FORRESTER®

For: CIOs

The Forrester Wave™: Enterprise Public Cloud Platforms, Q4 2014

by John R. Rymer and James Staten, December 29,2014

KEY TAKEAWAYS

Amazon Web Services, Microsoft, And Salesforce Are The Leaders

Across all three developer types, Microsoft and Salesforce scored well and continue to mature. AWS retained a solid advantage for the DevOps and coder segments -- and as an overall choice for CIOs. This result reflects the broad strategies of these three vendors; each of which is investing to satisfy the needs of a mix of developers.

Public Cloud Platforms Address Three Types Of Developers

CIOs will find that one cloud platform won't suit the needs of all developers. Some platforms empower "coders" that want to program without configuring infrastructure. Others give "DevOps pros" deep infrastructure configurability. Still others abstract away coding as well as infrastructure configuration for "rapid developers."

A Cloud Platform's Ecosystem Can Be As Important As Its Functionality

Several of the vendors have added significant new application services and managed offerings, raising their enterprise appeal and suitability for more complex and compelling applications. But a healthy roster of third-party services to extend and enhance the platform is just as important as the built-in platform features.

The Forrester Wave™: Enterprise Public Cloud Platforms, Q4 2014

How The 16 Providers That Matter Most Stack Up

by John R. Rymer and James Staten
with Peter Burris, Christopher Mines, and Dominique Whittaker

WHY READ THIS REPORT

Public cloud application platforms unlock the flexibility, developer-productivity, and economic advantages of cloud computing. Business technology and technology management professionals use a wide variety of public cloud platforms, and this Forrester Wave™ evaluates the leading providers of these choices. Public cloud platforms take several forms, including those providing basic infrastructure-as-a-service up through those providing full or partial platform services and tools. Each of these types of platforms is best suited to a distinct type of application development and delivery (AD&D) pro within your ranks. In Forrester's 19-criteria evaluation of public cloud vendors, we identified the 16 most significant public cloud platform providers for large enterprises — Acquia, Amazon Web Services (AWS), CenturyLink, Cordys, Dimension Data, Engine Yard, GoGrid, Google, IBM, Mendix, Microsoft, MIOsoft, OutSystems, Rackspace, Salesforce, and Verizon. This report details for CIOs how well each vendor fulfills our criteria and is suitable for a range of developers within your organization. Our goal: Help CIOs select public cloud platform partners that deliver the best balance of agility and enterprise fit.

Table Of Contents

Notes & Resources

During July and August 2014, Forrester gathered functional, strategy, and market presence information from each of the 14 participating vendors. We interviewed two reference customers for each vendor, and conducted structured product demonstrations with Acquia, CenturyLink, Dimension Data, Google, IBM, Mendix, Microsoft, OutSystems, and Salesforce.

Related Research Documents

The Forrester Wave™: Public Cloud Platform Service Providers' Security, Q4 2014
November 17, 2014

The Forrester Wave™: Enterprise Public Cloud Platforms, Q2 2013
June 14, 2013

PLATFORMS ARE CRUCIAL FOR ENTERPRISE ADOPTION OF PUBLIC CLOUDS

In increasing numbers, enterprises are adding public clouds to their technology portfolios. Adoption of public clouds by enterprises will cross over the 36% mark this year.[1]

As enterprises move to public clouds, selecting the right public cloud platform is a crucial decision. Forrester defines public cloud platforms as:

> *A publicly accessible application-hosting platform for customer-created executables. The service must be a standardized IT service offering, at minimum an application runtime platform and/or virtual infrastructure, delivered in a pay-per-use, self-service way.*

Within the CIO's domain, public cloud platforms empower AD&D pros with frameworks, tools, and consoles that speed creation, deployment, and ongoing updates. Select the right platform and AD&D pros will be highly productive.

Public Cloud Platforms Are Evolving To Meet Enterprise Needs

The popular wisdom that cloud computing comes in three flavors — software-as-a-service (SaaS), infrastructure-as-a-service (IaaS), and platform-as-a-service (PaaS) — no longer describes reality. We find that vendors are blurring the lines between the three cloud-computing categories as they seek to create public cloud platforms that can satisfy the needs of enterprises and widen their appeal to developers (see Figure 1). The four trends we see are:

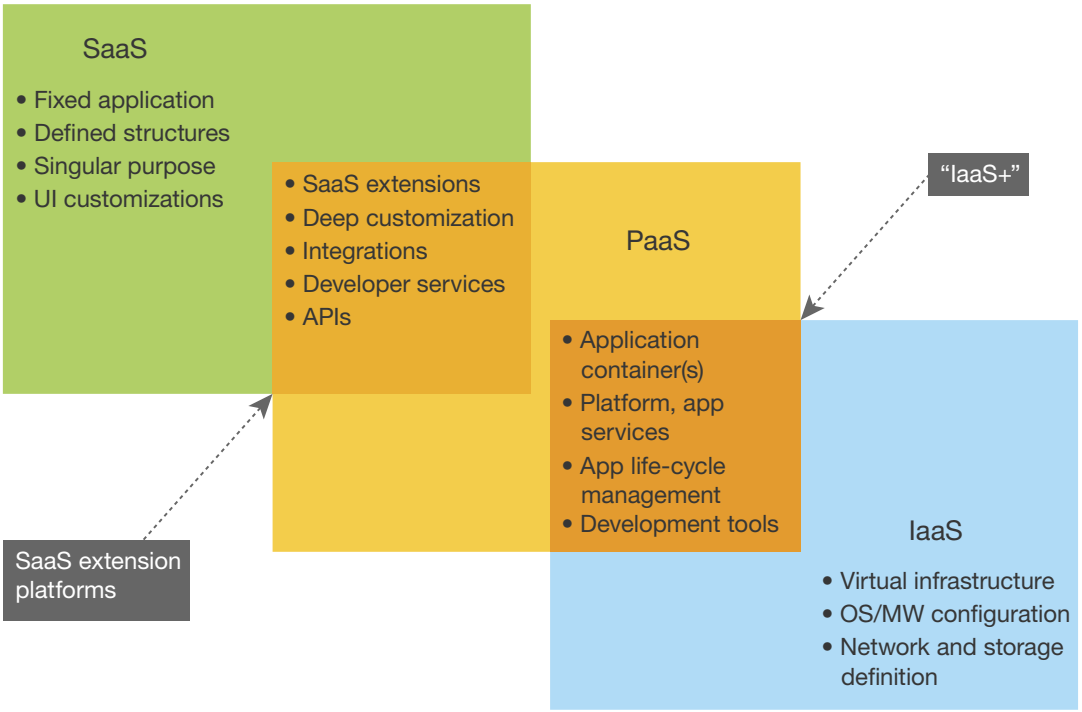
- **Historical IaaS vendors are embracing abstract development layers.** IaaS pioneers, such as Amazon Web Services (AWS) and Rackspace, are building services that deliver the abstraction and hosted middleware benefits often associated with PaaS. AWS' CloudFormation, Elastic MapReduce, and Cognito are examples of these services.[2] We refer to these platforms as "IaaS+."

- **Traditional PaaS vendors are reaching down to the virtual infrastructure.** Some PaaS originators now offer both highly abstracted platforms and transparency to the underlying plumbing. Engine Yard, for example, provides both an abstracted interface for developers and the ability to configure underlying middleware, database, and IaaS resources. Heroku, one of Salesforce's cloud platforms, runs on AWS, and the vendor encourages developers to mix AWS and Heroku services.

- **Other past PaaS vendors are now directly in the IaaS business.** Two of the leading early PaaS vendors, Microsoft and Google, now have IaaS services and have seen accelerated growth as a result. In Microsoft's case, its historical PaaS and newer IaaS are not silos but blended developer experiences allowing DevOps developers to build components on abstracted middleware and mix them easily with components hosted in virtual machines (VMs).[3]

- **SaaS vendors are pushing into platforms with extensibility features.** Salesforce's Force.com platform is the leading example of a product that began life as a set of application extension tools and is now a public cloud platform used for many applications. Intuit, NetSuite, Workday, Box, and other SaaS vendors are beginning to follow suit, though most do not have complete PaaS offerings that deliver independent value for enterprise AD&Ds today. (For this reason, we chose not to include any SaaS extensibility platforms except for Force.com in our Forrester Wave.)

Figure 1 The Boundaries Between SaaS, PaaS, And IaaS Are Blurring



118381 Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

YOUR PLATFORM CHOICE STARTS WITH YOUR DEVELOPER SEGMENTS

An evolving market with blending product categories makes selecting and adopting a public cloud platform challenging. The best way to proceed under these circumstances is to key your platform selection to your developers and their needs.

The 43 reference customers we interviewed for this research represent a cross-section of the enterprises committing to use public cloud platforms for enterprise applications. Within the sample, we identified three types of developers, each with distinct backgrounds, preferences, and motivations that strongly influenced the choice(s) of public cloud platforms. The three types of developers differ mostly in the depth of resource control they need and want (see Figure 2):

- **Rapid developers want high productivity, not resource details.** Rapid devs prefer not to code; coding takes too long. They value graphical, automated tools for creating applications. (In an earlier era, rapid devs adopted fourth-generation programming languages — 4GLs.) Rapid devs want to deliver major applications in weeks — days if possible. They see public cloud platforms as a fresh start with the potential to yield massive gains in the quantity, velocity, and quality of application delivery. They rarely desire — and often lack the skills necessary — to write infrastructure code, and control virtual infrastructure, middleware configuration, and application deployment and management.

