

Control The Cloud, Before The Cloud Controls You

FEATURING RESEARCH FROM FORRESTER

Forrester Data: Cloud Security Solutions
Forecast, 2016 To 2021 (Global)

OVERVIEW

The following report discusses the “Shift To The Cloud” that raises security concerns and how traditional security tools can’t effectively monitor data moving to and from the cloud and between cloud platforms.

While CASB is an essential element in a cloud security project, it’s important to note that cloud security requires a holistic approach. Know more about Tata Communications’ holistic security framework for Managed Security Services. Learn how to evaluate and select cloud security models for multi-cloud environments to meet security and compliance requirements using the Multi-Layered framework driven approach.

SHIFT TO THE CLOUD

The use of cloud services is rapidly expanding in the enterprise, with the average enterprise using hundreds of distinct cloud services today, there is an overwhelming trend to move a large variety of cloud environment and services. According to the following report, the public cloud services market is predicted to reach \$236 billion by 2020 with the highest growth rates being recorded in SaaS followed by IaaS. While CISOs and Security heads are burdened with the concerns around the challenges to secure and govern their cloud usage, their perspective is also shifting towards Cloud service enablement through a measured risk management approach. As a result, IT security organizations are looking to provide visibility, threat protection, compliance and data security for cloud services in an effective and practical manner that supports both employee productivity and IT security.

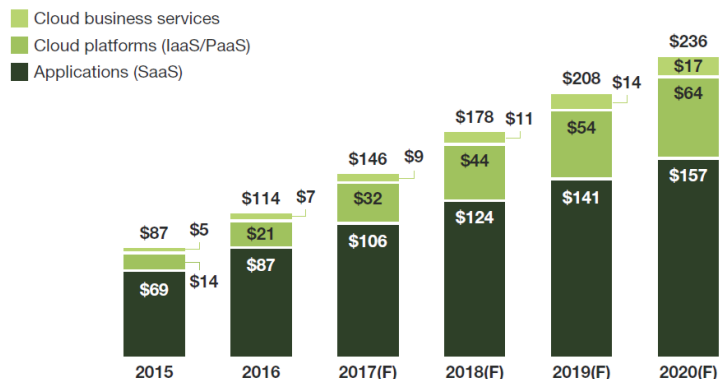
IN THIS DOCUMENT

2 Overview

4 Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

20 About Tata Communications

Global public cloud services revenue
(US\$ billions)



F = Forecast

Source: Forrester Data: Public Cloud Services Forecast, 2016 To 2020 (Global)

Tata Communications as both a Managed Security Services Provider (MSSP) as well as Cloud Service Provider (CSP) is seeing noticeable trends around –

- Need to make security as flexible and scalable as IaaS consumption, but this is not easily achieved
- Data encryption is a preferred method of data protection, but the model needs to be robust around key management controls as well as application compatibility with encryption
- Ability to layer on advanced controls including APT and Analytics based solution as more critical workloads make their way to the Cloud
- Common orchestration and management framework around Cloud Infrastructure and security

CLIENT CONTENT HEADING 2: CLOUD SECURITY CONCERNS

Some of the biggest challenges while organizations looking to move assets and data into the cloud are Shared responsibility, access control, Identity management, Governance, Shadow IT, human errors, etc. This makes risk assessment difficult, as every organization will have subjective views on what constitutes an appropriate minimum standard for security controls, as well as a model for evaluating risk.

Shared Responsibility Model:

Security is ultimately a shared responsibility between the company and the public cloud vendor. According to Forrester, cloud success comes from mastering the “uneven handshake”. While cloud vendors are typically responsible for securing the data center, infrastructure and hypervisor, the onus is on you, as a consumer to close this gap with the necessary OS, users, applications, data and of course, security– in tandem with the vendor. As we can see here, the shared security model means the organization is ultimately responsible for what happens to their data hence this model needs to be matched by a flexible security framework and operational approach that address the varying needs in a multi-cloud environment. - It’s time to secure the cloud!

CLIENT CONTENT HEADING 3: CONCLUSION

Customers can securely migrate to the cloud and consume the cloud services with the adoption of security best practices, guided by the industry experts.

The integrated cloud security approach by Tata communications provides organizations with a flexible architecture and delivery model which ensures highest security when the cloud services are consumed. We support organizations in developing an effective security strategy to manage the “Customer Responsibility” in the cloud, which also includes the focus around privacy, compliance, and business requirements during cloud adoption.

Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

ForecastView Document

by Jennifer Adams and Andras Cser
June 8, 2017 | Updated: July 6, 2017

Why Read This Report

As software, infrastructure, and platforms shift to the cloud, a new breed of security services is emerging and growing to address the security requirements. This data-driven report gives a five-year view of growth in the global cloud security solutions market, including cloud security gateways (CSGs), also known as cloud access security brokers (CASBs); centralized cloud security management (CCSM); hypervisor security; and native infrastructure-as-a-service/platform-as-a-service (IaaS/PaaS) security. We also share highlights from the forecast.

Key Takeaways

Shift To The Cloud Raises Security Concerns

Security decision makers are increasingly concerned about cloud security risk. According to the latest Forrester survey data, over 50% of security decision makers are concerned about the risk of SaaS, IaaS, PaaS, and virtualization in the data center.

Traditional Security Tools Fall Short

Traditional security tools can't effectively monitor data moving to and from the cloud and between cloud platforms. This can lead to a failure to identify fraudulent use of data in the cloud, unauthorized downloads, and malware in the cloud. Cloud security solutions provide the tools to keep cloud data and applications secure, especially when data moves between cloud workloads and apps (east-west).

Cloud Security Solutions Market Will Grow 28% Annually

We expect the global cloud security solutions market to grow 28% annually over the 2016-to-2021 period, from \$1.0 billion in 2016 to \$3.5 billion in 2021.

Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

ForecastView Document

by [Jennifer Adams](#) and [Andras Cser](#)
with Sanjeev Kumar

June 8, 2017 | Updated: July 6, 2017

Table Of Contents

[As Business Shifts To The Cloud, Security Becomes More Critical](#)

[Traditional Security Tools Fall Short](#)

[Cloud Security Solutions Evolve To Meet The Challenge](#)

[Global Cloud Security Spending Will Reach \\$3.5 Billion By 2021](#)

[US And Financial Services Will Continue To Fuel Growth](#)

[Supplemental Material](#)

Related Research Documents

[Brief: The Emergence Of The Cloud Security Gateway](#)

[Create Your Cloud Security Technology Strategy And Road Map](#)

[The Forrester Wave™: Cloud Security Gateways, Q4 2016](#)

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As Business Shifts To The Cloud, Security Becomes More Critical

Cloud is big business today. Forrester estimates that in 2016, global cloud services revenue totaled \$114 billion, up from \$68 billion just two years ago, implying 30% annual growth.¹ Looking ahead, we see the public cloud services market reaching \$236 billion by 2020 (see Figure 1). This rapid shift to the cloud raises new issues and challenges for security and risk professionals. [Access the ForecastView spreadsheet.](#)

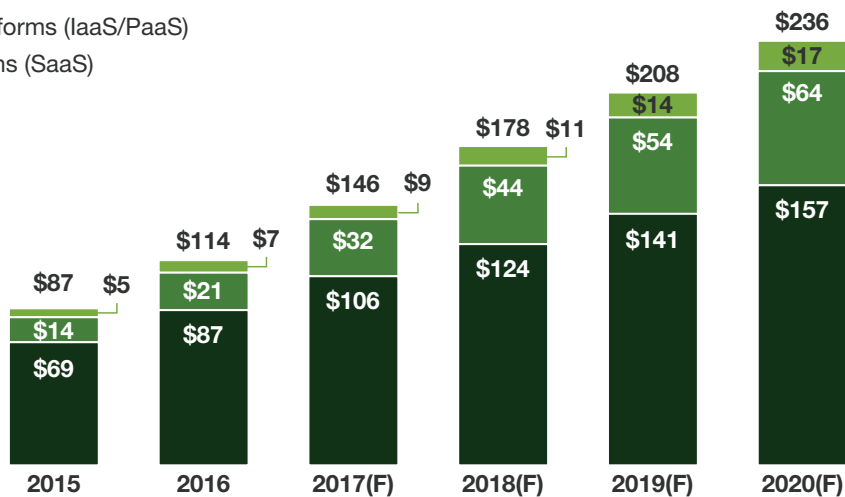
- › **Security becomes more important as mission-critical apps move to the cloud.** Enterprises want the flexibility of public cloud, and Forrester sees a new phase of public cloud growth as companies move analytics and core business applications to the cloud.² The public cloud providers can run data centers more efficiently and more securely than the tech managers driving the shift. A good analogy is the number of accidents per air passenger mile versus car passenger mile: You let the experts take care of security. Cloud security becomes increasingly essential as mission-critical apps and workloads move to the cloud.³ While the use of cloud services has become more mainstream, security decision makers are increasingly concerned about cloud security (see Figure 2). A security and risk (S&R) professional at a North American bank said: “Today it’s not if but how we move to the cloud. How can I enable and secure our bank’s transitioning of our data and workloads to the cloud?”
- › **Cloud complexity requires enhanced cloud security.** Enterprises typically have multiple cloud implementations and use multiple cloud service providers.⁴ Public, private, and hybrid cloud all coexist, serving different needs and applications. This complexity creates challenges for cloud security. Challenges include monitoring data, detecting anomalies, and intercepting bad behaviors.
- › **PaaS/laaS growth creates its own security challenges.** While growth in software-as-a-service (SaaS) has slowed down a bit, we continue to see aggressive growth for infrastructure-as-a-service (IaaS) and, to a degree, platform-as-a-service (PaaS) offerings. AWS and Microsoft Azure revenues were up 47% and 93%, respectively, in Q4 2016, while Alibaba reported over 100% growth in its cloud platform.⁵ Forrester expects 51% year-over-year growth in IaaS/PaaS in 2017.⁶ The growth in cloud platforms raises security challenges as data moves among multiple cloud platforms.

