

5th Annual Trends in Cloud Computing



NOVEMBER 2014

About this Research

CompTIA's 5th *Annual Trends in Cloud Computing* study builds on previous CompTIA research in the cloud computing space, further exploring trends, challenges, and opportunities. The objectives of this study include:

- Collect information on end-user purchase drivers and/or inhibitors
- Assess depth of cloud usage and ways in which it is changing IT behavior
- Evaluate adoption patterns among end users and map to channel business models
- Track the experience of channel partners offering cloud solutions, building cloud practices
- Measure impact of cloud computing on channel roles/vendor relationships

This study consists of five sections, which can be viewed independently or together as sections of a comprehensive report. The individual sections and full report can be viewed at the cloud computing research page on the CompTIA website.

Section 1: Market Overview

Section 2: Usage Patterns

Section 3: Challenges

Section 4: Business Model Analysis

Section 5: Channel Dynamics

This study was conducted in two parts.

Part I: quantitative online survey of 400 IT and business professionals in the United States involved in IT decision-making (aka end users). Data collection occurred during June 2014. The margin of sampling error at the 95% confidence level is +/- 5.0 percentage points. Sampling error is larger for subgroups of the data.

Part II: quantitative online survey of 400 IT firms in the United States (aka channel). Data collection occurred during July 2014. The margin of sampling error at the 95% confidence level is +/- 5.0 percentage points. Sampling error is larger for subgroups of the data.

For both surveys, CompTIA worked with the research firm Research Now to facilitate data collection using an independent panel. As with any survey, sampling error is only one source of possible error. While non-sampling error cannot be accurately calculated, precautionary steps were taken in all phases of the survey design, collection and processing of the data to minimize its influence.

CompTIA is responsible for all content contained in this series. Any questions regarding the study should be directed to CompTIA Market Research staff at research@comptia.org.

CompTIA is a member of the Marketing Research Association (MRA) and adheres to the MRA's Code of Market Research Standards.

SECTION 1:

Market Overview



Key Points

- In the five years that CompTIA has been studying cloud computing, the topic has shifted from a potential game-changer to an essential ingredient of modern IT. IDC estimates the public cloud market to have reached \$45.7 billion in 2013, and they expect it to grow at 23% CAGR through 2018. On the private cloud side, IDC estimates that worldwide spending on hosted private cloud services will surpass \$24 billion by 2016.
- Both channel firms and end users are experiencing disruption as they move towards cloud-enabled infrastructure and solutions. Forty-one percent of channel firms cite cloud as a catalyst for new directions requiring business transformation. From an end user perspective, over 90% of U.S. firms claim some form of cloud computing, and over 60% of those firms stating that cloud components represent at least a third of their overall IT architecture.
- Although adoption rates are high and market numbers are positive, there is still confusion related to cloud computing. Twenty-eight percent of survey respondents identifying as cloud users selected neither private nor public cloud as their usage model, pointing to confusion over terminology or lack of recognition for their cloud model. Clearing up this confusion should not be a primary activity but instead should be used as needed while discussing options for IT operations.

The First Five Years of Cloud Computing

In the five years that CompTIA has been studying cloud computing, the topic has shifted from a potential game-changer to an essential ingredient of modern IT. In fact, the disruption that cloud computing brings to back-end computing (traditionally done by on-premise mainframes and servers) along with the disruption that mobility brings to front-end computing (traditionally done by desktop or laptop PCs) is ushering in a new era of IT.

The significance of the new era comes from the changes that will take place in organizational workflow and in the distribution of technology products and services. From an end user perspective, companies may initially view cloud computing as an alternative option for existing processes and applications. Eventually, businesses will move towards a new architecture built on the unique properties of cloud systems. From a channel perspective, cloud computing will offer a new platform for building services, allowing channel firms to add new value in distancing their clients from the logistics of IT and focusing them on the ultimate goals they have for technology.

The previous eras of IT have lasted for 25-30 years. After five years, then, the era of cloud computing is just getting started. The next decade will see cloud computing become even more accepted as a foundational building block, and it may even fade into the background as discussions turn more towards the management of overall architecture and the services built on that architecture that drive a business forward.

What a Difference 5 Years Make

The past 5 years has seen major changes in the field of cloud computing, both from the perspective of the channel and from end users. Here are some comments from CompTIA's inaugural cloud computing report, along with brief updates in each area (with more details to follow throughout this report).

- **“A significant chunk of the channel is cautiously dipping into cloud computing”:** The channel is now all in on the cloud, with 93% of firms characterizing their cloud solutions as mature or somewhat mature.
- **“Both the channel and end user communities crave a more authoritative, uniform definition of cloud computing”:** Most cloud discussions no longer include definitions, but that is more due to a broad interpretation of cloud rather than agreement on a specific definition.
- **“The sweet spot for the channel is selling cloud to medium-sized companies”:** Adoption at medium-sized companies is strongest (97%), though large companies are basically in the same zone (96%). Small firms lag at 84%.
- **“Transitioning to the cloud will mean dealing with existing IT investments and systems and undertaking the integration work involved in tying multiple cloud and on-premise environments together”:** While much of the discussion over the past five years has focused on initial migrations to the cloud, many end users are now performing secondary migrations and quickly building a multi-cloud environment that includes on-premise systems.

Sizing the Cloud Market

As cloud computing has matured from an emerging architectural option to a disruptive new platform for many IT services, the market view has changed. In the early days, most analyst firms treated cloud computing as a single entity; CompTIA’s first cloud report included estimates from Gartner that predicted overall cloud revenue to grow from \$46.4 billion in 2008 to over \$150 billion by 2013. The only additional breakdown of the market was along the major service models—SaaS, PaaS, and IaaS. At the time, IDC was projecting the SaaS market to reach \$40.5 billion by 2014.

Two years later, the estimates reflected significant progress in the perception of cloud computing as a broad platform. Gartner’s estimates for cloud revenue now included service models by default. 2015 projections pegged SaaS at \$22.1 billion, PaaS at \$1.8 billion, and IaaS at \$22 billion. The market was also growing faster than predicted. These 2015 projections, totaling \$45.9 billion, were 17% higher than Gartner’s 2015 projections from the previous year.

More importantly, Gartner used two additional categories for cloud revenue. The first, Business Process as a Service, included indirect investments made for cloud computing (such as datacenter/network upgrades) along with overall processes that were built using cloud components (such as payroll or expense management). The second was Cloud Management and Security, two specific services surrounding the use of cloud resources. Together, these categories accounted for over 70% of Gartner’s total cloud projection of \$207 billion for 2016.

It has now become rare to find estimates that encompass the full set of activities that take place in the cloud arena. Projections may break things down by service model, deployment model, or business process. Consider the following:

- IDC reports that the worldwide public cloud services market reached \$45.7 billion in 2013 and is projected to grow at a compound annual growth rate (CAGR) of 23% through 2018. They break this total down by SaaS (\$32.9 billion), PaaS (\$6.4 billion), and IaaS (\$6.4 billion). They also identify secondary markets that are thriving as standalone segments.
- For private cloud, IDC estimates that worldwide spending on hosted private cloud services will surpass \$24 billion by 2016. This includes dedicated private clouds, where physical resources are reserved exclusively for single users, and virtual private clouds, where a public cloud provider offers shared virtual resources with greater degrees of customer control and security. Obviously, there is room for interpretation between virtual private cloud use and public cloud use.

Secondary Markets in IDC Public Cloud Definition

Secondary Market	2013 Revenue
Enterprise Resource Management (ERM) Applications	\$10,780
Customer Relationship Management (CRM) Applications	\$8,135
Server	\$3,981
Collaborative Applications	\$3,374
Security Software	\$2,922
Other markets	\$16,556

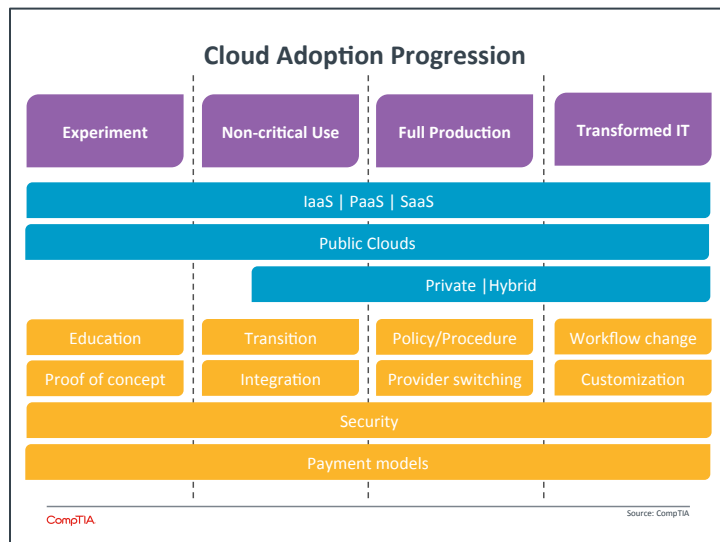
- Many different cloud-related segments are blossoming into robust markets of their own. Infonetics Research predicts the managed cloud security market will grow at 11% CAGR through 2017, resulting in \$9.2 billion in revenue. Technavio expects the cloud system management software market to grow at 33% CAGR over the 2013-2018 period. MarketsandMarkets believes that the cloud analytics market will generate \$16.5 billion in revenue by 2018. These areas and many others are developing into substantial opportunities as companies become more grounded in cloud technology.