- **Coders want to program, not manage infrastructure.** Coders prefer writing code, but want to concentrate on perfecting the application and not be bothered with configuring and maintaining application servers and databases — and certainly not virtual infrastructure. They simply want to quickly deploy their applications, gain feedback, and roll-in revisions and new features. Coders often need to make configuration decisions to get the performance and capabilities they seek, but rarely want to take on management of the infrastructure configuration if they can avoid it. Thus, coders prefer PaaS and IaaS+ services that slash deployment time and complexity and make deep configuration, deployment, and management choices for them.

- **DevOps pros want configuration control when they need it.** The DevOps pro also codes, and needs to configure the platform supporting his or her code.[4] DevOps pros often configure the application server and database, and sometimes want access to VM, network, and storage configuration as well. For this reason, DevOps pros can't get their jobs done only with graphical tools and other abstractions that impede access to all of the platform's "tuning knobs." DevOps pros prefer IaaS, IaaS+, and PaaS products that allow deep configuration.

AD&D organizations employ all three developer types and, increasingly, a variety of languages and frameworks. Thus, for many enterprises, the best choice of a public cloud platform will be a platform (or a portfolio of platforms) that addresses multiple types of developers working with several languages and frameworks.

BALANCE DEVELOPER EMPOWERMENT AND ENTERPRISE SUITABILITY

After examining past research, user-need assessments, surveys, and vendor and expert interviews, we developed a comprehensive set of selection criteria and invited 33 vendors to apply for participation in our Forrester Wave. Forrester narrowed the list to 16 vendors by focusing on nine platform characteristics that describe the vendors' enterprise customer base, global scope, and platform breadth (see Figure 3). The selected vendors were: Acquia, Amazon Web Services, CenturyLink, Cordys, Dimension Data, Engine Yard, GoGrid, Google, IBM, Mendix, Microsoft, MIOsoft, OutSystems, Rackspace, Salesforce, and Verizon.

Our analysis excluded many vendors, including Appian, Apprenda, AT&T, Caspio, Informatica, Intuit, Joyent, Oracle, OrangeScape Technologies, Pegasystems, SAP, Servoy, Software AG (LongJump), Tibco, VMware, and WorkXpress. Some didn't have qualifying products generally available by our deadline or did not offer their platform in both the US and Europe by our deadline. Others focused primarily on supplying enterprises with "internal cloud" software. Still others were not available as public cloud services or didn't have a strong focus on global enterprises.

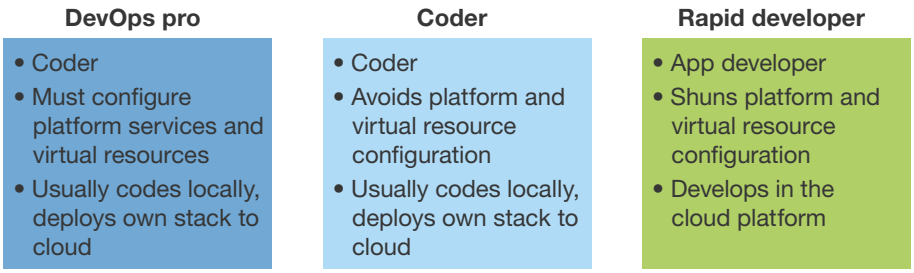
We evaluated the vendors' cloud platforms in general availability (GA) as of June 30, 2014 using 19 criteria based on the requirements from our AD&D clients. We also incorporated several criteria critical to chief information security officers (CISO), such as security controls, plus compliance and audits. Additional criteria address the concerns of the infrastructure and operations professionals (breadth of infrastructure and storage options, hybrid deployment types, depth of identity and access, and network configuration controls). The criteria fall into three groupings:

- **Fifteen criteria assess the current offering.** The 15 criteria measure a mix of developer enablement and enterprise readiness features. The criteria start with the developer autonomy provided by self-service portals, RESTful application programming interfaces (APIs), and configuration tools. The degree of platform abstraction and access to underlying infrastructure for custom configuration is next. We use a vendor's support for languages, application services and transaction features, development and test facilities, and deployment options as a measure of how rapidly and effectively a given developer can be productive on the platform. We evaluate each vendor's security and reliability *controls* and its audits and certifications to determine readiness to meet corporate governance requirements. Finally, we examine the breadth of infrastructure provided, deployment options available, and monitoring and scaling capabilities.

- **Two criteria assess vendor strategy.** We examine two key factors that can affect the immediate and long-term viability and applicability of a cloud platform to enterprise-level requirements. We look at product strategy for unique vision, differentiating value, fit with enterprise needs, and *execution* of road maps. Second, we examine the vendor's partner ecosystem to determine how broadly third-party vendors of development tools, database and other platform services, and management tools support its platform. A large ecosystem dramatically improves the customer's ability to deliver applications, find support for key components, supplement staff with consultants, and empower management of its cloud applications.

- **Two criteria assess each vendor's market presence.** We examine the size of the customer base for the cloud platform, as well as its current revenues and revenue growth rate. Many enterprises favor platforms used by other enterprises or cutting-edge companies, so size and makeup of the customer base is a key criteria. Similarly, enterprises need to know whether a cloud platform is financially viable and gaining adoption.

Figure 2 The Three Types Of Cloud Developers



118381 Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 3 Evaluated Vendors: Public Cloud Platform Information And Selection Criteria

Vendor name	Product name	Version evaluated
Acquia	Acquia Cloud	
Amazon Web Services	Amazon Elastic Compute Cloud (EC2)	
	Auto Scaling	
	Amazon RedShift	
	Amazon Elastic Map Reduce	
	Amazon Kinesis	
	Amazon CloudTrail	
	Amazon Elastic Beanstalk	
	Elastic Load Balancing	
	Amazon CloudFront	
	Amazon Relational Database Service (RDS)	
	Amazon DynamoDB	
	Amazon ElastiCache	
	AWS Identity and Access Management (IAM)	
	Amazon Virtual Private Cloud (VPC)	
	Amazon Simple Storage Service (S3)	
	Amazon Glacier	
	Amazon Elastic Block Store (EBS)	
	Amazon CloudWatch	
	AWS Elastic Beanstalk	
	AWS CloudFormer	
	Amazon CloudSearch	
	Amazon Simple Workflow Service (SWF)	
	Amazon Simple Queue Service (SQS)	
	Amazon Simple Notification Service (SNS)	

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 3 Evaluated Vendors: Public Cloud Platform Information And Selection Criteria (Cont.)

Vendor name	Product name	Version evaluated
Amazon Web Services	Amazon Simple Email Service (SES)	
	AWS Storage Gateway	
	AWS Import/Export	
	AWS Direct Connect	
CenturyLink	CenturyLink Cloud	
Cordys	Cordys Process Factory (CPF)	
	Cordys Business Operations Platform (BOP)	4.2
	Cordys Cloud Provisioning (CCP)	4.5
Dimension Data	Public CaaS	
Engine Yard	Engine Yard Cloud	
	Engine Yard Managed	
GoGrid	GoGrid Cloud Hosting	
	GoGrid Managed Services	
Google	Google App Engine	
	Google Compute Engine	
	Google Cloud Storage	
	Google Cloud Datastore	
	Google Cloud SQL	
	BigQuery	
IBM	IBM Bluemix	
	IBM SoftLayer	
Mendix	Mendix App Platform	
Microsoft	Microsoft Azure	
	Virtual Machines	
	Cloud Services	

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 3 Evaluated Vendors: Public Cloud Platform Information And Selection Criteria (Cont.)

Vendor name	Product name	Version evaluated
Microsoft	Web sites	
	Mobile Services	
	Storage	
	SQL Database	
	SQL Reporting	
	Backup	
	HDInsight	
	Media Services	
	Active Directory	
	Service Bus	
	Caching	
	BizTalk Services	
	Virtual Network	
	Traffic Manager	
	ExpressRoute	
	Notification Hubs	
	Autoscale	
	Azure Resource Manager	
	Azure Scheduler	
MIOsoft	MIOedge	
OutSystems	OutSystems Platform	
Rackspace	Rackspace Cloud	

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 3 Evaluated Vendors: Public Cloud Platform Information And Selection Criteria (Cont.)

Vendor name	Product name	Version evaluated
Salesforce	Force.com	
	Salesforce1 Platform	
	Heroku	
	Heroku Connect	
Verizon	Verizon Enterprise Cloud	
	Verizon Cloud	

Note: See Appendix for vendor inclusion criteria.

OUR SEGMENT-BASED ANALYSIS OF PUBLIC CLOUD PLATFORMS

Our research clearly shows that public cloud platforms are not a one-size-fits-all market. Rather, products are designed to satisfy the needs of one — sometimes two — developer segments. Our evaluation examines the 16 public cloud platforms using the requirements of our three developer categories plus the requirements of CIO leaders whose development teams include the three types below. Here is how we adjusted the weightings to reflect the needs of each group:

- **For CIOs, our weightings emphasize security and reporting.** Our CIO analysis makes two assumptions. First, CIOs oversee teams incorporating all three types of developers. Thus, all vendors are of interest. Second, CIOs (via their I&O and security leaders) know which cloud platforms can best meet the compliance and auditing needs of the range of business technology services and solutions. Thus, in this analysis, we gave added weight to security controls and reporting and monitoring features (see Figure 4). This analysis includes *all* 16 vendors.