FIGURE 1 The Global Public Cloud Services Market Is Growing By 22% Annually

Global public cloud services revenue

(US\$ billions)

- Cloud business services
- Cloud platforms (IaaS/PaaS)
- Applications (SaaS)



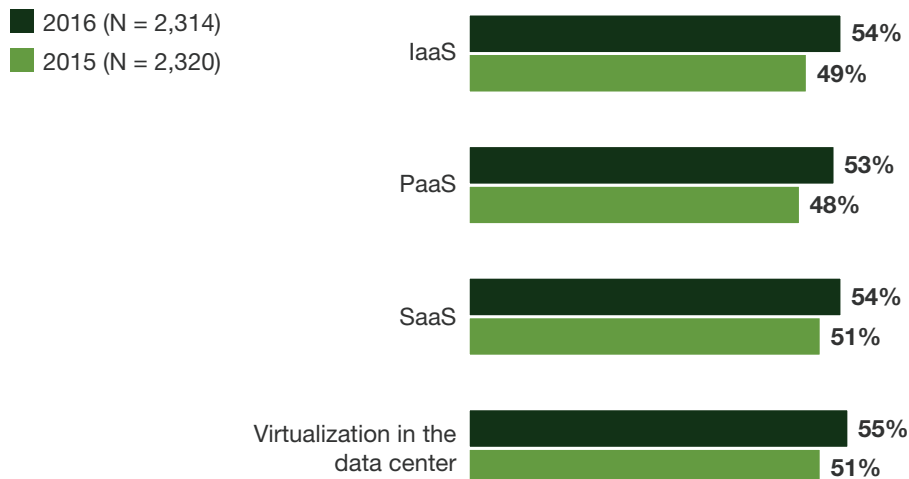
F = Forecast

Source: Forrester Data: Public Cloud Services Forecast, 2016 To 2020 (Global)

FIGURE 2 The Shift To The Cloud Raises Security Concerns

“How concerned are you with the risk that the following initiatives or technologies could introduce in your firm?”

(4 or 5 on a scale of 1 [not at all concerned] to 5 [very concerned])



Base: security technology decision makers

Source: Forrester Data Global Business Technographics® Security Survey, 2015 and 2016

