markets is nascent and uncertain. Cloud billing services are likely to be absorbed into broader commerce solutions — and become part of the SaaS segment. Testing is a use case that contributes to the revenues flowing to public cloud platforms. Vendors like Skytap

are making testing/QA-as-a-service an SaaS category. Backup/disaster recovery-as-a-service is nascent and may disappear entirely if customers begin using cloud-platform reliability features like availability zones for disaster recovery purposes. Lastly, Microsoft's Windows licensing prices and policies prevent desktop-as-a-service from taking off. Collectively, these miscellaneous cloud business services will expand from \$0.2 billion in 2013 to \$1.4 billion in 2020.

RECOMMENDATIONS

SHIFT TO STRATEGIC ADOPTION OF CLOUD FOR CUSTOMER INNOVATION

Most cloud adoptions are isolated application projects and largely tactical. If your organization's cloud journey now includes more than a handful of tactical projects, it is time to pull those activities into a coherent strategy that generates software modules, talents, and technology governance applicable to many projects for many years. Your strategy should have a focus; the most obvious candidates will raise business responsiveness to customers and customer-facing partners.

- **Use public cloud projects for customer-facing innovations.** Most organizations adopt cloud services to raise their business responsiveness. As the age of the customer unfolds, the pressure to be ever more responsive with both large and small customer innovations will be unrelenting.¹⁸ Use cloud services to trial new technologies (e.g., video delivery to customers) and new software ideas (e.g., A/B application testing with customers) that dramatically raise business responsiveness and innovation.
- **Use cloud-based partner services to enrich your customer-facing applications.** Adopt horizontal functions like mapping, community, and games as well as industry-specific applications in finance, travel, healthcare, and fitness within your own applications. Many apps that raise your own applications' relevance to customers are now available via APIs.
- **Use public cloud services to modernize for greater responsiveness.** Many SaaS adoptions are a step toward modern alternatives to aging, monolithic, hard-to-customize applications — either packaged or custom. Customer-facing applications put high pressure on inflexible ordering, inventory, sales, and pricing applications. The modernization journey will unfold over many years, but gains in business flexibility and perhaps cost of ownership can be had immediately given the right product selection.
- **Use public clouds to free back-office capital for customer-facing projects.** Many custom applications can be run less expensively on public cloud infrastructure than in conventional data centers. The same is true of some data sets — public cloud is sometimes the low-cost option. Public clouds are also a way to reclassify systems investments as operating expenses, freeing up capital expenditures for new software-powered channels, products, and service offerings.

- **Use public clouds to meet nonfunctional requirements.** Public cloud platforms are a natural for mobile projects because of their elastic scale and, in many cases, broad geographic presence. Elastic scale accommodates the unpredictable capacity demands of mobile apps. Broad geographic presence will help smooth out customer response times. And public cloud security provisions and practices are superior to those of many private data centers, meaning adopting public clouds can improve security.

A strategic cloud adoption strategy will also demand that your organization select a common platform for application integration. The numbers say that enterprises will soon have large portfolios of SaaS services, none of which will be an island.

WHAT IT MEANS

CLOUD WILL NEVER WIPE OUT ON-PREMISES

Cloud services and software bring high degrees of automation, standardization, and autonomy that empower the business to work faster, function more flexibly, and adopt new capabilities more readily. But that doesn't mean everything will move to the cloud. While many applications in our portfolios can be standardized and leverage standard infrastructures, there will remain two sets of applications that won't fit a cloud model:

1. **Steady-state business-unique applications.** All companies have a few of these critical applications that our unique business models define and can't take advantage of cloud economics. These may be unique logistics, financial, revenue recognition, or capital management solutions. Whatever form they take, their needs demand consistent, capitalized investments that cloud services may never fulfill. This doesn't mean that we won't surround these core applications with collections of cloud services — we certainly will. But moving the core is unlikely for many enterprises.
2. **Legacy applications where the return on investment of cloud migration doesn't compute.** Some applications that fulfill an important function for our business came to our company in a different era and run on a different class of system. We don't need to modernize or change these applications. Even if we wanted to, the cost and expertise necessary to do so would not justify such an investment. These applications certainly aren't moving to the cloud anytime soon. But they might be candidates for other outsourcing options.