- **For rapid developers, we gave extra weight to extreme abstraction.** For rapid devs, we chose weightings that put higher value on self-service, abstraction features (automatic scaling, reliability solution) and the completeness of the development, testing, and deployment services. Because rapid developers don't want deep configuration control, we inverted our scale for reliability functions (so that a high score reflects high automation of reliability) (see Figure 5).

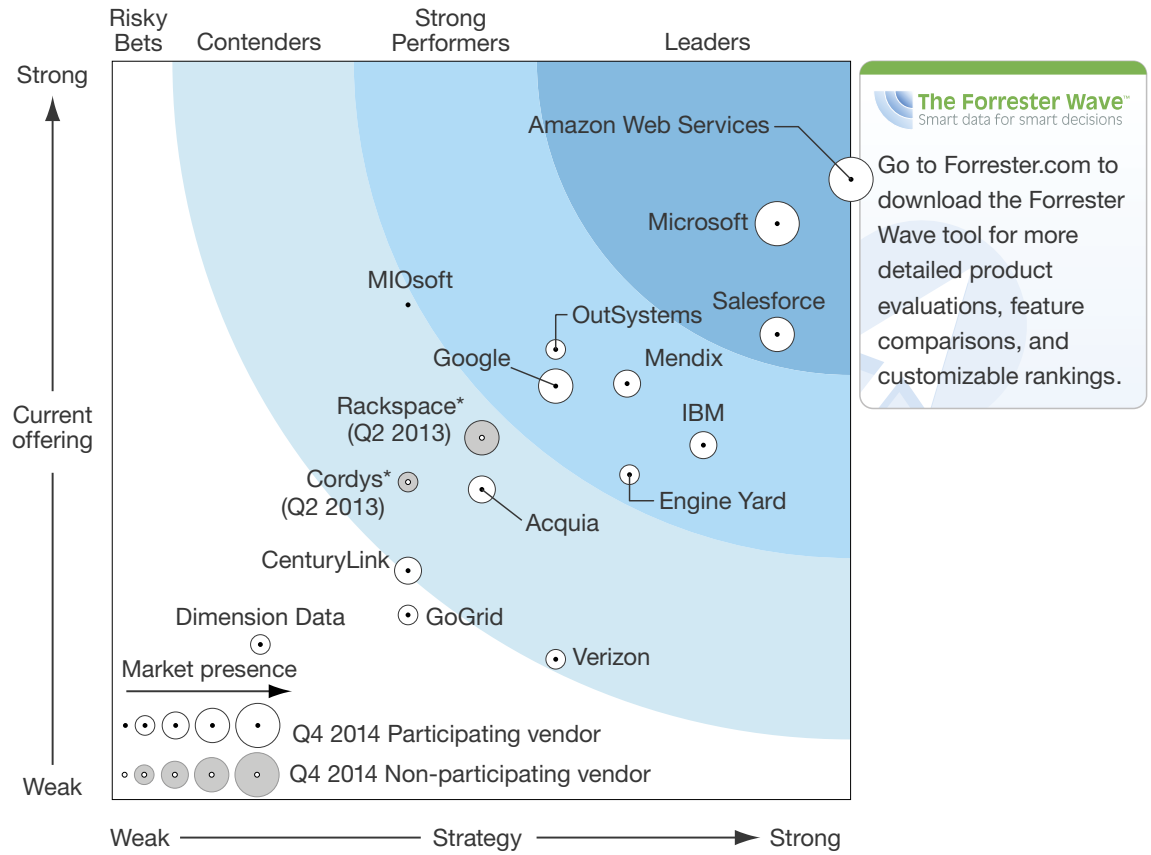
  We included only Acquia, Cordys, Mendix, MIOsoft, OutSystems, and Salesforce in this analysis, as these vendors directly target rapid devs and in our analysis proved to be the only platforms that directly meet their needs.

- **Coder weighting favored dev tools and infrastructure abstraction.** For coders, we chose weightings that emphasize language and framework support, *platform* (as opposed to infrastructure) configuration control, and development, test, and deployment tools. Similar to

rapid devs, coders want their cloud platform to abstract away the complexity of operational tasks such as high availability assurance, while control over reliability functions is valued more than rapid developers. As such, we inverted these criteria but reduced its weighting to reflect this client's needs (see Figure 6). We included all vendors in this analysis *except* those that do not support coding as a development method and do not provide direct access to platform and/or virtual infrastructure configuration (Mendix, MIOsoft, and OutSystems), as well as vendors that provide no native development tools other than their APIs (CenturyLink, Dimension Data, GoGrid, and Verizon).

- **DevOps pros weighting favored deep configuration controls.** For DevOps pros, we weighted more heavily criteria that deliver autonomous control over the infrastructure, platform and reliability configuration, and monitoring and reporting features that are so key to maintenance and operational optimizations (see Figure 7). We included all of the vendors in this analysis except those that don't provide control over these resources (Acquia, Mendix, MIOsoft, Salesforce, and OutSystems).

Figure 4 Forrester Wave™: Enterprise Public Cloud Platforms For CIOs, Q4 '14



*[Vendor] chose not to participate in this Wave update, but its developments since our last analysis aren't substantial enough to change its position in our market view.

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 4 Forrester Wave™: Enterprise Public Cloud Platforms For CIOs, Q4 '14 (Cont.)

	Forrester's Weighting	Acquia	Amazon Web Services	CenturyLink	Cordys	Dimension Data	Engine Yard	GoGrid	Google
CURRENT OFFERING	50%	2.10	4.20	1.55	2.15	1.05	2.20	1.25	2.80
Self-service control	10%	1.00	5.00	3.00	0.00	1.00	1.00	1.00	3.00
Platform configuration options	5%	0.00	5.00	1.00	5.00	3.00	5.00	1.00	5.00
Monitoring and policy features	5%	0.00	5.00	0.00	0.00	0.00	5.00	0.00	1.00
Private and hybrid cloud options (VPC to on-premises total isolation)	5%	0.00	1.00	3.00	5.00	5.00	5.00	1.00	1.00
Breadth of storage options	5%	4.00	5.00	3.00	4.00	4.00	4.00	3.00	5.00
Audits and certifications	5%	1.00	5.00	1.00	0.00	1.00	0.00	3.00	3.00
Transaction features	5%	1.00	1.00	0.00	3.00	0.00	1.00	0.00	5.00
Breadth of platform and application services	5%	1.00	5.00	0.00	5.00	0.00	1.00	1.00	3.00
Languages supported	10%	1.00	5.00	0.00	1.00	0.00	1.00	0.00	3.00
Infrastructure abstraction features	5%	5.00	3.00	3.00	5.00	1.00	5.00	3.00	5.00
Application deployment services	10%	5.00	3.00	1.00	1.00	0.00	1.00	1.00	1.00
Security controls	5%	3.00	5.00	4.00	3.00	3.00	3.00	1.00	3.00
Development and testing tools	5%	5.00	3.00	0.00	5.00	0.00	1.00	0.00	3.00
Reliability functions	10%	3.00	5.00	3.00	1.00	1.00	3.00	3.00	3.00
Autoscaling features	10%	1.00	5.00	1.00	1.00	0.00	1.00	1.00	1.00
STRATEGY	50%	2.50	5.00	2.00	2.00	1.00	3.50	2.00	3.00
Product strategy	50%	3.00	5.00	3.00	3.00	1.00	5.00	3.00	3.00
Partner ecosystem	50%	2.00	5.00	1.00	1.00	1.00	2.00	1.00	3.00
MARKET PRESENCE	0%	2.20	5.00	2.40	1.20	1.80	1.80	1.80	3.20
Number of customers	60%	3.00	5.00	4.00	2.00	3.00	3.00	3.00	4.00
Revenue and growth rate	40%	1.00	5.00	0.00	0.00	0.00	0.00	0.00	2.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