After five years, the industry has reached a point where it is difficult to talk generally about the “cloud market.” The breadth of offerings based on a cloud foundation has grown, and many companies are taking steps beyond initial cloud moves and considering strategies that assume cloud components.

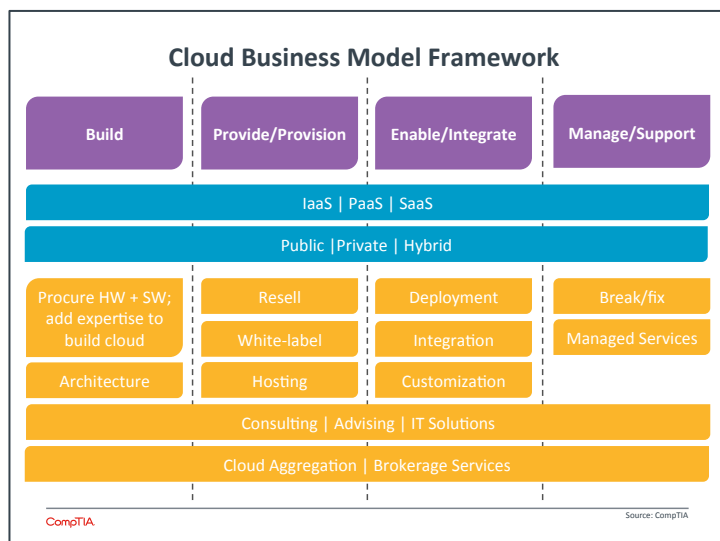
The Transformation of Business

From channel firms to end users, most companies are experiencing a drastic change in the way they approach IT and overall business operations thanks to the cloud. Last year, CompTIA established models for both channel business models and cloud adoption progression:

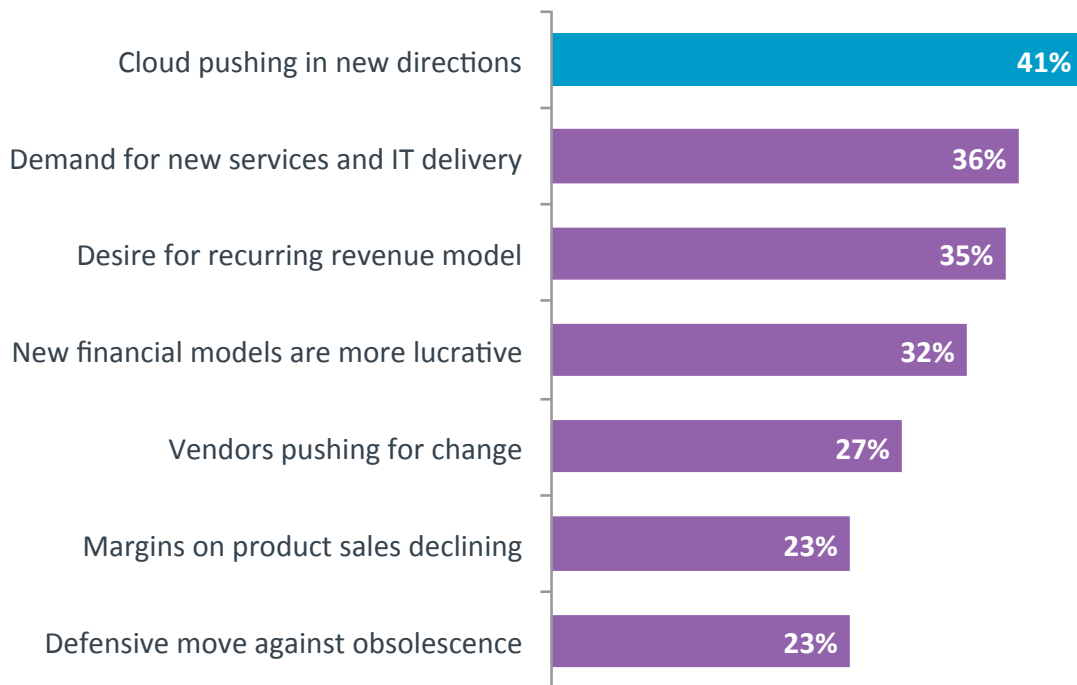
Channel Perspective



End User Perspective



Primary Catalysts for Channel Business Transformation



CompTIA

Source: CompTIA's 4th Annual State of the Channel study | Base: 350 U.S. IT channel firms

Today's IT channel continues to undergo a transition along with the rest of the industry, triggered by changes in the ways that customers buy IT goods and services, new types of competition and the forward march of themes such as cloud computing and mobility. In effect, the channel has had to step up its game, morphing in some cases from a straight reseller of products – particularly hardware – to a multifaceted provider of services and solutions. While some firms will maintain status quo, most will shift their business model or at least embrace a hybrid approach, adding a services component alongside a product-based revenue stream.

For those moving down the path of business transformation, the cloud is the primary driver. In CompTIA's 4th Annual State of the Channel study, 4 in 10 respondents cited cloud as pushing them in new directions. Cloud's influence spans fairly evenly across all size companies, with medium and larger firms reporting it as a primary driver in slightly higher numbers than the smaller channel firms. Half of all respondents said that attaining cloud expertise is going to be "very important" to the future prospects of an individual channel firm; half also placed as much import on undertaking managed services and becoming proficient in selling services.

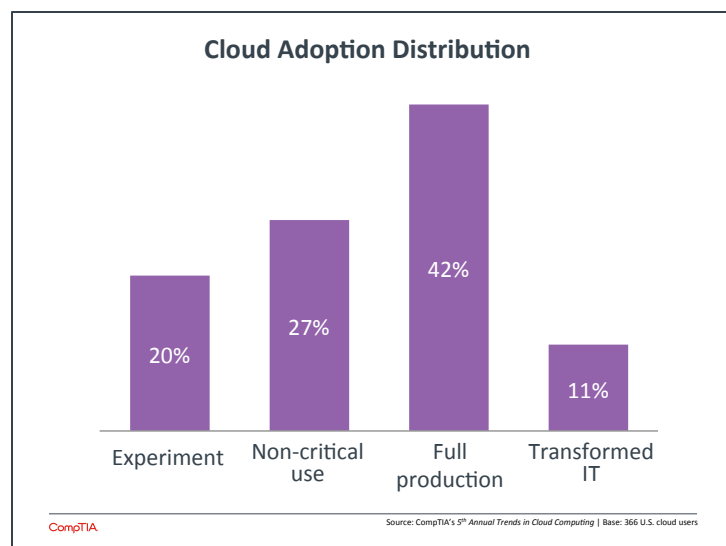
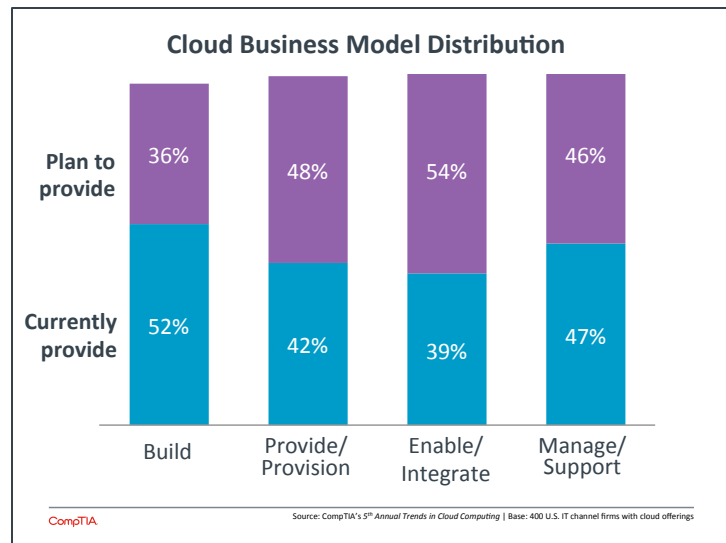
Cloud itself is subtext to many of the other business transformation drivers. For example, customer demand for different delivery models for IT, a primary change agent, can be directly related to the emergence of the cloud computing business model. Cloud offers an alternative, and fairly attractive, way to provide technology services to the end customer beyond selling them the speeds and feeds of an

IT product. Think of the widespread use of SaaS applications such as Google Docs or cloud-based storage and other compute infrastructure from the likes of Amazon or Microsoft.

As channel firms respond to the changes in the industry driven by cloud computing, they are discovering which business model fits their current practice. The broad adoption of different cloud business models reflects the diverse makeup of the channel, and the plans for future adoption point to the forces driving transformation for many firms.