TRADITIONAL SECURITY TOOLS FALL SHORT

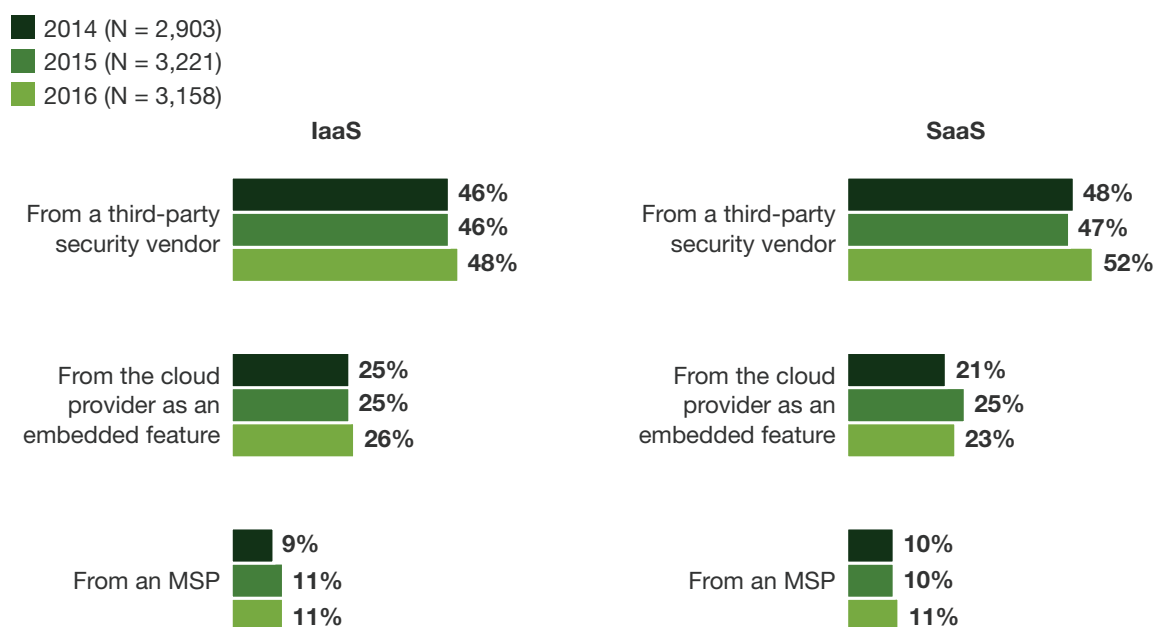
Traditional perimeter-based security tools do little to protect cloud workloads, and do-it-yourself internal solutions can be costly to develop and consume valuable in-house IT resources. We expect most companies to look to commercial off-the-shelf (COTS) solutions for their cloud security needs.

- › **No more chewy centers.** In 2009, Forrester developed a new information security trust model called the Zero Trust Model. “Chewy centers” refers to the old adage, “We want our network to be like an M&M, with a hard, crunchy outside and a soft, chewy center.” For today’s digital business, this traditional perimeter-based security model is ineffective and the shift to the cloud has further undermined its effectiveness.⁷ Identity, privacy, and behavioral analytics are emerging as the key enablers of Zero Trust in the cloud.
- › **IaaS platforms don’t offer cross-platform support.** An increasing number of enterprises use multiple IaaS cloud providers. Unfortunately, individual IaaS providers don’t offer cross-platform security support. AWS, for example, does not easily allow for centralized security management of workloads in any other cloud than AWS. Alternatively, centralized cloud security management (CCSM) tools can monitor the security of and prevent unauthorized changes and activity in cloud platforms.⁸

- › **Third-party cloud security solutions are a top choice to solve the problem.** We recently asked security decision makers how they plan to manage the security of their SaaS and IaaS operations, and about half prefer to use third-party security vendors (see Figure 3). Why? The most common rationale is this: “If the cloud provider gets hacked, at least our data is encrypted and the hackers have no access to the encryption keys — so our data is useless to them.” We expect this preference for third-party solutions to help drive commercial cloud security software sales over the next five years.

FIGURE 3 Interest In Third-Party Cloud Security Solutions Is Steady

“How would your firm prefer to implement solutions that secure public infrastructure-as-a-service and software-as-a-service?”



Base: security decision makers

Source: Forrester Data Business Technographics® Global Security Survey, 2014 and Forrester Data Global Business Technographics Security Survey, 2015 and 2016

Cloud Security Solutions Evolve To Meet The Challenge

Since we last published our cloud security solutions forecast in August 2015, we have seen a reshaping and consolidation in the sector.

- › **Cloud security gateways.** Over the last two years, we have seen three security segments — cloud data protection (CDP), cloud access security intelligence (CASI), and cloud data governance (CDG) — consolidated into cloud security gateways (CSGs), also known as cloud access security brokers (CASBs).⁹ Cloud security gateways enable: 1) encrypting data at use, at result, and before it goes to SaaS applications; 2) shadow IT detection; 3) data loss prevention (DLP); 4) malware detection; and 5) cloud access anomaly detection.
- › **Centralized cloud security management.** These are solutions that control security configurations and file configuration integrity in IaaS and PaaS workloads. This can include: 1) malware protection; 2) host-based firewalls; 3) log inspection; 4) intrusion detection and prevention; 5) configuration management and file integrity monitoring; 6) virtualization support; and 7) privilege escalation.
- › **Hypervisor security.** Solutions that control security in hypervisors enable their users to monitor activity between the guest operating system (OS) and the hypervisor, encrypt disks that the guest OS uses, and centrally manage the tasks each administrator can do (start, stop, etc.) with each guest OS.
- › **Native IaaS/PaaS platform security.** Native security solutions are provided by cloud platform providers. Typical areas include: 1) data classification and categorization; 2) data segmentation; 3) server access control; 4) resource-based access control and access control lists; 5) user IAM and attestation; 6) data-at-rest encryption; 7) data-in-transit encryption; 8) encryption key management; 9) logging, auditing, and anomaly detection; and 10) role-based access control.