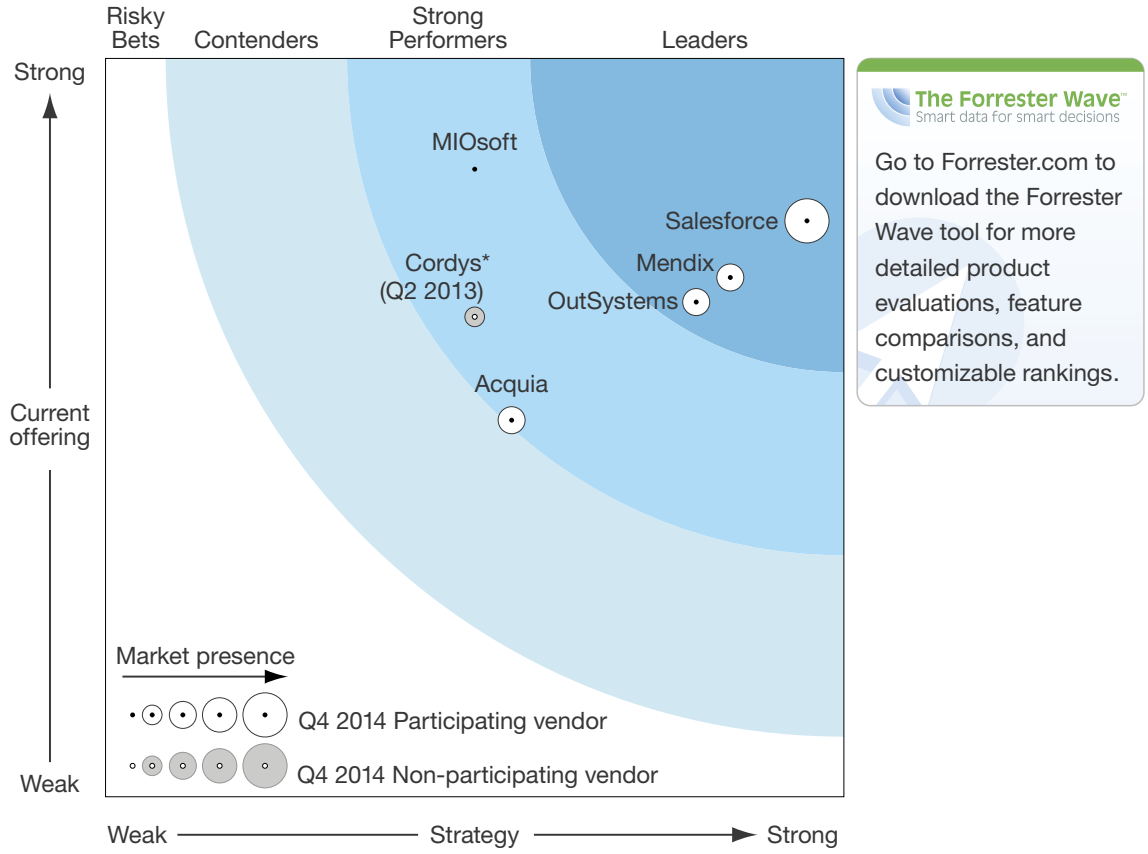
Figure 4 Forrester Wave ™: Enterprise Public Cloud Platforms For CIOs, Q4 '14 (Cont.)

	Forrester's Weighting	IBM	Mendix	Microsoft	MIOsoft	OutSystems	Rackspace	Salesforce	Verizon
CURRENT OFFERING	50%	2.40	2.85	3.90	3.35	3.05	2.45	3.15	0.95
Self-service control	10%	5.00	3.00	4.00	3.00	3.00	3.00	5.00	0.00
Platform configuration options	5%	3.00	1.00	3.00	1.00	0.00	1.00	1.00	1.00
Monitoring and policy features	5%	3.00	3.00	3.00	3.00	3.00	1.00	1.00	0.00
Private and hybrid cloud options (VPC to on-premises total isolation)	5%	3.00	5.00	3.00	5.00	5.00	5.00	0.00	3.00
Breadth of storage options	5%	3.00	3.00	4.00	4.00	5.00	4.00	4.00	4.00
Audits and certifications	5%	5.00	0.00	3.00	0.00	0.00	3.00	3.00	3.00
Transaction features	5%	1.00	3.00	3.00	5.00	1.00	1.00	1.00	0.00
Breadth of platform and application services	5%	1.00	5.00	3.00	5.00	5.00	1.00	5.00	0.00
Languages supported	10%	3.00	3.00	5.00	3.00	3.00	3.00	5.00	0.00
Infrastructure abstraction features	5%	3.00	5.00	5.00	5.00	5.00	3.00	5.00	1.00
Application deployment services	10%	1.00	3.00	5.00	1.00	5.00	1.00	3.00	0.00
Security controls	5%	3.00	3.00	4.00	4.00	4.00	4.00	4.00	3.00
Development and testing tools	5%	1.00	5.00	5.00	5.00	5.00	0.00	5.00	0.00
Reliability functions	10%	1.00	3.00	4.00	3.00	3.00	5.00	3.00	1.00
Autoscaling features	10%	1.00	0.00	3.00	5.00	0.00	1.00	1.00	1.00
STRATEGY	50%	4.00	3.50	4.50	2.00	3.00	2.50	4.50	3.00
Product strategy	50%	5.00	5.00	5.00	3.00	5.00	3.00	5.00	3.00
Partner ecosystem	50%	3.00	2.00	4.00	1.00	1.00	2.00	4.00	3.00
MARKET PRESENCE	0%	3.00	2.20	4.20	0.60	1.80	3.40	3.80	1.60
Number of customers	60%	3.00	3.00	5.00	1.00	3.00	5.00	5.00	2.00
Revenue and growth rate	40%	3.00	1.00	3.00	0.00	0.00	1.00	2.00	1.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 5 Forrester Wave™: Enterprise Public Cloud Platforms For Rapid Developers, Q4 '14



*[Vendor] chose not to participate in this Wave update, but its developments since our last analysis aren't substantial enough to change its position in our market view.

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

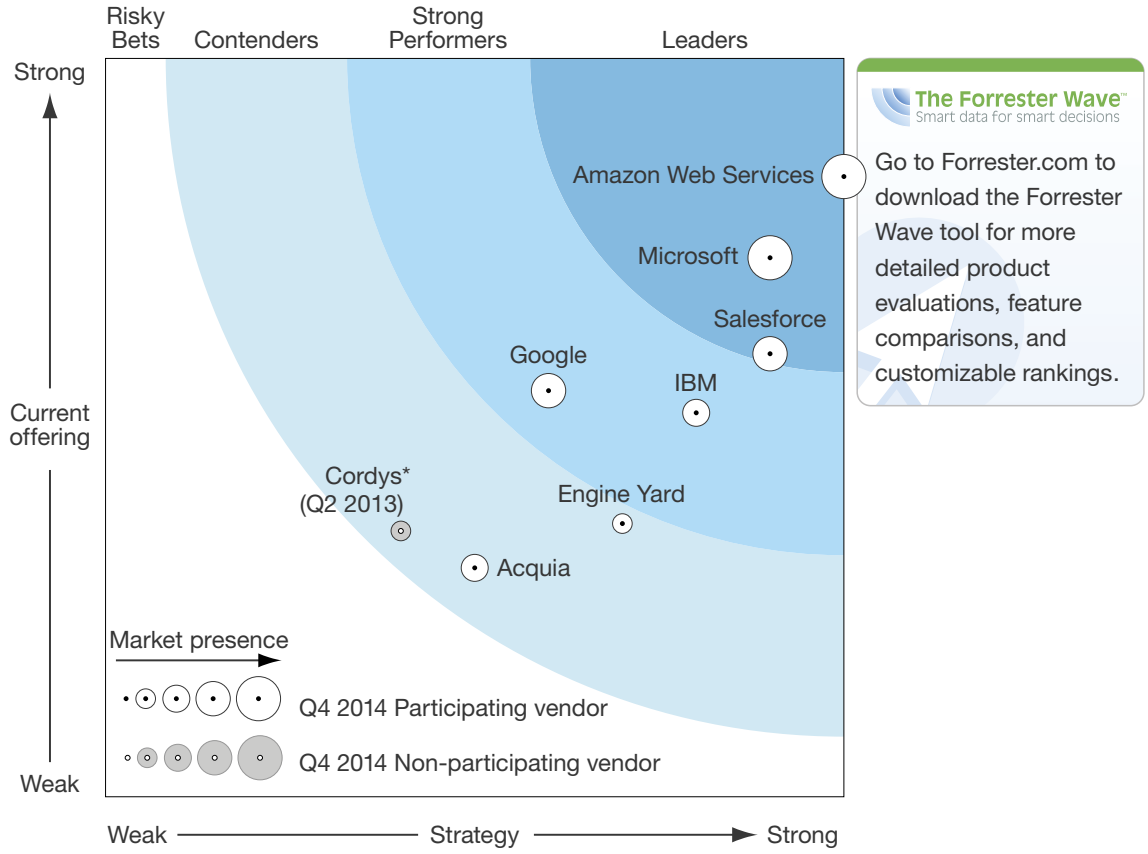
Figure 5 Forrester Wave™: Enterprise Public Cloud Platforms For Rapid Developers, Q4 '14 (Cont.)