The different business models directly apply to the different challenges being faced by end users at each stage of cloud adoption. Although end user firms may be somewhat aggressive in classifying their adoption progress, the basic pattern likely holds true, with the bulk of firms in the middle stages of adoption. In general, cloud computing has definitely passed into a mass adoption phase, with over 90% of U.S. firms claiming some form of cloud computing and over 60% of those firms stating that cloud components represent at least a third of their overall IT architecture. Software is probably the piece of architecture that is most quickly becoming cloud-based, and there is still plenty of headroom for growth: With Gartner projecting the total enterprise software market to reach \$320 billion in 2014, the \$22 billion that comes from SaaS represents just 6.9% of the market.

In 2011, CompTIA found that “medium-sized businesses are utilizing cloud more than small or large businesses.” This trend remains true today; although medium-sized firms and large firms are identical in overall adoption rate, medium-sized firms tend to have a greater percentage of cloud-based architecture. These companies still represent a sweet spot of sorts for cloud computing—they have sizable IT requirements but are also not constrained by legacy systems and complexity.



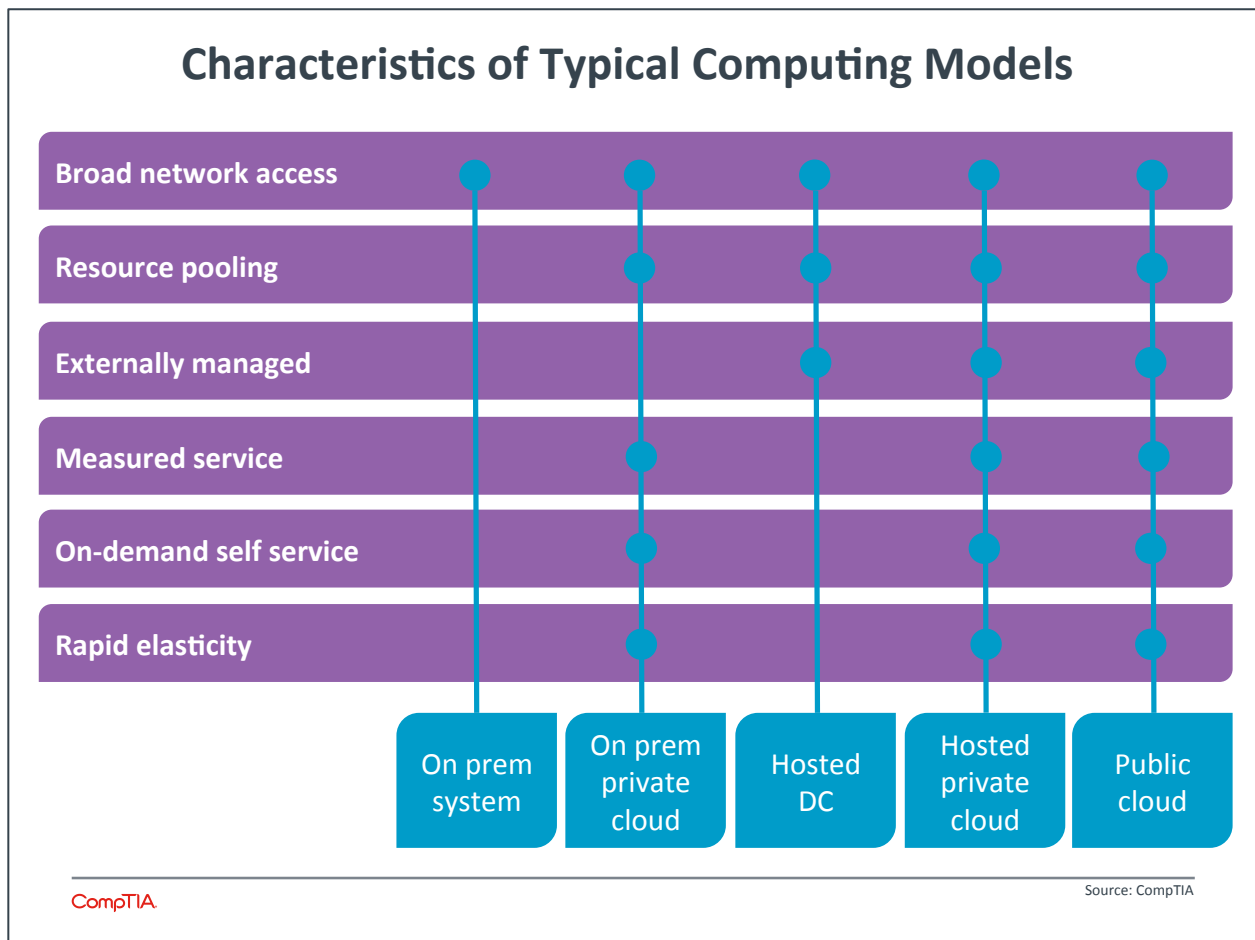
Still Confused—But Does it Matter?

All of the strong channel momentum and adoption progress overshadows an issue that has been present in cloud computing discussions since the launch of Amazon Web Services in 2006: what exactly is the cloud? In the early days of cloud computing, there was healthy debate between those who felt

cloud represented a massive shift in IT and those who felt like cloud was just a new marketing term. Today, that debate has mostly died down, but it is not clear that the industry has reached resolution.

Hints of confusion can be seen in the deployment model that end users identify in use at their companies. Forty percent of respondents who identified as cloud users selected private cloud, and 32% selected public cloud. These two options should account for 100% of cloud usage (with some companies using both options), but 28% of respondents did not select either, pointing to confusion over terminology or lack of recognition for their cloud model.

The balance between public cloud and private cloud is also a point worth considering. Other studies have also seen strong momentum towards private clouds, such as InformationWeek’s study finding that the percentage of enterprises reporting functional private clouds more than doubled from 21% to 47% between April 2012 and December 2013. However, there are also studies that indicate public cloud as the dominant model, such as RightScale’s *2014 State of the Cloud Report* finding that 87% of all organizations are using public cloud systems.



Finally, vendor awareness and usage seems to indicate confusion in the market. Most cloud pundits recognize Amazon Web Services as the leader in public IaaS, yet Amazon falls behind Microsoft, Google, and IBM as a company CompTIA respondents recognize as a top choice in this field. Similarly, the top system companies claim to use for private cloud construction is VMware’s vCloud, but this does not

track with industry observations that OpenStack has the greatest momentum. Instead, companies are likely aware of using VMware for virtualization and are assuming that they use the same vendor for private cloud (this finding was corroborated by similar data in RightScale's study).

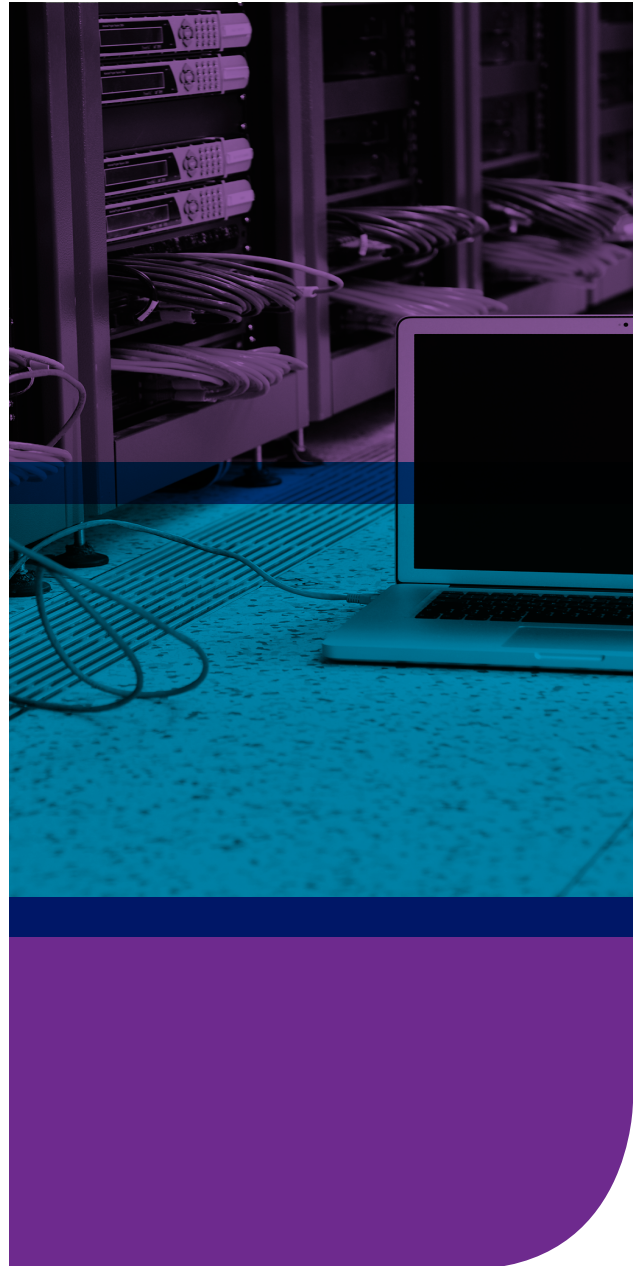
The confusion can most likely be traced back to the defining characteristics of a true cloud solution. According to the NIST definition that has been in place since CompTIA's inaugural study, those characteristics are broad network access, resource pooling, measured service, on-demand self service, and rapid elasticity. An obvious problem with these characteristics is that they themselves require some definition. For example, how rapidly must systems grow or shrink to constitute rapid elasticity? Other characteristics leave some room for interpretation. For example, a provider might claim that a two-year contract with monthly charges constitutes measured service.