GLOBAL CLOUD SECURITY SPENDING WILL REACH \$3.5 BILLION BY 2021

Forrester has examined the growth in four cloud security solutions segments: CSGs, centralized CCSM, hypervisor security, and native IaaS/PaaS security. We expect the global cloud security market to grow from \$1.0 billion in 2016 to \$3.5 billion in 2021, implying a 28.1% compound annual growth rate (CAGR) (see Figure 4).

- › **CSG emerges as a consolidated offering.** Our market segmentation has evolved since we last published our cloud security solutions forecast in August 2015. Not surprisingly, over the last two years, we have seen three security segments — CDP, CASI, and CDG — consolidated into CSGs.¹⁰ Rather than investing in several point solutions for cloud security, CSGs allow security and risk professionals to partner with a single vendor offering a consolidated solution. We expect the CSG market to grow at a 25.5% CAGR over the 2016-to-2021 period.

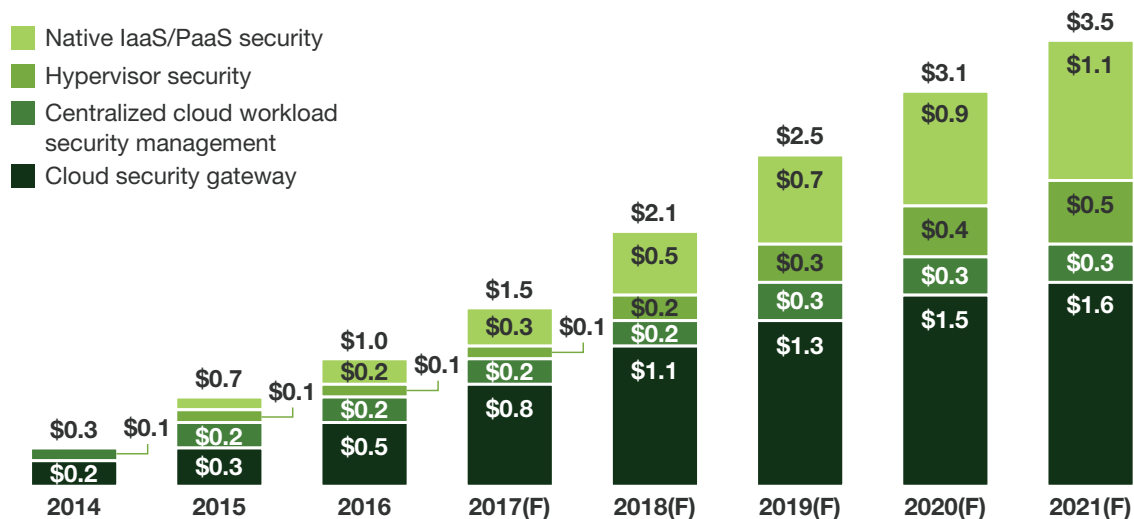
- › **CCSM offers cross platform support.** CCSM solutions control security configurations and file configuration integrity in IaaS and PaaS workloads.¹¹ These tools solve the security challenges of diverse clouds and offer cross-platform support using centralized policy management and auditing. We forecast 7.5% growth in CCSM solutions over the next five years.
- › **Hypervisor security keeps virtual machines safe.** As virtual machines' use grows, we see a corresponding need for increased hypervisor security. In Forrester's latest infrastructure survey, 66% of global infrastructure decision makers cite broad use of server virtualization as a high or critical priority.¹² We project that the hypervisor security market will grow 38.4% over the forecast period.
- › **Native IaaS and PaaS security grows as cloud platforms go mainstream.** The cloud platform vendors provide native IaaS/PaaS security.¹³ Forrester estimates that in 2015, IaaS/PaaS represented the equivalent of 15% of global hardware spending, and we expect this to increase to 40% by 2020.¹⁴ We expect this rapid growth in IaaS/PaaS adoption to fuel 40.9% native IaaS/PaaS security growth over the next five years.