	Forrester's Weighting	Acquia	Cordys	Mendix	MIOsoft	OutSystems	Salesforce
CURRENT OFFERING	50%	2.55	3.25	3.55	4.25	3.35	3.90
Self-service control	15%	1.00	0.00	3.00	3.00	3.00	5.00
Platform configuration options	0%	0.00	5.00	1.00	1.00	0.00	1.00
Monitoring and policy features	0%	0.00	0.00	3.00	3.00	3.00	1.00
Private and hybrid cloud options (VPC to on-premises total isolation)	0%	0.00	5.00	5.00	5.00	5.00	0.00
Breadth of storage options	0%	4.00	4.00	3.00	4.00	5.00	4.00
Audits and certifications	5%	1.00	0.00	0.00	0.00	0.00	3.00
Transaction features	10%	1.00	3.00	3.00	5.00	1.00	1.00
Breadth of platform and application services	15%	1.00	5.00	5.00	5.00	5.00	5.00
Languages supported	0%	1.00	1.00	3.00	3.00	3.00	5.00
Infrastructure abstraction features	20%	5.00	5.00	5.00	5.00	5.00	5.00
Application deployment services	0%	5.00	1.00	3.00	1.00	5.00	3.00
Security controls	5%	3.00	3.00	3.00	4.00	4.00	4.00
Development and testing tools	15%	5.00	5.00	5.00	5.00	5.00	5.00
Reliability functions	5%	2.00	4.00	3.00	2.00	2.00	2.00
Autoscaling features	10%	1.00	1.00	0.00	5.00	0.00	1.00
STRATEGY	50%	2.75	2.50	4.25	2.50	4.00	4.75
Product strategy	75%	3.00	3.00	5.00	3.00	5.00	5.00
Partner ecosystem	25%	2.00	1.00	2.00	1.00	1.00	4.00
MARKET PRESENCE	0%	2.50	1.50	2.50	0.75	2.25	4.25
Number of customers	75%	3.00	2.00	3.00	1.00	3.00	5.00
Revenue and growth rate	25%	1.00	0.00	1.00	0.00	0.00	2.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 6 Forrester Wave™: Enterprise Public Cloud Platforms For Coders, Q4 '14



*[Vendor] chose not to participate in this Wave update, but its developments since our last analysis aren't substantial enough to change its position in our market view.

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

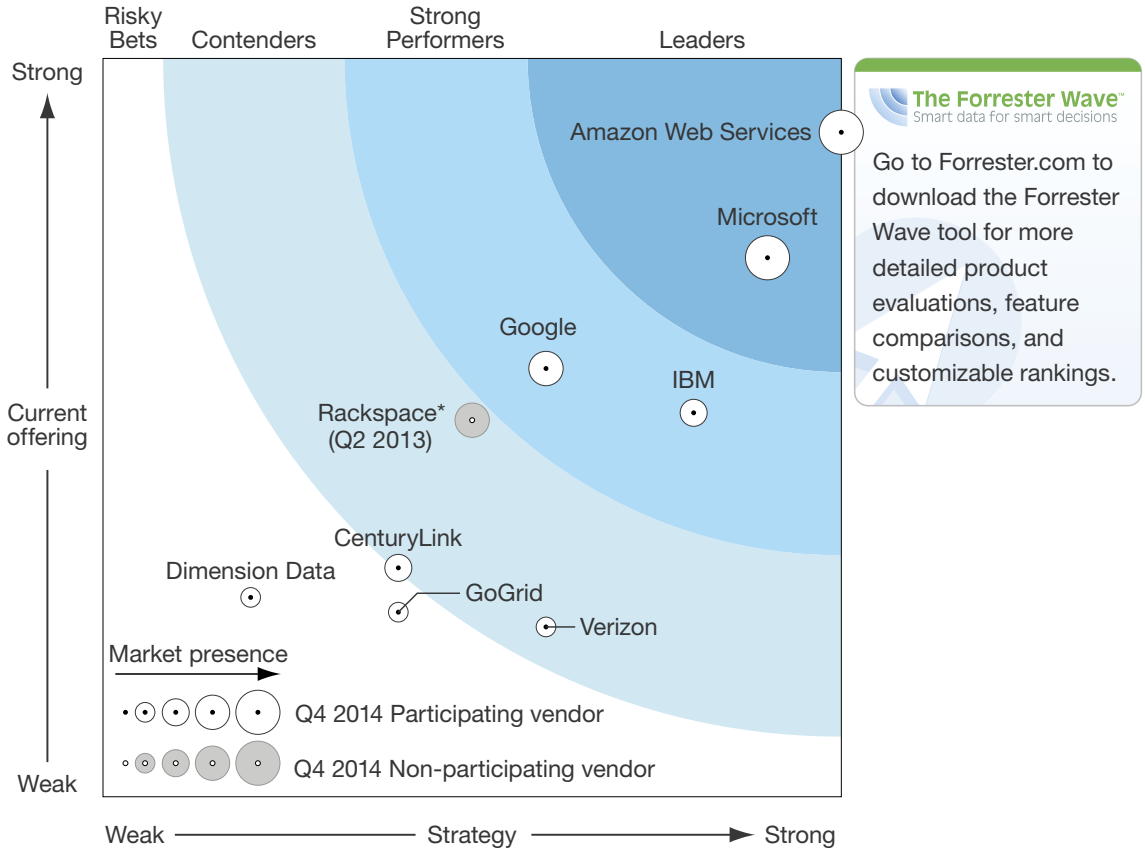
Figure 6 Forrester Wave™: Enterprise Public Cloud Platforms For Coders, Q4 '14 (Cont.)

	Forrester's Weighting	Acquia	Amazon Web Services	Cordys	Engine Yard	Google	IBM	Microsoft	Salesforcre
CURRENT OFFERING	50%	1.55	4.20	1.80	1.85	2.75	2.60	3.65	3.00
Self-service control	15%	1.00	5.00	0.00	1.00	3.00	5.00	4.00	5.00
Platform configuration options	5%	0.00	5.00	5.00	5.00	5.00	3.00	3.00	1.00
Monitoring and policy features	5%	0.00	5.00	0.00	5.00	1.00	3.00	3.00	1.00
Private and hybrid cloud options (VPC to on-premises total isolation)	5%	0.00	1.00	5.00	5.00	1.00	3.00	3.00	0.00
Breadth of storage options	5%	4.00	5.00	4.00	4.00	5.00	3.00	4.00	4.00
Audits and certifications	5%	1.00	5.00	0.00	0.00	3.00	5.00	3.00	3.00
Transaction features	10%	1.00	1.00	3.00	1.00	5.00	1.00	3.00	1.00
Breadth of platform and application services	5%	1.00	5.00	5.00	1.00	3.00	1.00	3.00	5.00
Languages supported	15%	1.00	5.00	1.00	1.00	3.00	3.00	5.00	5.00
Infrastructure abstraction features	0%	5.00	3.00	5.00	5.00	5.00	3.00	5.00	5.00
Application deployment services	10%	5.00	3.00	1.00	1.00	1.00	1.00	5.00	3.00
Security controls	5%	3.00	5.00	3.00	3.00	3.00	3.00	4.00	4.00
Development and testing tools	0%	5.00	3.00	5.00	1.00	3.00	1.00	5.00	5.00
Reliability functions	5%	2.00	5.00	1.00	2.00	2.00	1.00	1.00	2.00
Autoscaling features	10%	1.00	5.00	1.00	1.00	1.00	1.00	3.00	1.00
STRATEGY	50%	2.50	5.00	2.00	3.50	3.00	4.00	4.50	4.50
Product strategy	50%	3.00	5.00	3.00	5.00	3.00	5.00	5.00	5.00
Partner ecosystem	50%	2.00	5.00	1.00	2.00	3.00	3.00	4.00	4.00
MARKET PRESENCE	0%	2.20	5.00	1.20	1.80	3.20	3.00	4.20	3.80
Number of customers	60%	3.00	5.00	2.00	3.00	4.00	3.00	5.00	5.00
Revenue and growth rate	40%	1.00	5.00	0.00	0.00	2.00	3.00	3.00	2.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 7 Forrester Wave™: Enterprise Public Cloud Platforms For DevOps Pros, Q4 '14



*[Vendor] chose not to participate in this Wave update, but its developments since our last analysis aren't substantial enough to change its position in our market view.

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

Figure 7 Forrester Wave™: Enterprise Public Cloud Platforms For DevOps Pros, Q4 '14 (Cont.)

	Forrester's Weighting	Amazon Web Services	CenturyLink	Dimension Data	GoGrid	Google	IBM	Microsoft	Rackspace	Verizon Terremark
CURRENT OFFERING	50%	4.50	1.55	1.35	1.25	2.90	2.60	3.65	2.55	1.15
Self-service control	10%	5.00	3.00	1.00	1.00	3.00	5.00	4.00	3.00	0.00
Platform configuration options	10%	5.00	1.00	3.00	1.00	5.00	3.00	3.00	1.00	1.00
Monitoring and policy features	10%	5.00	0.00	0.00	0.00	1.00	3.00	3.00	1.00	0.00
Private and hybrid cloud options (VPC to on-premises total isolation)	5%	1.00	3.00	5.00	1.00	1.00	3.00	3.00	5.00	3.00
Breadth of storage options	10%	5.00	3.00	4.00	3.00	5.00	3.00	4.00	4.00	4.00
Audits and certifications	5%	5.00	1.00	1.00	3.00	3.00	5.00	3.00	3.00	3.00
Transaction features	5%	1.00	0.00	0.00	0.00	5.00	1.00	3.00	1.00	0.00
Breadth of platform and application services	5%	5.00	0.00	0.00	1.00	3.00	1.00	3.00	1.00	0.00
Languages supported	10%	5.00	0.00	0.00	0.00	3.00	3.00	5.00	3.00	0.00
Infrastructure abstraction features	0%	3.00	3.00	1.00	3.00	5.00	3.00	5.00	3.00	1.00
Application deployment services	5%	3.00	1.00	0.00	1.00	1.00	1.00	5.00	1.00	0.00
Security controls	5%	5.00	4.00	3.00	1.00	3.00	3.00	4.00	4.00	3.00
Development and testing tools	0%	3.00	0.00	0.00	0.00	3.00	1.00	5.00	0.00	0.00
Reliability functions	10%	5.00	3.00	1.00	3.00	3.00	1.00	4.00	5.00	1.00
Autoscaling features	10%	5.00	1.00	0.00	1.00	1.00	1.00	3.00	1.00	1.00
STRATEGY	50%	5.00	2.00	1.00	2.00	3.00	4.00	4.50	2.50	3.00
Product strategy	50%	5.00	3.00	1.00	3.00	3.00	5.00	5.00	3.00	3.00
Partner ecosystem	50%	5.00	1.00	1.00	1.00	3.00	3.00	4.00	2.00	3.00
MARKET PRESENCE	0%	5.00	2.40	1.80	1.80	3.20	3.00	4.20	3.40	1.60
Number of customers	60%	5.00	4.00	3.00	3.00	4.00	3.00	5.00	5.00	2.00
Revenue and growth rate	40%	5.00	0.00	0.00	0.00	2.00	3.00	3.00	1.00	1.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc. Unauthorized reproduction or distribution prohibited.