An additional characteristic has crept into many cloud discussions—the tendency to classify a system as cloud-based if it is externally managed. With Amazon Web Services acting as the primary example of cloud computing after its launch in 2006, many people were drawn to a discussion of cloud computing becoming a sort of utility. External provision and management fit into this framework, even though the defining cloud characteristics can be provided on internal systems with the right software.

There are many available computing models. Some fit a strict NIST definition of cloud computing and some only share a subset of characteristics. Ultimately, end users will choose the systems that closest meet their needs for function and cost. Overlooking individual characteristics may lead to a competitive disadvantage, but this is a long-term risk as many companies are still gaining familiarity with virtualization or hosted models. For now, agreeing on nomenclature is not critical. It is more important to understand how to use all the available options to build IT systems that drive today's businesses forward.

SECTION 2:

Usage Patterns

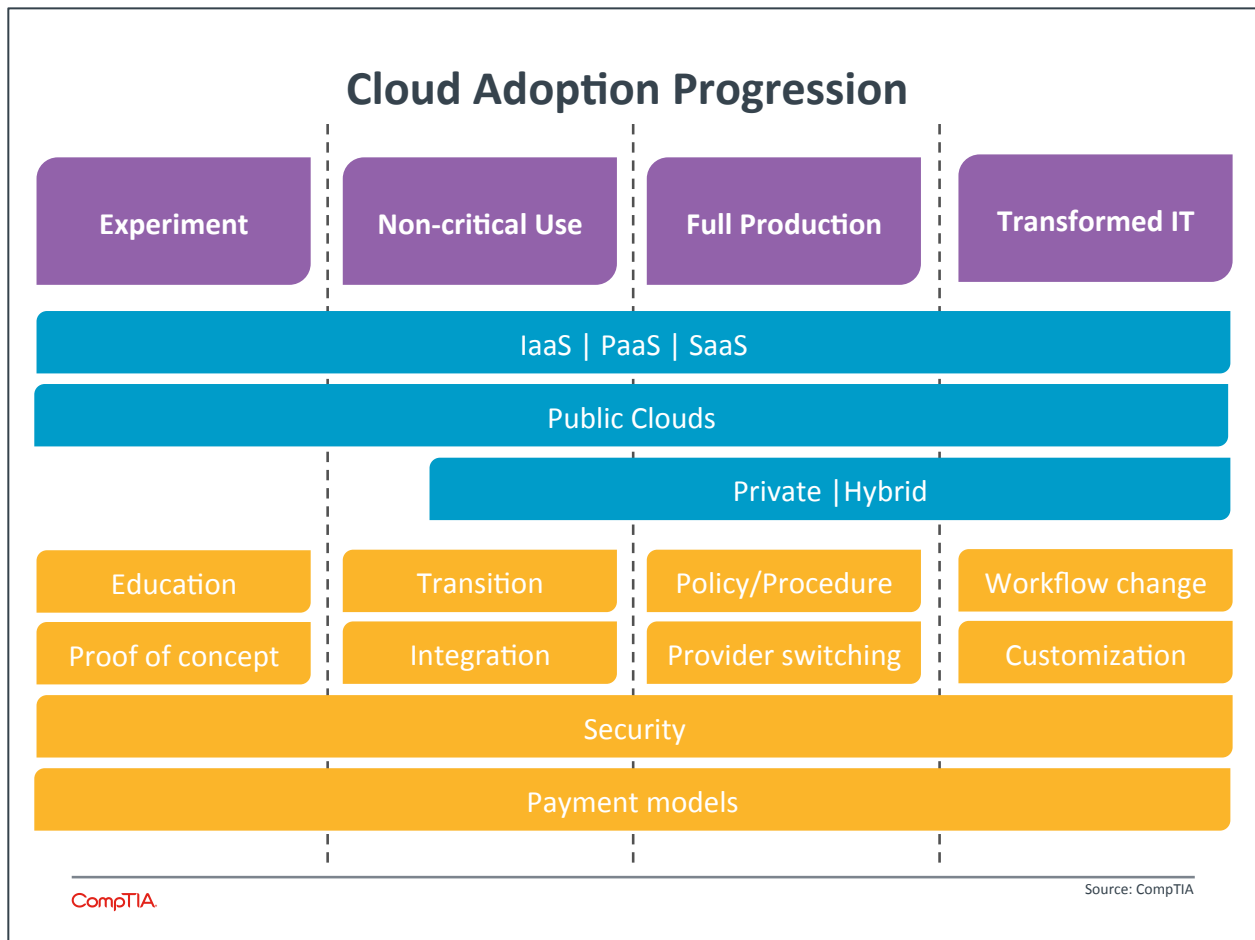


Key Points

- As cloud components are becoming more prevalent in IT architectures, more companies are relying on cloud computing for business processes such as storage (59%), business continuity/disaster recovery (48%), and security (44%). This strong usage and strong market indicators show that cloud computing is becoming a default part of the IT landscape.
- Although adoption rates are high and market numbers are positive, there is still confusion related to cloud computing. This confusion will hinder end users and channel firms from fully transforming their IT practices and offerings. Only 46% of channel firms with cloud offerings described their cloud business as completely mature—an established, strategic part of business plans.
- The impact of cloud computing will continue to drive companies to clarify issues around usage and move towards greater maturity with the model. End users still report a wide range of benefits, led by the ability to cut costs. Approximately half of channel firms see faster revenue growth and larger profits from cloud offerings than from traditional offerings.

Building Towards Cloud-Enabled Architecture

Cloud computing has become an accepted option for companies as they plan out their systems and architecture, and each company will move through distinct phases of adoption as they incorporate cloud components. In last year’s cloud study, CompTIA defined four stages in the cloud adoption progression for companies who were adopting cloud for their own business operations (aka end users). Companies will enter this progression and move through stages based on several factors, including technical know-how, risk tolerance, and budgetary constraints.



In the **Experiment** phase, companies are simply building familiarity with the cloud model, including terminology and basic working principles. During this stage, a company may test out cloud systems by building sample virtual instances or using software on a free trial basis. These proof-of-concept undertakings will most often be performed on public cloud systems, since they are readily available and require minimal investment. Companies may investigate the pros and cons of private clouds, but very few will begin building out those systems at this time.

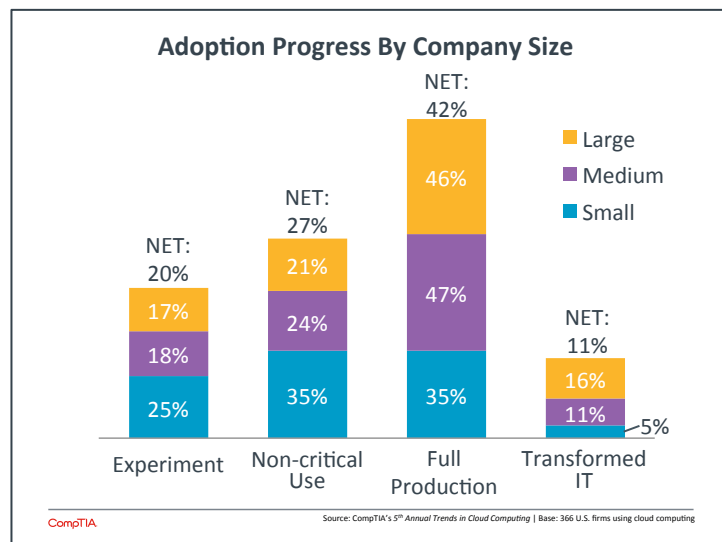
Next, companies will move into a **Non-critical Use** stage. Here, cloud systems will actually be used for operational workflow, though businesses will not choose to migrate their most important systems or most sensitive data. Typically, a peripheral system will be chosen, which still allows companies to learn

the fine details behind a cloud transition and also gain a first-hand appreciation for the integration challenges.

Once a certain level of comfort with the cloud model has been achieved, companies will move into **Full Production**. Businesses at this stage have understood and mitigated their security concerns and view cloud systems as a viable option for most IT operations, including some systems that may be business-critical. Policies and procedures will be built and modified as firms change the way they procure and utilize technology.

The final step in the progression is a move to **Transformed IT**. Those companies that have started up over the past five to seven years, typically having built all their business systems around cloud solutions, are the primary residents of this category at this point in time. Here, companies are not simply moving existing systems or applications into the cloud; they are changing the way they work in order to reap the full benefit.