FIGURE 4 Cloud Security Solutions Will Grow By 28% Annually

Global cloud security solutions spending

(US\$ billions)

CAGR (2016 to 2021): 28.1%



F = Forecast

Source: Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

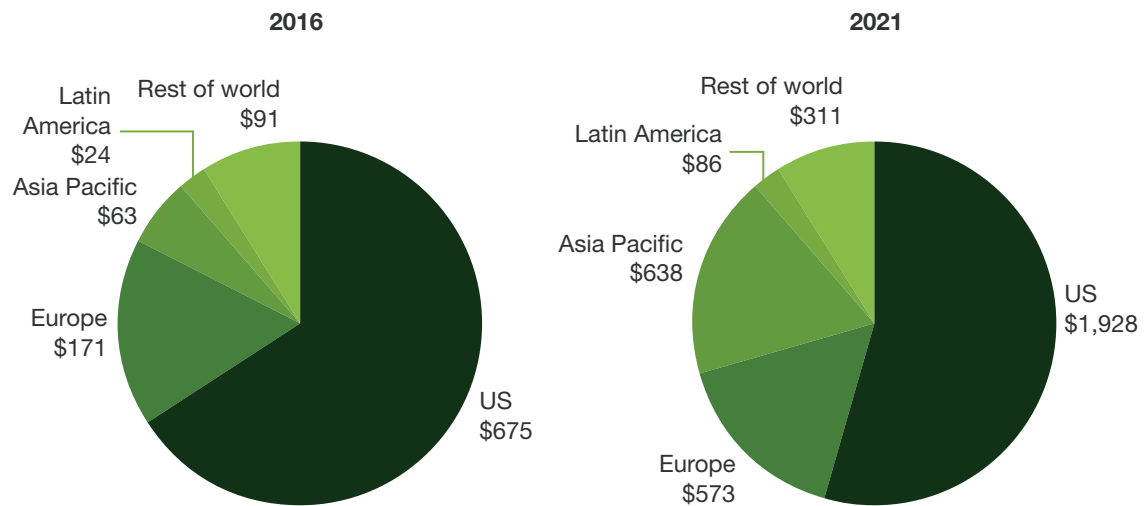
US And Financial Services Will Continue To Fuel Growth

Today, most cloud security solutions users are in the US and Europe (see Figure 5). We estimate that the US accounted for 66% of the market in 2016, and its share will decrease to 55% by 2021. Asia will show considerable growth, but it will be driven by native IaaS/PaaS offerings. Looking at the market by vertical on a global basis, we highlight a few compelling sectors and trends (see Figure 6).

- › **Financial services represent the largest market today.** A few years ago, the idea of using cloud services would have been controversial, and even radical, at most financial services companies.¹⁵ Today — to reduce costs and stay competitive among their peers — financial services companies are migrating applications and integrating legacy assets into the cloud. Security is paramount to keep customers comfortable with online banking tools and to protect personal financial data. To keep those assets safe, we estimate that financial services companies are the largest users of cloud security solutions in 2016 and will continue to be the largest market segment in 2021. We expect the financial services sector to grow by 19.6% over the next five years.
- › **Retailers embrace cloud security to protect personal data.** While Amazon is the leader in one-click shopping, today many retailers allow customers to store credit card and other personal information on their eCommerce sites to speed up the shopping process. In parallel with the shift of fraud management solutions from on-premises to the cloud, we expect retailers to adopt cloud security solutions to protect not only credit card data but also other personal information such as home address, email address, cell phone, and buying histories. Data breaches can be extremely costly to retailers in terms of long-term damage to their brand. We expect the retail segment to be one of the largest users of cloud security solutions by 2021, growing by 29.7% annually.
- › **Government use is growing rapidly.** Government agencies are traditionally laggards in technology adoption — however, the US government's proactive FedRAMP initiative to codify cloud security requirements was ahead of other verticals.¹⁶ The shift of government resources to the cloud brings with it not only a proliferation of special, government-specific IaaS data center zones but also a need for additional security protections. We have seen government use of cloud services tick up over the last few years, and we expect growth in use of cloud security tools to follow.¹⁷ Government will be one of the fastest-growing sectors, at a 38.7% CAGR.
- › **Professional services embrace the cloud.** Professional services include a diverse mix of firms such as consultants, law firms, advertising agencies, and realtors who are adopting cloud. In March 2017, Deloitte acquired Day1 Solutions, a cloud consulting business, to accelerate its clients' digital transformation.¹⁸ We project that the professional services sector will grow by 39.6% over the 2016-to-2021 period.