AWS, Microsoft, And Salesforce Have The Highest *Overall* Scores

AWS, Microsoft, and Salesforce are each leaders in meeting CIO requirements. Each of these vendors started its cloud-platform journey in a distinct position serving a specific developer type and has expanded its offerings to provide greater breadth to a wider range of developers and support

for a larger catalog of application types. Across all four Forrester Wave comparisons, two vendors stood out as consistent and clear leaders, while another, AWS was a leader across three of the four segments. Listed in alphabetical order, they are:

- **AWS is the best fit for the DevOps pro segment, but scores high for all segments.** AWS is best known for its IaaS foundational offerings — EC2 and S3 — but has expanded rapidly with a large collection of platform and application services that meet the needs of DevOps pros and coders. The capabilities of AWS' application services, coupled with its mature infrastructure services, vast ecosystem of partners, including many of the rapid dev and coder-focused platforms in this analysis, gave it high current offering and strategy scores across all but the rapid dev segment, where its degree of abstraction does not rise to the needs of this user. It also excels in breadth of security, reliability, and compliance characteristics.

- **Microsoft's Azure is the best fit for coders, but a good choice for DevOps.** Azure is maturing rapidly, and Microsoft has both simplified the developer experience and added application and infrastructure services that appeal to coders and DevOps pros. It provides distinct and compelling user interfaces for these developer types as well as direct integrations with Visual Studio, Team Foundation Server, and System Center for administration.[5] Microsoft engages the non-Microsoft developer community through its support for Linux VMs, Java and other languages, plug-ins for other IDEs, and support for open standards and popular open source technologies such as MapReduce and Puppet. But the user experience clearly favors developers in the Microsoft fold.

- **Salesforce's greatest strength is for rapid devs, but it serves coders well too.** The Salesforce1 Platform comprises two distinct public cloud platforms: Force.com and the AWS-based Heroku. We evaluated The Salesforce1 Platform as a single entity, but our analysis highlights the features of its component parts. The combined features of both platforms earned high Current Offering scores. Force.com targets rapid devs and some coders, but supports only its own Apex language.[6] Heroku targets coders working in primarily Ruby and Java, while partners provide support for other languages. Most significant since our last analysis is the addition of Heroku Connect, which provides integration between the two platforms, as well as availability of identity, Data.com, and mobile app toolkits that span both platforms.

Engine Yard, IBM, Mendix, OutSystems, And Google Are Strong Performers

These five vendors register as Strong Performers for CIOs, with varied performance for DevOps pros, coders, and rapid developers:

- **Mendix and OutSystems are Leaders for rapid devs.** These vendors compete for rapid developers with powerful tools and automation that drastically reduce the need for coding. As such, Mendix and OutSystems earned high scores for abstracting away both infrastructure and platform configurations and for application services and tooling. Each fares less well on criteria that emphasize freedom to configure underlying services.

- **Google and IBM are Strong Performers for coders and DevOps pros.** Google's renewed commitment to cloud platforms paid big dividends in our analysis, with a leap into the Strong Performer category for coders and DevOps. Adding Google Compute Engine during 2014 made Google an option for DevOps pros, a group it previously didn't serve. Google also added notable new development tools including an inline debugger and RESTful APIs.

  In late 2012, IBM acquired SoftLayer, and pushed the "reset" button on its public cloud strategy. IBM's public cloud platform now comprises SoftLayer for infrastructure services, Bluemix for platform services, and a collection of application services available through Bluemix. SoftLayer allowed IBM to rapidly expand its global public-cloud footprint; the vendor is now bringing its many middleware and SaaS properties to SoftLayer, including its Watson analytics technologies.

- **Engine Yard is a Strong Performer for CIOs.** Engine Yard provides a PaaS that abstracts away infrastructure details, but also offers an API to configure the IaaS services its PaaS runs on. The vendor falls short of the leaders on tooling and application services.

- **Acquia, MIOsoft, and OpenText Cordys are Strong Performers for rapid devs.** Acquia is new to our analysis; it provides "Drupal-as-a-service" along with extensive tooling for rapid application delivery. Acquia Cloud is growing rapidly for consumer-oriented websites, built in Drupal, and PHP. MIOsoft provides a comprehensive PaaS with strong features for handling large data sets, data migration and transformation, and data aggregation.

  Cordys, now part of OpenText, is focused on BPM applications. As an independent company, Cordys had larger ambitions. Both vendors' scores were constrained by their limits on platform and infrastructure configurability. OpenText Cordys chose not to participate in this Wave update, but its developments since our last analysis aren't substantial enough to change its position in our market view.

CenturyLink, Rackspace, And Verizon Are Contenders For CIOs

Our analysis of these three vendors placed them in Contender positions for CIOs. Each of these vendors has strengths, but for a narrower set of requirements than the Leaders and Strong Performers. CIOs should consider these vendors to fill roles within their platform portfolios, but not yet as platforms for a wide variety of applications:

- **CenturyLink is a Contender for DevOps and moving up for coders.** US telecommunications provider CenturyLink is building its public cloud platform on infrastructure-services provider Tier 3, acquired in 2012, and PaaS provider AppFog, acquired in 2013. Today, the platform provides a strong user experience mostly for the Ops side of DevOps with solid security controls, virtual infrastructure options, and managed services. We expect CenturyLink's appeal for coders to rise in 2015, as its Cloud Foundry-based AppFog offering gains integration with Tier 3, as well as greater maturity and geographic spread.

- **Rackspace in steady state, while Verizon plots a new course.** Verizon shifted from the Terremark-built cloud platform we evaluated in the 2013 Forrester Wave to a new platform and enterprise-focused strategy during 2014. The vendor's position should significantly rise in our next analysis, as we're able to include new services added during the end of 2014. Rackspace's platform is heavily weighted to IaaS, but has added platform services for big data and mobile apps. Rackspace chose not to participate in this Wave update, but its developments since our last analysis aren't substantial enough to change its position in our market view.

Dimension Data And GoGrid Are Risky Bets As Broad Platforms

Both Dimension Data and GoGrid are strong managed services providers that have relatively new cloud platform offerings. Both vendors appeal primarily to I&O pros, but offer scant features for developers. Both also have small partner ecosystems. GoGrid made a big shift since our last analysis, refocusing on managed cloud services for big data applications. Dimension Data is a new entrant hoping to leverage its strong Asia Pacific presence to create a worldwide powerhouse. These vendors scored well on infrastructure features, but were held back in our analysis by their lack of application-level services and tools for developers. Even some DevOps pros will find these services feature too much infrastructure and not enough development capabilities.

CIOS: ADJUST THE CRITERIA WEIGHTINGS TO REFLECT YOUR ORGANIZATION

The above Forrester Wave charts look at this vendor landscape through isolated lenses of specific developer classifications. Your organization will clearly represent a mix of developer skill sets. As such, we cannot emphasize enough the need for CIOs to adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool. Your mix of developers and the engagement in cloud applications by your SRM and I&O teams will not align perfectly with our analysis. Adjust the weightings of each criterion to match your particular situation. For example, you may want to evaluate platforms for specific applications or classes of use, such as for systems of engagement development or big data purposes. It's highly unlikely you will be migrating significant parts of your in-house application portfolio to cloud platforms anytime soon, so the more specific you can be to the objectives you have and the mix of developers and the skills they will bring to these tasks, the better.

VENDOR PROFILES

Below are profiles of each of the included vendors, their platforms, and platform strategies. Vendors are presented in alphabetical order:

- **Acquia seeks to take Drupal to the next level.** Acquia Cloud packages the open source Drupal web application development framework with deployment, development, and application life cycle tools. The appeal? For many of the vendor's customers, Acquia Cloud is

their first full Drupal platform complete with application-life cycle and -management services. Acquia's tooling very effectively supports a continuous-delivery style of application delivery. Reference customers gave Acquia Cloud high marks for shielding developers from virtually all infrastructure-configuration chores and concerns — and for high reliability. The vendor's strength in abstracting infrastructure is a weakness for teams that either want or need deep control over the platform's configuration. Also, Acquia is only an option for Drupal — PHP development. Acquia reports having 1,700 paying customers for Acquia Cloud, and a growth rate in excess of 100% in the last year.