In this final stage, something interesting happens: the cloud is no longer a distinct focus area. Rather than taking specific actions for cloud services, such as technical migrations or workflow restructuring, companies consider the entire architecture. With applications in place and policies set, businesses can concentrate on the operation of IT and the innovative way they would like to use their technology to drive growth. Instead of being a focal point, cloud is deeply integrated into new forms of IT operations and management.



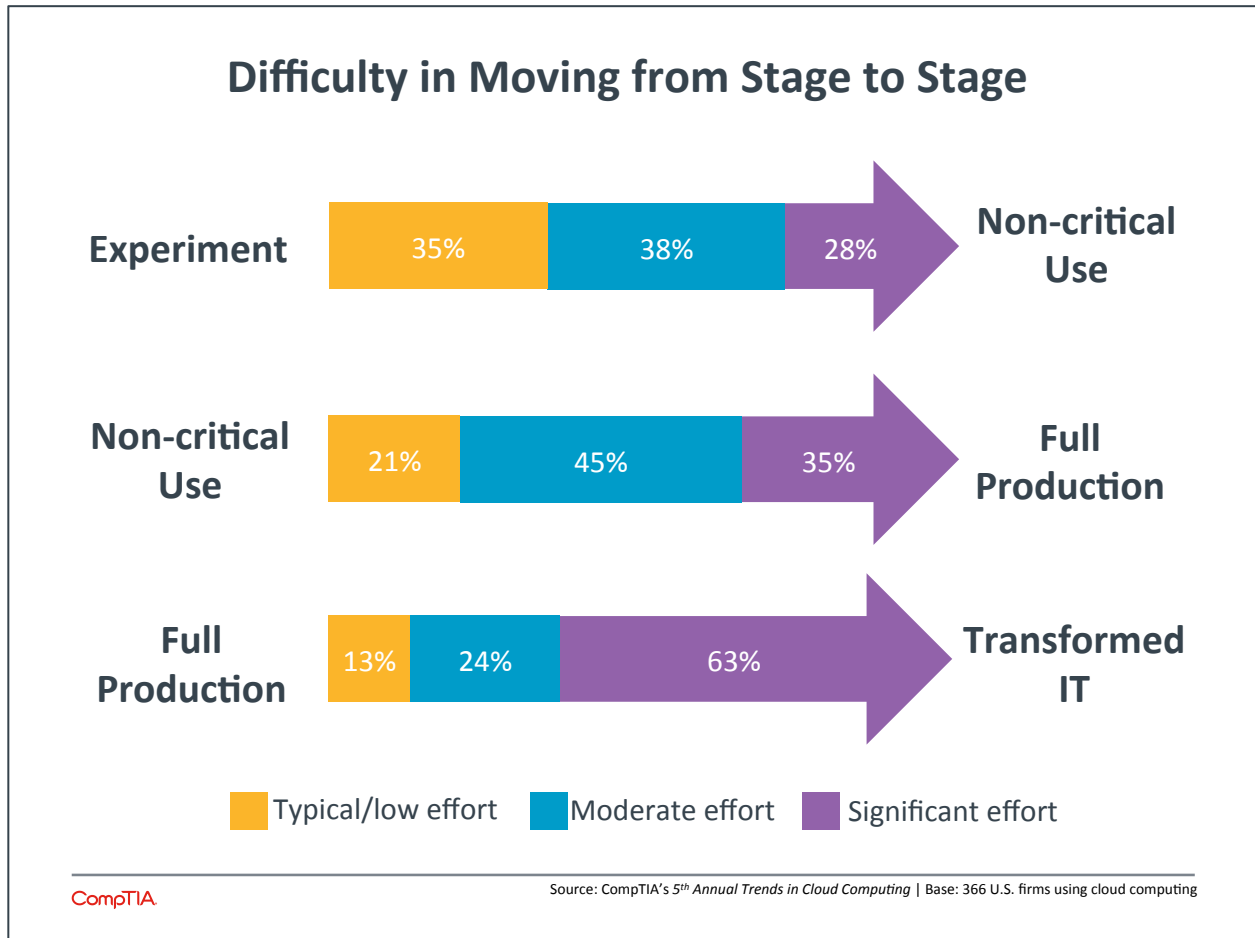
Even with the typical inflation that comes with self-classification, very few companies place themselves in the Transformed IT stage. Full Production may be slightly inflated, but the majority of firms today should fall somewhere in the middle two categories. A healthy number of firms are still entering the market, led by small firms and those firms that may have a more cautious approach based on technology familiarity or regulatory concerns.

Solving Challenges in Each Stage

As cloud computing was maturing, security was a major hurdle that kept companies from entering the Experiment phase. Other factors such as performance or reliability also played a role. Now, with the adoption rate over 90%, there are few variables that are still keeping companies from exploring cloud options.

The barriers to entry have largely been replaced by the challenges that come as businesses implement cloud systems. The first challenge is simply in moving from one stage to another. This could come as a surprise to some firms, as they may hold an expectation that the initial migration and integration pose the largest obstacles to smooth cloud operations.

In fact, companies that have progressed through several adoption stages find that the transitions become more difficult as the adoption strategy moves forward. Of those companies that have progressed to the Non-critical Use stage, 28% rate the transition from the Experiment stage as requiring significant effort. On the other end of the scale, 63% of companies that have progressed to the Transformed IT stage rate the final transition as requiring significant effort.



Larger companies tend to have more maturity in cloud adoption than smaller companies, but they also have more difficulty in making transitions. Consider the transition between Non-critical Use and Full Production: 43% of large companies said that this transition required significant effort, compared to just 25% of small businesses. While the large companies have more resources that they can devote to the problem, they also have much greater complexity. Solution providers assisting small businesses should take note that cloud computing may open new doors for their clients, but adding complexity to workflow or architecture may complicate the route to cloud-based operations.

Within each stage, there are different challenges that rise from adopting cloud computing. Integration, of course, is a constant challenge from stage to stage. The bulk of the cost and effort for any IT project is typically consumed by integration, and cloud computing is no different. If anything, cloud integration may be even more challenging for firms as it requires web APIs that may be unfamiliar to the technical team. Furthermore, the technical team may not always be directly involved in procurement. Integration

may be complicated by lines of business procuring their own applications without being aware of how they will fit into the overall system.

In the Experiment stage, challenges also include ROI calculation and the cloud learning curve. As companies build their understanding of cloud computing in preparation for business use, they need help in determining the associated costs and becoming proficient with the available options. Education is especially important for all businesses—the learning curve was cited as a challenge by 40% of large companies, 34% of medium-sized firms, and 40% of small businesses.

As companies move into the Non-critical Use stage, the technical challenges become more apparent. The learning curve now focuses on the details behind a cloud migration, such as the security that will be required and the actual application usage that drives the solution cost. In addition, companies grow concerned about the portability of their cloud application. Thirty-four percent of companies identify vendor lock-in as a challenge for the Non-critical Use stage, compared to just 23% of companies who identify this as a challenge for the Experiment stage.

Moving forward, the challenges begin to shift from technical to business-related. The top two challenges that companies cite in the Full Production Stage are making changes to IT policy (43%) and modifying workflow (41%). This is when technical expertise must be matched with business knowledge. Businesses are finding that the greatest benefits of cloud computing are not necessarily the cost-related perks that come from swapping systems, but instead are the agility and speed that come from reconfiguring operations.

This realization leads into the final stage of Transformed IT, where workflow modification is the top challenge. As companies re-architect their business processes (including systems, applications, and workflow), they realize that even further investment is needed to reach an optimal state. Forty-four percent of companies cite higher-than-expected costs as a challenge in this stage, showing that the opportunity for valuable cloud services certainly does not end after the first migration.