FIGURE 5 The US Will Remain The Largest Market**Global cloud security solutions spending by region**

(US\$ millions)



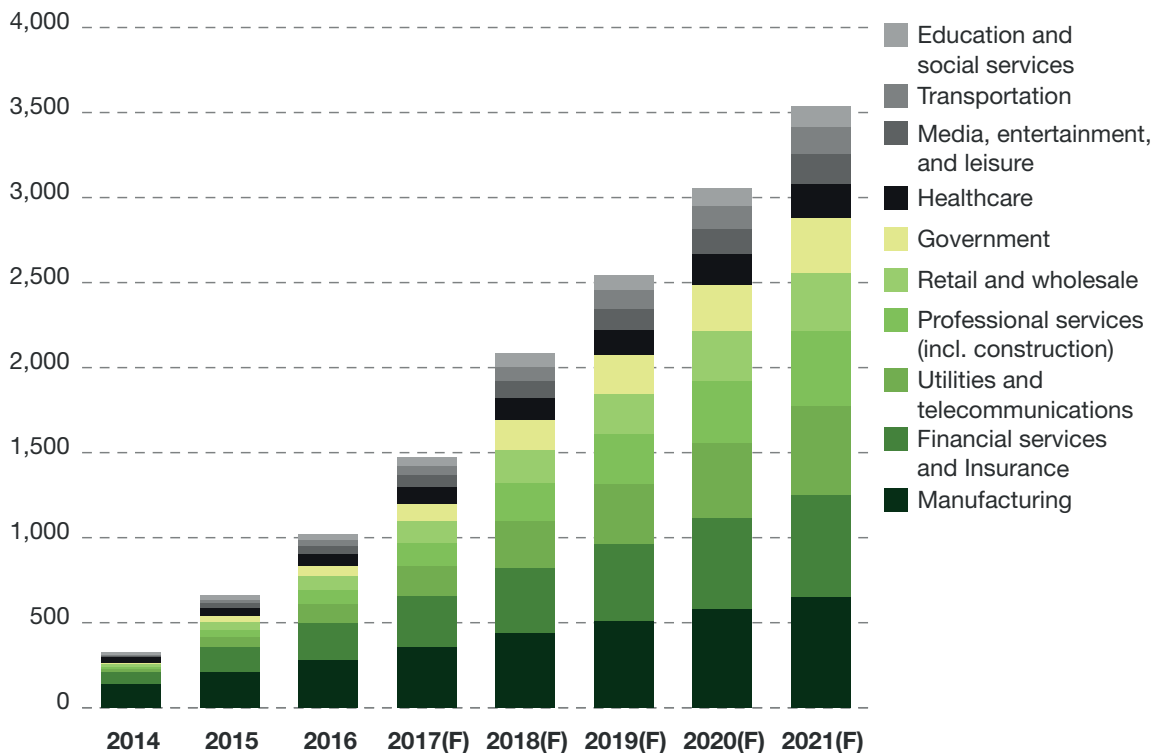
Source: Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

FIGURE 6 Multiple Verticals Will Drive Growth

 The spreadsheet associated with this figure contains additional data.

Global cloud security solutions spending by industry

(US\$ millions)



Source: Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

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SURVEY METHODOLOGY

For the Forrester Data Global Business Technographics® Applications And Collaboration Workforce Survey, 2016, we conducted an online survey fielded from October to November 2016 of 7,249 information workers located in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US from companies with two or more employees.

For the Forrester Data Global Business Technographics Infrastructure Survey, 2016, we conducted an online survey fielded from June to July 2016 of 3,503 business and technology decision makers located in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US from companies with two or more employees.

For the Forrester Data Global Business Technographics Security Survey, 2016, we conducted an online survey fielded from March to May 2016 of 3,588 business and technology decision makers located in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US from companies with two or more employees.

For the Forrester Data Global Business Technographics Software Survey, 2016, we conducted an online survey fielded from August to September 2016 of 3,582 business and technology decision makers located in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US from companies with two or more employees.

Forrester Data Business Technographics provides demand-side insight into the priorities, investments, and customer journeys of business and technology decision makers and the workforce across the globe. Forrester collects data insights from qualified respondents in 10 countries spanning the Americas, Europe, and Asia. Business Technographics uses only superior data sources and advanced data-cleaning techniques to ensure the highest data quality.