Still, inertia is difficult to overcome in the enterprise market, and there remain real and legitimate concerns about the security and performance of cloud solutions in certain parts of the world. There are cultural, psychological, and financial accounting barriers born in a different age that will take decades to change.

SUPPLEMENTAL MATERIAL

Methodology

In our last cloud forecast, we segmented the market into 12 segments: four for public clouds, four for virtual private clouds, and four for private clouds. In this report, we are concentrating on just three public cloud markets: 1) cloud platforms for IaaS and PaaS; 2) cloud services for database management, file services, integration services, and application services; and 3) cloud applications of SaaS. We have narrowed our focus for three reasons:

- **Virtual private is simply a configuration of public clouds.** While vendors had distinct offerings labeled as virtual private clouds in the early days of cloud platforms, this secure configuration has become simply that — a configuration option. Nearly every IaaS platform can be set up in a virtual private format, and in many, it has become the default configuration.
- **The lines between IaaS and PaaS are now blurred.** As noted in several Forrester reports, there are no longer clear distinctions between IaaS and PaaS.¹⁹ Vendors in both historical spaces are now blending traditional application and infrastructure abstractions within their offerings. For example, AWS offers a series of services, including its RDS database offerings and Amazon Redshift data warehouse, which abstract the application configuration, management, and scaling so that the developer can simply consume the capability. EngineYard, Heroku, and many other traditional PaaS solutions now expose hooks to the underlying IaaS platforms they run on. And application developers are mixing these environments within single deployments.
- **We separated SaaS middleware from SaaS applications and called them “cloud services.”** There are clear distinctions in the buyer and the use case for finished SaaS applications and middleware components that are used to compose finished applications. Developers are the target consumer of SaaS middleware solutions and use them to create hybrid applications that integrate cloud and non-cloud elements. They also leverage SaaS middleware services in much the same way that web services are leveraged to compose business processes or services. SaaS applications typically are ready for consumption by end users (employees or consumers) who do not need to develop or integrate other services to use the product. As such, the buyer tends to be the direct consumer or appropriate department within a company.

Forrsights Software Survey, Q4 2013, was fielded to 2,074 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the US from small and medium-size business (SMB) and enterprise companies with two or more employees. This survey is part of Forrester's Forrsights for Business Technology and was fielded during October 2013 and November 2013. ResearchNow fielded this survey online on behalf of Forrester. Survey respondent incentives include points redeemable for gift certificates. We have provided exact sample sizes in this report on a question-by-question basis.

Each calendar year, Forrester's Forrsights for Business Technology fields business-to-business technology studies in more than 17 countries spanning North America, Latin America, Europe, and developed and emerging Asia. For quality control, we carefully screen respondents according to job title and function. Forrester's Forrsights for Business Technology ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of IT products and services. Additionally, we set quotas for company size (number of employees) and industry as a means of controlling the data distribution and establishing alignment with IT spend calculated by Forrester analysts. Forrsights uses only superior data sources and advanced data-cleaning techniques to ensure the highest data quality.