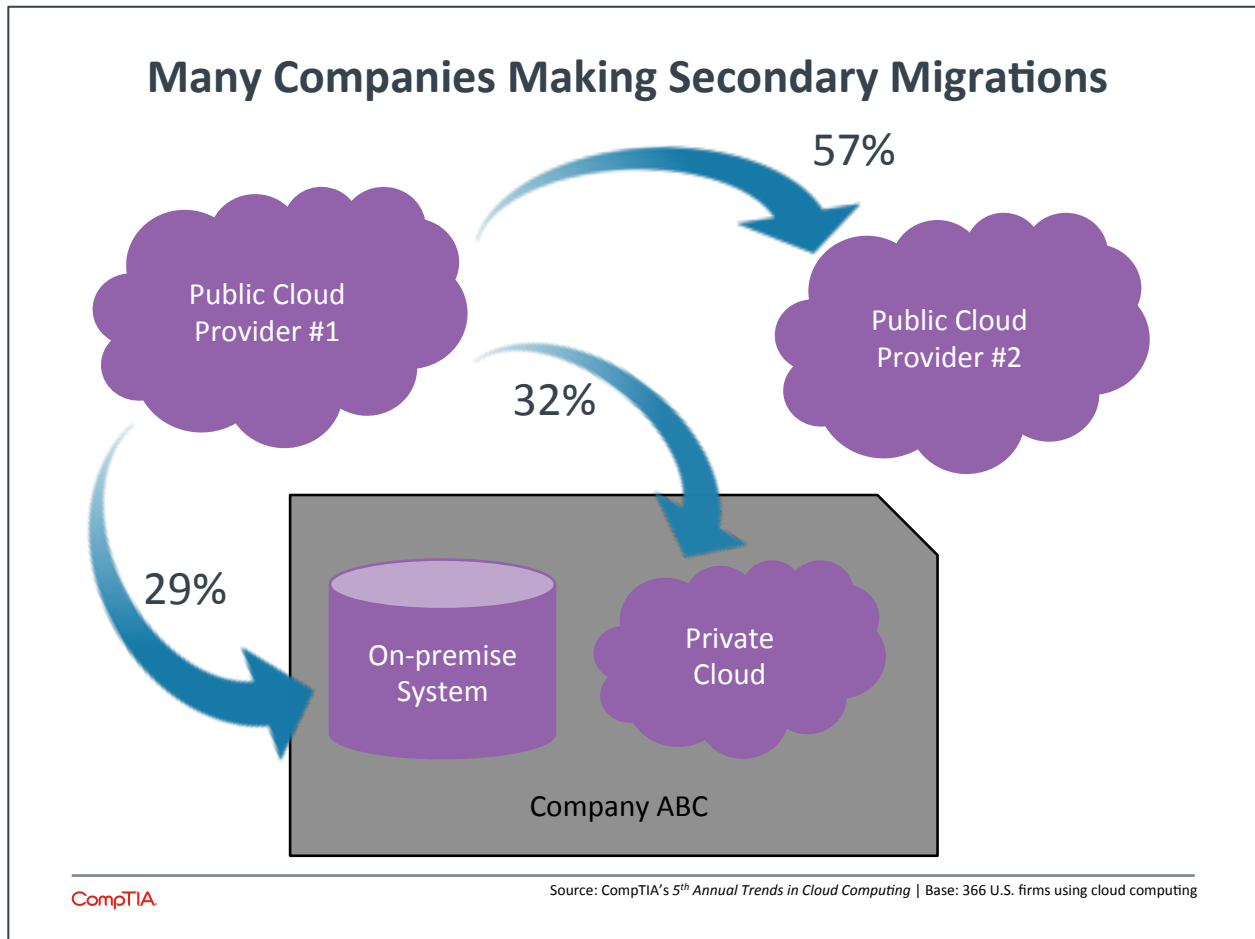
Moving to a Multi-Cloud Environment

The actions that companies are taking following their first migration act as further proof of the opportunities that exist. By gaining hands-on experience with cloud systems, businesses are able to compare the theoretical to the practical and make decisions on how to best optimize their infrastructure.

The number of companies making secondary migrations is rising. Last year, 44% of companies had moved either infrastructure or applications from one public cloud to another, 25% of companies had moved from a public cloud into a private cloud, and 24% of companies had moved from a public cloud back to an on-premise system. The primary takeaway from all this movement is that no one model is the best answer for every workload. Companies will be utilizing every type of system as they find the multi-cloud approach that works for them, and the management of all these systems will be a significant challenge for most firms.

The reasons for secondary migrations vary depending on the type of transition. Movement between two public cloud providers could be driven by a number of factors, such as better offerings/features (cited by 44% of companies making such a move), security concerns (32%), cost (31%) or a desire for open

standards (31%). Movement back to an on-premise system was primarily driven by security (60%). Other reasons for such a move included failure to integrate (27%) and failure to achieve cost goals (21%).



Of course, these migrations do not indicate wholesale moves from one model to another. A company may move a number of applications to a public cloud provider in early stages of adoption, then move some of those applications to a private cloud and some back on premise while leaving some in the original cloud provider. Not only is it challenging to determine the correct model for application, but it also requires effort to make the transition. Twenty-six percent of companies migrating from one public cloud to another said that the secondary move actually required more effort than the initial project. This level of effort is starting to be understood by companies who are in earlier stages of adoption and anticipating a secondary move. Thirty-three percent of companies estimate that a secondary migration will require more effort than the first. Nearly 40% of these companies expect to make such a move in the next year, citing reasons such as security (49%), cost (49%), and offerings or features (42%). Solution providers will have to be aware of the many different vendors in this new landscape, and they may turn to distributors to act as an initial filter for discovering the best options.

SECTION 3:

Challenges



Key Points

- Companies moving through the progression model towards Transformed IT will need to understand the various applications that are being used and choose the best model for running those applications. The most common cloud applications are currently productivity suites and email, but many other applications are becoming cloud candidates, especially in the SMB space.
- Rogue IT, where a line of business procures technology without involving the IT department, is not necessary rampant but is still a real phenomenon. Only 12% of companies say they do not consult with the IT department or allow them to give final approval, but issues such as integration and security are still reason for businesses to build a procurement process that allows everyone to voice their concerns.
- As businesses continue to transform to utilize cloud IT, there will be a series of internal changes that will take place. Deciding on new policies/procedures, hiring and retraining to improve the IT department skill mix, and contracting with outside firms are all activities that companies undertake as they reconfigure their operations.

Restructuring Operations on a Cloud Foundation

As companies move more and more towards a cloud-based architecture (as described in Section 2), they will focus less on cloud infrastructure and more on business process and workflow. This is a major part of the transition to Transformed IT: choosing new applications (or rebuilding applications) in order to take full advantage of cloud characteristics and building new policies and procedures that enable greater business agility.

	Small	Medium	Large
Business productivity	61%	58%	71%
Email	52%	64%	63%
Analytics/BI	45%	56%	59%
Collaboration	43%	55%	58%
Virtual desktop	41%	54%	57%
Web presence	43%	48%	53%
CRM	34%	49%	51%
HR management	33%	45%	50%
Help desk	30%	40%	44%
Expense management	27%	46%	33%
ERP	24%	34%	44%
Financial management	27%	29%	32%
Call Center	26%	33%	36%

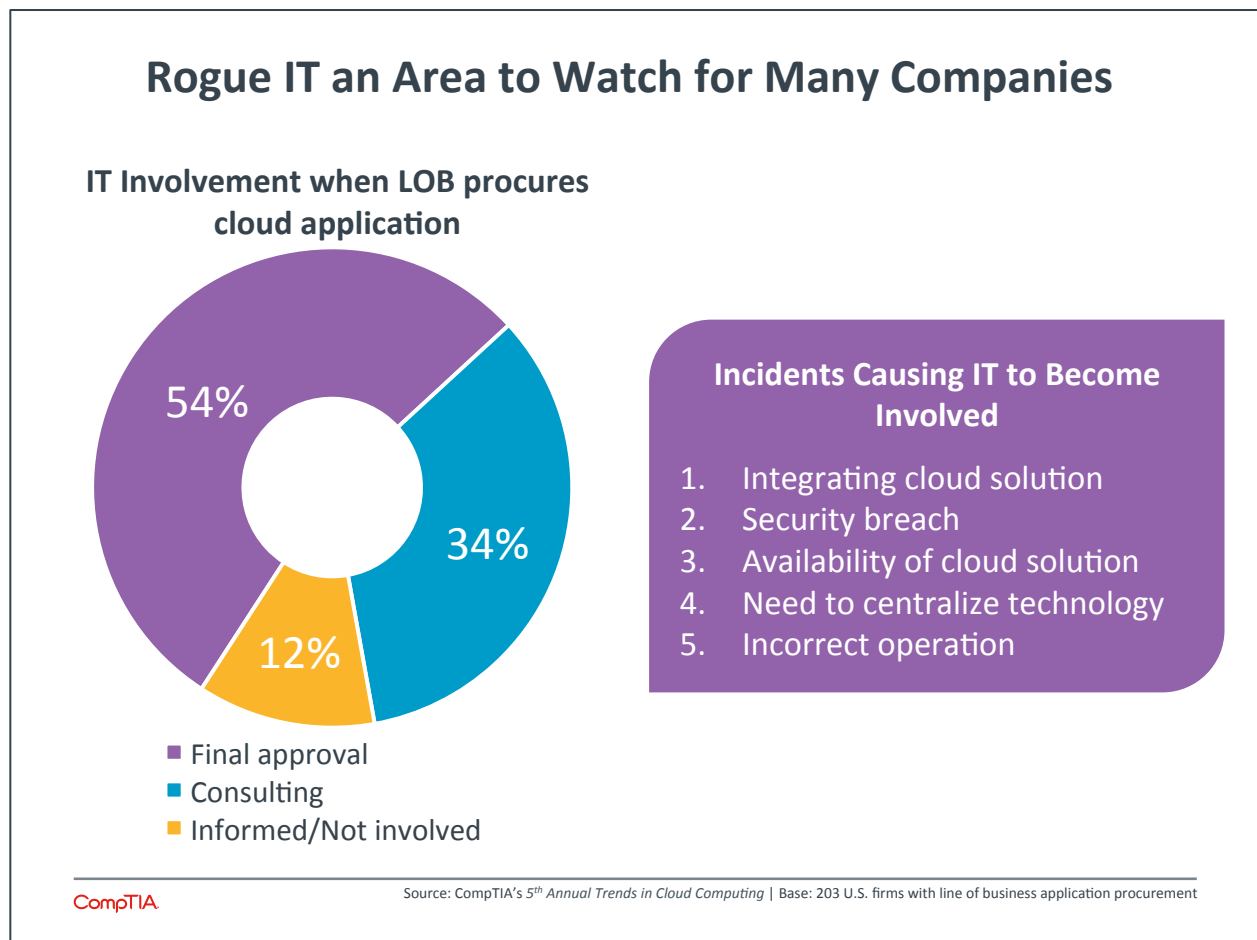
Source: CompTIA's 5th Annual Trends in Cloud Computing | Base: 366 U.S. firms using cloud computing

The first step in this operational journey is to understand the applications that are being used and choose the best model for running those applications. A large part of the cloud discussion over the past five years has centered on software development, with developers now able to quickly create test environments and build applications outside the constraints of an on-premise system. The discussion is quickly turning to those applications, which can take advantage of elastic resources and cloud-based data stores. Obviously, the addressable market for application usage is far greater than for application development.