- **Amazon Web Services leads in maturity and breadth but can be overwhelming.** Founded in 2006, this division of eRetail giant Amazon debuted with its Elastic Compute Cloud (EC2) and Simple Storage Service (S3), which remain the foundations of its cloud platform today. But over the past eight years, AWS has aggressively innovated atop this foundation with abstracted services that developers can leverage to enhance their applications. Key foci since our 2012 evaluation have been security, transparency, enterprise-focused professional services, workflow automation, and the creation of innovative born-on-the-cloud services like its archive storage solution Glacier. The company has chosen not to deliver a fully abstracted middleware runtime platform, but has instead focused on providing a collection of services that can be combined with custom code to accelerate application creation. AWS has steadfastly remained focused on delivering all its services as a public cloud solution and does not offer on-premises technologies derived from its platform. Earlier this year, it implemented what could be viewed as its first private cloud implementation for the US Central Intelligence Agency. However, that implementation is clearly not a go-forward strategy but a one-off solution for a very unique client. AWS is thus a pure-cloud provider that doesn't offer traditional hosting, colocation, or even hosted private cloud services. While many have taken AWS' self-service and low-cost approach to suggest that it is not enterprise-class, Forrester surveys peg half its customer base as enterprise clients, and enterprise reference calls for this study validated that they felt AWS has made big strides in this regard.[7]

- **CenturyLink is an infrastructure-centric cloud with a PaaS future.** CenturyLink is the newest entrant into the cloud platform market via its acquisition of Seattle-based Tier 3. The platform is a solid provider of infrastructure services with a clean user interface and APL platform. It has strongly invested in the Tier 3 platform, expanding its geographic footprint to within existing CenturyLink data centers and training the legacy CenturyLink managed services professionals on the new platform. However, CenturyLink Cloud currently lacks a significant stable of application services or developer tools, making it mostly appealing to IT operations teams. Tier 3 also brought to the company one of the earliest CloudFoundry implementations, a port of this solution to C#, called Iron Foundry. Only available in a limited number of US data centers, expect this more coder-focused offering to proliferate globally in 2015.

- **Dimension Data is a cloud born out of managed services.** Dimension Data came from South Africa, but has become the international hosting and managed services arm of Japan's NTT Corp. Through a string of acquisitions over the past two years, the company now has a significant data center footprint across the major geographies and has rolled up a solid stable of enterprise customers. But the focus of Dimension Data is on managed services and traditional outsourcing, not cloud computing. This shows in its platform which covers the bases one would expect from a cloud platform circa 2011, but lacks the application services, developer tooling, and robust self-service capabilities that the leaders in this analysis have in spades.

- **Engine Yard is transitioning to a focus on enterprise DevOps pros.** Engine Yard is repositioning to seek higher growth and broader enterprise relevance. Engine Yard began life as a Ruby PaaS, which attracted developers building "Web 2.0" applications. The company sought broader relevance by adding support for four languages — PHP, Ruby, Java, and JavaScript/node.js — on its own AWS-based cloud and support of Ruby on Microsoft Azure. Engine Yard's API exposes the configuration of its underlying IaaS — making the offering unique. The company's "configure it when needed" approach could position it for a big role in this market, but the company instead has produced disappointing commercial progress; in the last year, Engine Yard's commercial progress has been especially marginal. The vendor still reports having between 1,000 and 9,999 subscribing organizations, and between $10 million and $99 million, with a growth rate of less than 100%. Expect Engine Yard to focus primarily on DevOps and even I&O pros — and perhaps to offer its technology on-premises as well as in public clouds.

- **GoGrid focuses on rich and reliable operations for big data workloads.** Originally a traditional hosting company (ServePath), GoGrid aggressively shifted strategy in 2008 to focus on its cloud platform, and then in 2013 tightened its focus further to big data applications. In doing so it chose to focus on do-it-yourself or managed services-led big data service configurations rather than building multitenant big data services. This is clearly a faster path to supporting a broad range of industry and open source tools, but puts more burden on DevOps or data scientist professionals to configure or specify for GoGrid's managed services teams the environments they want. GoGrid offers a broad set of infrastructure controls to DevOps pros via a robust API. The bulk of its customers are startups and smaller businesses, but its enterprise customer base has been growing steadily. GoGrid's focus from the beginning was on providing a resilient, high-performance cloud backed by a 100% uptime SLA and was one of the first public cloud vendors to offer a performance SLA.

- **Google, now a full-service platform, is running to catch the leaders.** Since our last analysis, Google has made significant improvements to its cloud platform — adding an IaaS service, innovated with new big data solutions (based on its homegrown dremel architecture), and added partners. Google is popular among web developers — we estimate that it has between 10,000 and 99,000 customers. But Google Cloud Platform lacks several key certifications, monitoring and security controls, and application services important to CIOs and provided by

AWS and Microsoft.[8] Google has also been slow to position its cloud platform as the home for applications that want to leverage the broad set of Google services such as Android, AdSense, Search, Maps, and so many other technologies. Look for that to be a key focus in 2015, and for a faster cadence of new features.

- **IBM's public cloud "reset" is off and running.** IBM's public cloud offering is comprised of two distinct brands. With SoftLayer, IBM has a solid infrastructure platform; with Bluemix, IBM has a promising development platform and growing set of application services and SaaS products. These new services replace IBM's first attempt at a public cloud, called SmartCloud. SoftLayer's infrastructure services are mature and expanding with new data centers around the world. SoftLayer customers also account for most of IBM's public-cloud accounts. In contrast, Bluemix is brand new, having become generally available to customers on June 30, 2014, and unproven at scale. The same is true of IBM's application services running on Bluemix — they are new and relatively untested. IBM's partner roster for its cloud platform is also rather light, reflecting just how new all of these services are. Building a large partner ecosystem will take time, even for IBM.

- **Mendix provides a PaaS dedicated to the rapid developer.** Mendix is focused solely on providing rapid developers with a time- and effort-saving alternative to conventional development platforms. As such, Mendix doesn't address the needs of development shops that must rely primarily on coding and/or custom infrastructure configurations. Mendix includes extensive visual, declarative development and delivery tools, prebuilt application components, and support for both web and mobile application creation. Since our last evaluation, Mendix has added a new marketplace, expanded its application-management features, and opened its platform with both a new API and support of Cloud Foundry. Mendix reports having between 1,000 and 10,000customers, of which about 200 are enterprises with 1,000 or more employees. Mendix reports that its revenues are between $10 million and $99 million, with a growth rate slightly more than 100%.

- **Microsoft's relentless pursuit of cloud platform leadership is paying off.** Microsoft had a rough start in public cloud platforms back in 2008 as it debuted an offering aimed at rapid devs and coders but lacking enough transparency to the infrastructure below to garner broad appeal. Now, Azure is a full service platform with solid infrastructure services, robust application services, a solid partner ecosystem, and strong integrations with its tools for developers and systems administrators. It has also built strong bridges to the non-Microsoft developer community through solid support for Linux, open source tools, and middleware. While its offering lacks the maturity and breadth of capabilities and controls of AWS, Microsoft has delivered strong services for video, big data, mobility, and integrations with the rest of the Microsoft application portfolio. Azure has also benefitted from strong strategic priority under Satya Nadella, who ran this platform prior to his ascension to CEO. He has ensured that Microsoft be "cloud first," mandating that all Microsoft services integrate with, and advance as, cloud services.

- **MIOsoft provides rapid devs with a strong data management PaaS.** That's not a typographical error; MIOsoft's MIOedge platform is designed for rapid devs but is relevance to coders as well. The challenge for MIOsoft is to break through as a recognized option. The company reports having fewer than 100 subscribing organizations, about a third of which are enterprises with 1,000 or more employees. And MIOsoft generated less than $10 million in cloud-related revenue in the last year, with a growth rate of more than 100%. MIOsoft added partners in the time since our first evaluation of the company, but faster customer acquisition clearly is MIOsoft's biggest challenge.

- **OpenText Cordys is now focused on BPM — but for who?** Cordys is one of OpenText's BPM solutions, having been acquired in August 2013. As such, Cordys' role is limited even though the company's development platforms are appropriate for a variety of application scenarios, not just BPM. We estimate that OpenText now has more than 1,000 customers on Cordys, including large enterprises. Further, we estimate that Cordys generated cloud revenues of between $10 million and $99 million during the last 12 months.

- **OutSystems' PaaS for rapid devs supports either .NET or Java stacks.** OutSystems is a long-time provider of development and delivery platforms for rapid devs that recently released its technology as a public PaaS. Like its frequent competitor, Mendix, OutSystems is dedicated to the rapid developer, not coders or DevOps pros. OutSystems includes extensive visual, declarative development and delivery tools, prebuilt applications and application components, support for both web and mobile application creation, and rich continuous delivery and application life-cycle management tools. OutSystems claimed to have more than 10,000 subscribing organizations; Forrester estimates about 200 of these customers are large enterprises.