ENDNOTES

- ¹ Geoffrey Moore coined the expression "crossing the chasm" to denote when a product began to achieve a critical mass of adoption in his book of the same name. Source: Geoffrey Moore, *Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers*, Harperbusiness, 1999.
- ² We published our first estimates for the global cloud market in April 2011. See the April 21, 2011, "[Sizing The Cloud](#)" report.
- ³ We discussed the convergence of IaaS and PaaS into cloud platforms in the Forrester Wave™ on this product. See the June 14, 2013, "[The Forrester Wave™: Enterprise Public Cloud Platforms, Q2 2013](#)" report.
- ⁴ Hypergrowth is the period of growth for a product when it achieves 10% of its ultimate saturation level and grows at rates in excess of 25% per year.
- ⁵ Some of the leading SaaS vendors that are public and report revenues include Athenahealth, Bazaarvoice, BroadSoft, Concur Technologies, Constant Contact, Cornerstone OnDemand, Dealertrack Technologies, Demandware, E2open, Fleetmatics Group, Intralinks, Jive Software, LifeLock, LinkedIn, LivePerson, LogMeIn, Marin Software, Marketo, Medidata Solutions, NetSuite, Proofpoint, Qualys, Rally Software, Responsys (prior to its acquisition by Oracle), salesforce.com, SciQuest, ServiceNow, The Ultimate Software Group, Vocus, and Workday. In addition, Adobe, AutoDesk, Infor, Oracle, and SAP, among others, now report their SaaS subscription revenues (at least in their SEC filings), while Microsoft and IBM have provided public information on their SaaS subscription revenues. We capture not only their actual revenues as they occur for the publicly listed vendors but also their expected revenues for the current and next fiscal year, as summarized in the consensus forecast of equity analysts for these companies' projected revenues.
- ⁶ "Public cloud platforms take several forms, including basic infrastructure-as-a-service platforms as well as either full or partial platform services and tools." For more information, see the June 14, 2013, "[The Forrester Wave™: Enterprise Public Cloud Platforms, Q2 2013](#)" report.
- ⁷ The rise of business-only purchases of technology and business-initiated purchases is very much tied to SaaS and the ability of businesses to purchase SaaS applications with limited or delayed involvement of the CIO's department. See the February 10, 2014, "[Understanding Shifting Technology Acquisition Patterns](#)" report.

- ⁸ In 2011, we used this framework of SaaS positives and negatives to identify the segments of the software market in which SaaS would become the dominant deployment model and other segments where SaaS would have more limited presence. See the January 12, 2011, “[Which Software Markets Will SaaS Disrupt?](#)” report.
- ⁹ The SaaS software categories we used for our sizing purposes overlap with, but are more granular and different from, those used in Forrester’s Tech Radar™ for the SaaS market. See the January 7, 2014, “[TechRadar™: Software-As-A-Service, Q1 2014](#)” report.
- ¹⁰ While the direction of the increase in the adoption of SaaS as a replacement is clear, there are reasons to doubt that the magnitude of the shift is as great as the data implied. For example, the 2013 data showed a consistent 12% to 15% range of respondents who said that they had replaced an existing app with an SaaS app, while prior surveys had showed a much wider range of adoption rates by product.
- ¹¹ Forrester first outlined the three segments of cloud developers in a report. See the June 14, 2013, “[Forrester Wave™: Enterprise Public Cloud Platforms, Q2 2013](#)” report.
- ¹² Systems of engagement are technologies that interface directly with users and are distinct from systems of record that process or store transactions and data. See the February 13, 2012, “[Mobile Is The New Face Of Engagement](#)” report.
- ¹³ For more information, see the May 2, 2012, “[Achieve Cloud Economics For Operations And Services](#)” report.
- ¹⁴ Forrester has evaluated the key vendors in this cloud database market in a Forrester Wave. See the November 8, 2012, “[The Forrester Wave™: Enterprise Cloud Databases, Q4 2012](#)” report.
- ¹⁵ The authoritative “Digital Universe” study sponsored by EMC concluded in its latest edition (dated 2011) that information is more than doubling in volume every two years, and that by 2021, we’ll have 75 times more files than in 2011. Source: EMC (<http://www.emc.com/leadership/programs/digital-universe.htm>).
- ¹⁶ Forrester has evaluated the key vendors in the cloud file management market in a Forrester Wave. See the July 10, 2013, “[The Forrester Wave™: File Sync And Share Platforms, Q3 2013](#)” report.
- ¹⁷ Forrester has evaluated the key vendors in the cloud-based integration market in a Forrester Wave. See the February 14, 2014, “[The Forrester Wave™: Hybrid² Integration, Q1 2014](#)” report.
- ¹⁸ “We have begun a 20-year business cycle in which the most successful enterprises will reinvent themselves to systematically understand and serve increasingly powerful customers.” Forrester calls this cycle “the age of the customer.” See the October 10, 2013, “[Technology Management In The Age Of The Customer](#)” report.
- ¹⁹ For more information, see the November 19, 2012, “[Cloud Keys An Era Of New IT Responsiveness And Efficiency](#)” report.

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