Business productivity suites and email are the two most popular applications that companies are placing in the cloud. It is very likely that some of these applications are simply hosted applications, but this is a good example of a case where differences in terminology are less important. For most end users, the primary concern for an application like email is that the routine upkeep and maintenance are performed

externally rather than tying up internal resources. Since the main function of these applications is largely unchanged between a hosted model and a cloud model, the few differences that exist may be too subtle to make an impact for many users.

With other applications, though, the cloud may be opening new possibilities. CompTIA has previously noted that medium-sized businesses represent a sweet spot for cloud operations because their infrastructure needs are growing while their resources are still fairly constrained. The current application usage patterns validate this position—medium-sized businesses are often closer to large firms in cloud application usage, and they are actually leading large firms in some instances. This shows that medium-sized firms are more aggressively targeting cloud applications as a way to expand their technology footprint beyond what they could achieve through traditional means.



The availability of cloud applications creates a new issue for businesses. The ease of access and simplicity of use allow individual departments to utilize their own budget to procure applications (or infrastructure, for that matter). This behavior, known as rogue IT since the IT function is sometimes bypassed, is appealing to business units since they have the best knowledge of what they require to achieve their goals. While rogue IT may not yet be rampant, it is growing: companies in the CompTIA survey saw lines of business procuring cloud applications anywhere from 18% to 36% of the time, a slight increase from last year's numbers.

The main issue with rogue IT is whether or not the IT department is being left completely out of the loop, but most instances of LOB procurement still keep IT involved in some way. In fact, the incidence of IT departments only being informed or not involved at all is dominated by small companies, which often do not have an IT function. For solution providers serving the SMB space, this will be an area to watch as they increasingly act as the overarching IT function rather than simply providing point solutions.

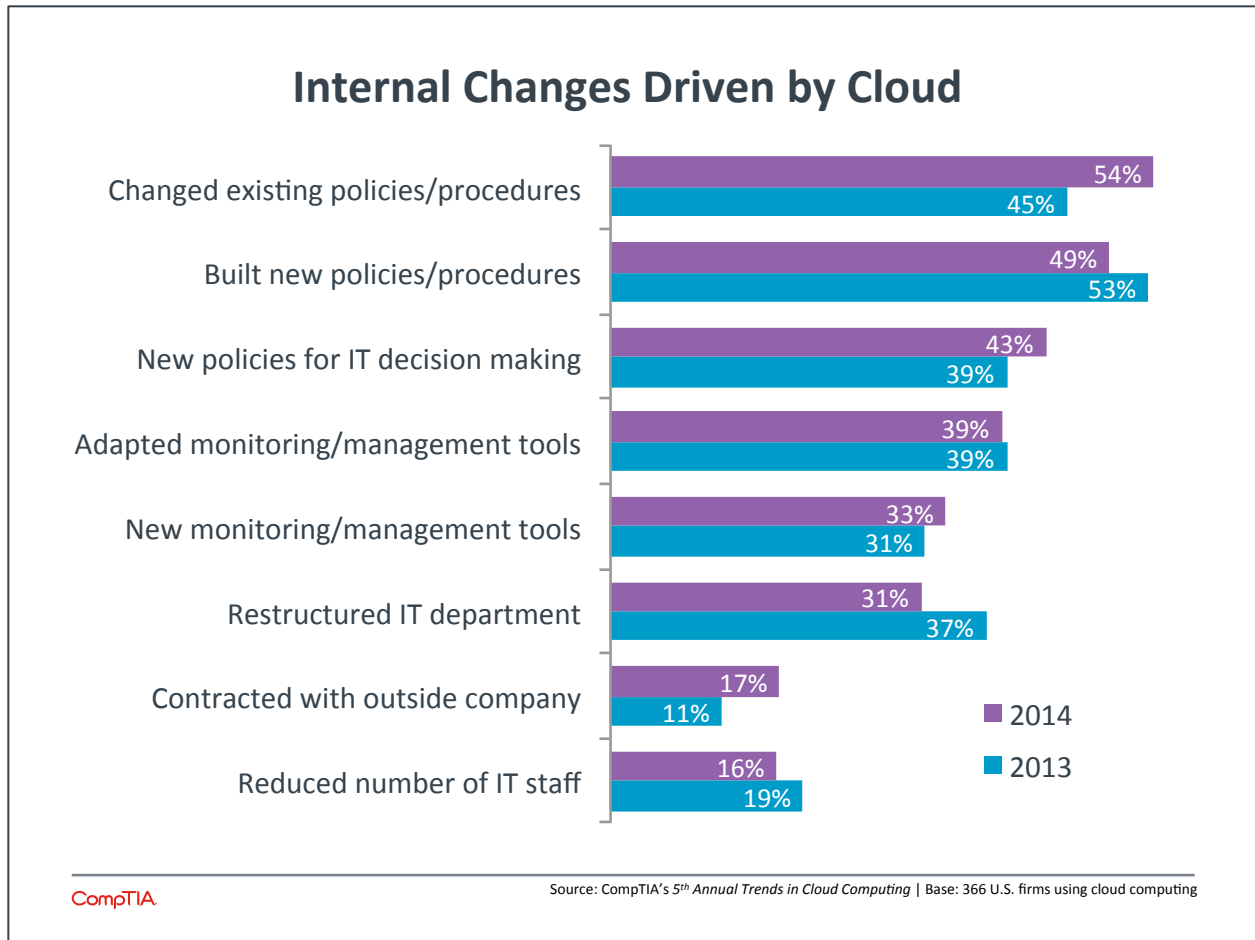
Determining the best process for procurement will be a major task for companies of all sizes moving forward. Allowing the LOB to procure technology allows for greater agility, but it also has the potential to create costly problems. Integration and security are the primary issues that a LOB might not consider. Integration typically accounts for the lion's share of cost and effort in an IT project, and it is much more effective to deal with security up front rather than repair a breach. IT departments and solution providers can help drive the discussion towards a new style of procurement that allows for agility while ensuring that IT concerns are surfaced.

Internal Changes

Building new processes for procurement is just the first step in IT becoming more of a partner to the lines of business rather than simply a supplier. The ability to use technology through the cloud can streamline the way IT is provided, but it can also streamline general workflows. A transformation of internal operations is taking place as companies are applying technology across the entire organization in completely new ways.

This transformation does not come from a business simply applying the current knowledge and skills of an IT department or solution provider to the task at hand. As with procurement, there must be new ways of combining the IT function with other functional areas in order to produce a new standard for operations.

Small businesses especially should take care to examine their IT and business operations. Twenty-three percent of small businesses using cloud solutions have not undertaken any operational changes at this point, compared to just 3% of medium-sized businesses and 9% of large businesses. Partly, this is due to the amount of time spent in the cloud so far—operational changes are less common among late adopters, where there is a heavier concentration of small businesses. It is also likely that many small businesses have less bandwidth to review their operational procedures. With cloud computing being a less direct method for building and using IT, it may be advisable for smaller companies to begin building more operational aptitude in order to optimize their workflow with cloud systems.



There is an unfortunate side to this disruption and streamlining. Cloud computing has caused some amount of trepidation among IT staff thanks to the possibility of outsourcing compute resource (and the subsequent maintenance). Nearly one in five companies reports reducing the number of IT staff, showing that this may be a logical step for some businesses. However, it should be noted that this action is listed at the bottom of the list of changes a company may have undertaken, just as it is near the bottom of the list of benefits listed by cloud users. As the job market adjusts to the realities of cloud, proactive IT workers can get involved in a variety of other actions their business may be taking to better utilize cloud resources. This may involve changes to policy, IT restructuring, or use of outside firms.

Policies and Procedures

Changes to policy or procedure are the most common action taken by companies who have moved into a cloud environment. Whether it is redefining steps that the IT team must take as they administer solutions or building new processes for making decisions on technology, actions related to policy and procedure are the top three items on the list of changes driven by cloud computing.