Endnotes

- ¹ See the Forrester report “[The Public Cloud Services Market Will Grow Rapidly To \\$236 Billion In 2020.](#)”
 - ² See the Forrester report “[Brief: Systems Of Record Projects Are Poised To Drive New Cloud Growth.](#)”
 - ³ For more discussion of the issues associated with moving mission-critical apps to the cloud, see the Forrester report “[SAP Customers Have Four Paths To The Cloud.](#)”
 - ⁴ In the Forrester Data Global Business Technographics Infrastructure Survey, 2016, over 50% of respondents reported four or more public cloud implementations, and 9% reported 10 or more cloud implementations. Source: Forrester Data Global Business Technographics Infrastructure Survey, 2016.
 - ⁵ On February 2, 2017, Amazon reported its results for the quarter ending December 31, 2016. AWS revenue of \$3.5 billion was up 47% year-over-year. Source: “Amazon.com Announces Fourth Quarter Sales up 22% to \$43.7 Billion,” Amazon press release, February 2, 2017 (http://phx.corporate-ir.net/phoenix.zhtml?c=97664&p=irol-newsArticle_Print&ID=2241835).
- On January 26, 2017, Microsoft reported its results for the quarter ending December 31, 2016. Microsoft Azure revenue was up 93% year-over-year. Source: “Earnings Release FY17 Q2,” Microsoft press release, January 26, 2017 (<https://www.microsoft.com/en-us/Investor/earnings/FY-2017-Q2/press-release-webcast>).
- On January 24, 2017, Alibaba Group reported its results for the quarter ending December 31, 2016. Revenue from cloud computing was US\$254 million, up 115% year-over-year, and paying customers were up 100% year-over-year to 765,000. Alibaba Cloud provides services including elastic computing, data storage, web hosting, and cloud security services. Source: “Alibaba Group Announces December Quarter 2016 Results,” Alibaba Group press release, January 24, 2017 (http://www.alibabagroup.com/en/news/press_pdf/p170124.pdf).
- ⁶ See the Forrester report “[The Public Cloud Services Market Will Grow Rapidly To \\$236 Billion In 2020.](#)”
 - ⁷ See the Forrester report “[No More Chewy Centers: The Zero Trust Model Of Information Security.](#)”
 - ⁸ For more insight on scaling security to a large number of IaaS workloads, see the Forrester report “[Market Overview: Cloud Workload Security Management Solutions — Automate Or Die.](#)”
 - ⁹ For more insight, see the Forrester report “[Brief: The Emergence Of The Cloud Security Gateway.](#)”
 - ¹⁰ For more insight, see the Forrester report “[Brief: The Emergence Of The Cloud Security Gateway.](#)”
 - ¹¹ For more information on centralized cloud security management, see the Forrester report “[Market Overview: Cloud Workload Security Management Solutions — Automate Or Die.](#)”
 - ¹² Source: Forrester Data Global Business Technographics Infrastructure Survey, 2016.
 - ¹³ Native IaaS/PaaS security is provided by the cloud platform vendors. For example, AWS launched Amazon Inspector and AWS Config Rules in October 2015. Source: Paul Stamp, “New Security Services Launched at AWS re:Invent 2015—Amazon Inspector, AWS WAF, and AWS Config Rules,” Amazon Web Services, October 7, 2015 (<https://aws.amazon.com/blogs/security/new-security-services-launched-at-aws-reinvent-2015-amazon-inspector-aws-waf-and-aws-config-rules/>).
 - ¹⁴ See the Forrester report “[The Public Cloud Services Market Will Grow Rapidly To \\$236 Billion In 2020.](#)”
 - ¹⁵ Source: Rahul Singh, “How the financial services industry is slowly waking up to cloud computing,” Cloud Tech, October 3, 2016 (<https://www.cloudcomputing-news.net/news/2016/oct/03/how-financial-services-industry-slowly-waking-cloud-computing/>).
 - ¹⁶ FedRAMP is the result of close collaboration with cybersecurity and cloud experts from GSA, NIST, DHS, DOD, NSA, OMB, the Federal CIO Council and its working groups, as well as private industry. Source: “About FedRAMP,” U.S. General Services Administration (<https://www.gsa.gov/portal/category/102375>).

¹⁷ Looking at the US government as an example, Forrester sees a continuing shift to the cloud. For more information, see the Forrester report “[US Government Sector Tech Spending Trends, 2017 To 2018.](#)”

Source: Barb Darrow, “Why the U.S. Government Finally Loves Cloud Computing,” Fortune, September 2, 2016 (<http://fortune.com/2016/09/02/us-government-embraces-cloud/>).

¹⁸ Source: James Bourne, “Deloitte strengthens cloud options with acquisition, new jobs and studios,” Cloud Tech, March 27, 2017 (<https://www.cloudcomputing-news.net/news/2017/mar/27/deloitte-strengthens-cloud-options-acquisition-new-jobs-and-studios/>).

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