- **Rackspace.** A pioneer of IaaS and the innovative leader behind the OpenStack open source platform architecture, Rackspace has had a tumultuous year. On the positive side, it has continued to grow customers and revenues as it has shifted its strategy and marketing away from OpenStack tutelage to building out new application services, acquiring others, and shifting its value proposition back to its foundational heritage of superior support, which it calls Fanatical Support. But it also faced the distractions of a change in leadership at the top and multiple acquisition discussions. Rackspace Cloud is still somewhat in transition as well. While its go-forward offering is now fully OpenStack-based it has a significant stable of customer applications on its prior cloud platform implementations. As those contracts expire and its managed services teams help customers migrate their workloads to the go-forward platform, it should allow the company to increase its investments in R&D of application services that will help it better compete as the market evolves. Rackspace was a non-participating vendor in this updated analysis.

- **Salesforce rides Force.com to leadership, seeks broader appeal with Heroku.** Force.com is one of the oldest and most successful platform-as-a-service offerings; Heroku is popular among developers creating consumer web applications. Together, as the Salesforce1 Platform, Force.com and Heroku are used by up to 100,000 organizations, about 10% of which are large enterprises.

Both Force.com and Heroku are backed by robust but divergent partner ecosystems — reflecting the different developer audiences the products appeal to. Salesforce advises clients to employ Force.com primarily for internal applications and use Heroku for customer-facing applications including mobile that access data managed in Salesforce's sales and service applications. A common identity management service and integration API connect the two platforms today; we expect more integration points in the future.

- **Verizon is a managed-service powerhouse early with a new cloud platform.** Verizon has moved away from what was a confusing mix of multiple cloud solutions in 2012 to a singular focus on a newly developed cloud platform based on Apache CloudStack atop either VMware or Xen hypervisors. It built out a new self-services interface designed to bridge the provisioning and management of its traditional hosting and cloud resources and as such this solution and the platform beneath it are showing their greenness. Lack of maturity was the biggest knock on this current offering but it shows solid promise in the infrastructure-as-a-service space. The company said it is moving away from providing a self-service cloud solution to one led instead by managed services. The company recently acquired EdgeCast, which adds content delivery services to its portfolio, but the emphasis going forward clearly looks more aligned to traditional managed services and less developer empowerment. One unique application play Verizon made this year was to purchase a bulk license of Oracle applications it can resell to its cloud users making it one of the first cloud platforms to provide per-use Oracle licenses supported for production deployment.

SUPPLEMENTAL MATERIAL

Online Resource

The online versions of Figures 4 through 7 are an Excel-based vendor comparison tools that provide detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of four data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.

- **Compulsory evaluations.** Vendors were presented with a compulsory script to demonstrate how developers consume their service which reflected common enterprise practices. We asked vendors to complete the steps within a 60-minute window. The demonstrations were recorded (video and audio) for analyst review during evaluation and with vendor permission.

- **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with two of each vendor's current customers.

- **Executive strategy calls.** We conducted a 60-minute strategy call with each vendor to address any remaining questions based on the survey, product demonstrator, or customer reference calls.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

This Forrester Wave evaluation employs a modified version of our standard methodology to update The Forrester Wave: Enterprise Public Cloud Platforms, Q2 2013. In the update, we removed a vendor that dropped out of the market and added new qualifying providers. We used the same criteria from the Q2 2013 Wave, with updated scoring scales to evaluate vendor features and strategy information as of June 30, 2014. We gave vendors that participated in our Q2 2013 Wave the option of providing updated information on their services, strategies, and market presences. Two vendors that participated in our Q2 2013 Wave chose not to provide updated information for this update, and so we included them as "nonparticipating vendors."

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave report — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and we encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

Vendor Selection Criteria

Forrester selected 16 vendors from an initial field of 60 using the following nine criteria.

- **Accessible via Internet protocols as a public cloud service.** Enterprise developers need the ability to access the service unfettered to achieve the agility and autonomy desired. Thus, we excluded services available only after signing a sales agreement with the vendor, only accessible via private links, or only accessible as a managed service.

- **Provides a cloud runtime environment.** We included application platforms that provided fully automated virtual infrastructure, cloud-native platform services, or a full runtime environment for hosting and launching customer applications. We excluded products that did not allow direct configuration and deployment of end user code.

- **Provides its own persistent virtual storage repository.** Storage is a crucial element for any application, but it comes in many different forms. For some developers, the selection of the storage technology is crucial to the application's performance or execution. All selected vendors had to provide at least one of object, file, or block storage options.

- **Provides data centers in at least the US and Western Europe.** The platforms also had to provide the ability for customers to deploy applications locally in North America and Western Europe. This is a key criterion for performance for enterprise customers and helps clients isolate compute and/or data storage to a single geography to meet EU and similar privacy regulations.

- **Five publicly referenceable enterprises use the platform.** To ensure that each cloud platform had enterprise customers and were meeting their unique needs we required five public references with 1,000 or more employees.

- **Provides billing based on tracking of actual resource consumption.** This criterion recognizes a defining characteristic of cloud computing platforms — pay-as-you-go pricing and economic models. Developers prefer to leverage cloud platforms for Agile projects knowing that their commitments to resources can be changed at any time. This cost model also best suits applications with elasticity or transiency performance characteristics.

- **Provides self-service developer access to the service.** We required that vendors provide both a self-service portal and application programming interfaces (APIs) for sign-up, deployment, configuration, and administration functions. While a portal is common among nearly all cloud platforms, developers often prefer to programmatically control app deployment, which makes the API crucial to enterprise readiness.

- **Backed by 24x7 customer phone support.** It's hard to say you are ready for enterprise customers if you take 24 hours to get back to the client when a problem occurs. We required support availability around the clock and a minimum support response time of four hours.

- **Generally available as of June 30, 2014.** All evaluated platforms needed to be in full commercial release as of the beginning of our analysis period with paying customers using the service and production applications as of this date. Some of the providers evaluated had enhancements to their services and complimentary services available only in limited preview or beta at this time — we screened out those services in our Current Offering analysis, but factored them into our evaluation of the vendor's product strategy.

ENDNOTES

[1] Thirty-six percent of global technology and business decision-makers responded that their firms were "planning to implement in the next 12 months," "piloting," "implemented, not expanding," or "expanding/upgrading implementation" of a public cloud deployment model. Source: Forrester's Business Technographics® Global Infrastructure Survey, 2014.

[2] Forrester's cloud developer survey found that AWS' higher-level services were gaining adoption at rates equal to the most popular PaaS services. See the December 14, 2012, "Q3 2012 Global Cloud Developer Online Survey Results" report.

[3] Both Microsoft's Windows Azure Infrastructure Services and Google Compute Engine were in limited preview at the time of this Forrester Wave analysis and thus were not included in the full evaluation. We factored the existence of both products into our analysis of the vendors' respective strategies.

[4] DevOps pro is our term, but not yet widely used in the industry. "DevOps" usually refers to a set of practices for collaboration between AD&D and I&O to improve responsiveness. We found in this research that some developers take on configuration and support work that historically has belonged to I&O groups. See the April 26, 2011, "Augment DevOps With NoOps" report.

[5] We excluded Microsoft's WebMatrix tool from our comparison of products for rapid devs in this update. The tool, while it dramatically simplifies basic website creation, is not competitive with the cloud platform designed for rapid developers that we evaluated.

[6] Force.com Communities supports a broader language set for creating web applications.

[7] We define AWS' customer base as global technology and business decision-makers whose firms are "piloting," have "implemented, not expanding," or are "expanding/upgrading implementation" of a public cloud deployment model with Amazon Web Services (AWS) Elastic Compute Cloud (EC2) as their provider. Source: Forrester's Business Technographics® Global Infrastructure Survey, 2014.

[8] Among certifications, Google lacked PCI-DSS, FedRamp, and MPAA at the time of our analysis. Google was working on obtaining each of these certifications. Similarly, Google's cloud-management tools lacked policy features at our cutoff date for inclusion, but were in development. Lastly, Google's catalog of application services is limited to MapReduce analysis.

FORRESTER®

About Forrester

A global research and advisory firm, Forrester inspires leaders, informs better decisions, and helps the world's top companies turn the complexity of change into business advantage. Our research-based insight and objective advice enable IT professionals to lead more successfully within IT and extend their impact beyond the traditional IT organization. Tailored to your individual role, our resources allow you to focus on important business issues — margin, speed, growth — first, technology second.

FOR MORE INFORMATION

To find out how Forrester Research can help you be successful every day, please contact the office nearest you, or visit us at www.forrester.com. For a complete list of worldwide locations, visit www.forrester.com/about.

CLIENT SUPPORT

For information on hard-copy or electronic reprints, please contact Client Support at +1 866.367.7378, +1 617.613.5730, or clientsupport@forrester.com. We offer quantity discounts and special pricing for academic and nonprofit institutions.

Forrester Focuses On CIOs

As a leader, you are responsible for managing today's competing demands on IT while setting strategy with business peers and transforming your organizations to drive business innovation. Forrester's subject-matter expertise and deep understanding of your role will help you create forward-thinking strategies; weigh opportunity against risk; justify decisions; and optimize your individual, team, and corporate performance.

« **CAROL ITO,** client persona representing CIOs