Continuing a trend from previous years, security tops the list of items that companies are addressing as they modify policies. Through the early days of cloud adoption, security was commonly cited as the prime factor preventing companies from moving to cloud solutions. With the vast majority of companies having started some form of cloud adoption, it is apparent that companies are either accepting some

level of risk or finding ways to mitigate cloud security concerns—at least for the applications they are placing in the cloud. However, the discussion around security has now shifted from addressing basic concerns (which drives initial adoption) to focusing on finer details (which drives full production use).

Another area frequently addressed in policy changes is the proper storage of company data. CompTIA’s studies on the Big Data trend show that many companies feel that their use of data is less than optimal, in part because they do not have strong overarching data management practices. The use of cloud systems for storage and backup only complicates an already complex situation, and many companies may benefit from a data audit and education on best practices in managing data in a cloud environment.

Security and data management are examples of policies that are broader in nature and apply to the entire company. Building these policies will be a cross-departmental effort, but should still involve significant input from the IT team. The IT team must learn how to meet the needs of the business with minimal delay, and they also must properly understand and convey the need to maintain a company’s risk posture. The best policies will represent an agreement at all levels of the company on how cloud resources will be procured and used. This will not necessarily mean that all information flows through the IT team for approval, but the IT team should be comfortable with their level of awareness and responsibility in the process.

Internal IT Department Changes

Aside from policies and procedures that get created or altered within an IT department, other changes may take place that allow IT to be better equipped to deal with a cloud environment. These changes may be peripheral to the specific cloud solutions being put in place, but they still have an effect on the overall implementation cost. Companies pursuing cloud projects should consider whether these actions would be a worthwhile part of their cloud investment given their business objectives.

The first area to consider is the need for new or improved tools to control or monitor a cloud solution. In some cases, this could be a simple extension. For example, a system administrator may use software provided by his virtualization vendor to spin up new virtual machines. In a cloud situation, this will likely be handled through a web front end, and there may be little training required to create new servers. There may even be generic machine images that have been saved by other users to eliminate the more tedious steps involved in getting a VM or instance up and running.

Other tools will be new additions to the IT toolbox. Third party software may be needed that can provide a comprehensive view of an architecture, allowing administrators to see vital information from both cloud systems and on-premise systems in a single pane of glass. There may be a requirement to tie a company’s financial system to a cloud provider to determine usage for billing purposes. These are examples of tools that can be major projects on their own, driving costs higher and



necessitating a heavy time investment as well.

The other primary area to consider within the IT department is the personnel. As mentioned before, staff reduction may be an aftereffect of a cloud transition, but the more likely scenario is that companies will restructure the IT department in some way. In fact, 44% of companies that have performed IT restructuring have hired new workers to bolster IT efforts—a significant jump from last year. This may be especially true where cloud computing is used to add new capabilities to a business, and a sizable amount of equipment remains on-premise.

At an organizational level, the movement towards transitioning the IT department from supplier to partner seems to be making good progress. Over half of the companies in the survey (57%) say that the IT team has been able to move away from maintenance tasks and become involved in more innovative work. An even greater number (69%) say that the IT department has become more integrated with other lines of business to understand how to meet their needs through cloud solutions. The implication is that the technical knowledge held by these workers is still valuable, and new roles are being developed that require new skills.

Use of Outside Companies

One of the biggest surprises with IT-related changes is the low number of companies that are using outside firms, although that number appears to be growing. Last year, only 11% of companies contracted with an outside firm for their cloud initiatives. This year, the number grew to 17%, as companies of all sizes increased their utilization of external services and support.

While the direction for third party assistance is positive, the incidence among the smallest companies (which are least likely to have internal expertise) has still not taken off dramatically. There are several factors that could be contributing to this. Among companies that did partner with a solution provider, the top reason that they eliminated potential candidates was that the costs were too high. Although lower costs is still the top driver for cloud solutions, many companies find that particular applications do not actually have lower costs, mainly due to unexpected expenses. As companies more closely examine their transition cost, the additional overhead required to contract the work might be enough to deter them completely from outsourcing.

Looking at channel firms that are providing cloud services, 67% say that they experienced a demand for cloud services that outstripped their capacity to supply a solution. This could be a statement of technical capability or simply raw bandwidth. In addition, 50% said that they lost a sale to a non-traditional IT solution provider, such as a vendor, distributor, or telecom carrier. Both of these numbers are significantly higher than last year's results.

Taken together, these data points suggest that there are some gaps—either real or perceived—in the ability of solution providers to adequately support cloud services. For SMBs, the hurdles of additional overhead cost and struggles with solution provider capacity may be too large to overcome. As a result, these companies may work directly with cloud providers in many instances. Even though they may receive services beyond the actual product being procured, this is likely not considered “contracting” by the end user since it all comes directly from the provider.

Solution providers should be aware that these perceptions may exist and should take action to address them. For the issue of cost, solution providers will need to be prepared to fully explain the value of a

cloud solution and the added benefit that the provider is able to deliver. The issue of capacity may be more challenging. If a customer desires a solution beyond the technical capability of a provider or if the provider is fully booked, hiring or training can solve the problem but are not immediate fixes. One suggestion for solution providers is to look for partners with specialized expertise, then act as a focal point with the customer to provide a complete solution.

SECTION 4:

Business Model Analysis



Key Points

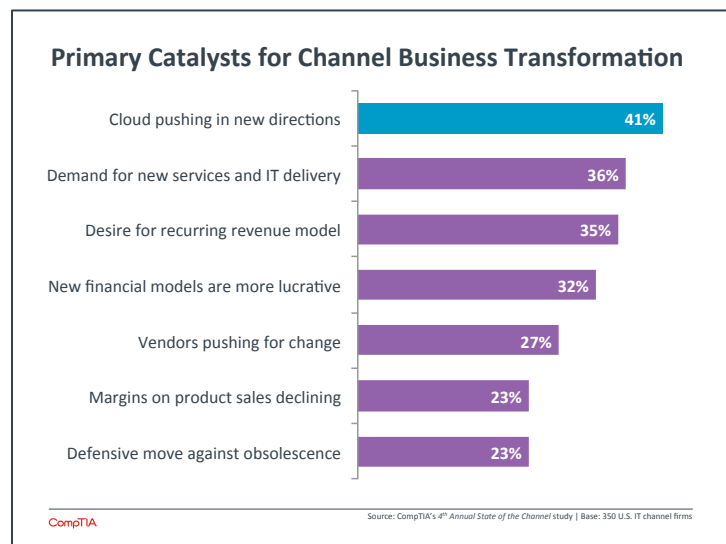
- Along with greater adoption of cloud within the channel has come a more positive outlook. Nearly two thirds (63%) of channel firms described the impact cloud computing has had on the channel in the past five years as “extremely positive,” while another 30% deemed it “positive.” Channel firms also have more confidence in their abilities with cloud and the role it plays in their overall portfolio. Fifty-seven percent of respondents described their cloud business as mature and strategic, compared with 46% with similar sentiment in 2013.
- Among the cloud-based business model frameworks outlined by CompTIA, channel firms reported significant increases in the strategic importance of each of those they operate in compared with a year ago. There was some retrenchment, however, in the percentage of firms that are engaged in two of the four frameworks from 2013. The Enable/Integrate and Manage/Support models both saw a decline in participation.
- Many of the activities and services in the Enable/Integrate and Manage/Support cloud models require a complex set of skills. Some of the channel firms that initially rushed into this market may have found the work either exceeded their capacity to address while continuing to balance their legacy business or that the necessary resources to train or retrain staff on these services was too costly. One of the key challenges of doing cloud-based integration is having a working knowledge of a morass of Web-based APIs, a development skill that is not in the wheelhouse of the majority of the channel.
- Commitment to the Build business model for cloud appears to be the strongest. More than half of channel firms today (52%) participate in this model, with 64% of them describing this part of their cloud business as strategic and core, compared with 46% who did so in 2013.

Business Transformation within the Channel: Path to the Cloud

Just as end user organizations are moving through various stages of adoption with respect to cloud computing, the IT channel has been charting its own course over the last five years. Generally speaking, channel firm thinking has evolved from “cloud is something to fear” to “cloud is a catalyst for business transformation and new opportunities.” In fact, 4 in 10 respondents in CompTIA’s recent 4th *Annual State of the Channel* study credited cloud computing for pushing them in new business directions, the top response amid a host of other business transformation drivers that in their own right are cloud-related.

The most pressing question channel firms face related to cloud adoption concerns business model choice – or choices as the case may be. In this section of CompTIA’s 5th *Annual Trends in Cloud Computing* report, we will discuss the various models that have gained traction within the channel today and provide details into how those models are structured and performing.

First off, however, let’s acknowledge that the channel has come a long way with cloud from where it sat five years ago. In 2010, just 1 in 10 channel firms reported any involvement with selling or using cloud solutions. Today, some level of adoption is near-universal, with heavy involvement quite prevalent in some circles. The number of companies identifying as “born in the cloud” has jumped considerably, though it’s important to note that this might be more a function of latching onto catchy marketing lingo than it is that all of these companies are purely cloud-based and not offering any traditional channel business lines such as product resales or project work.



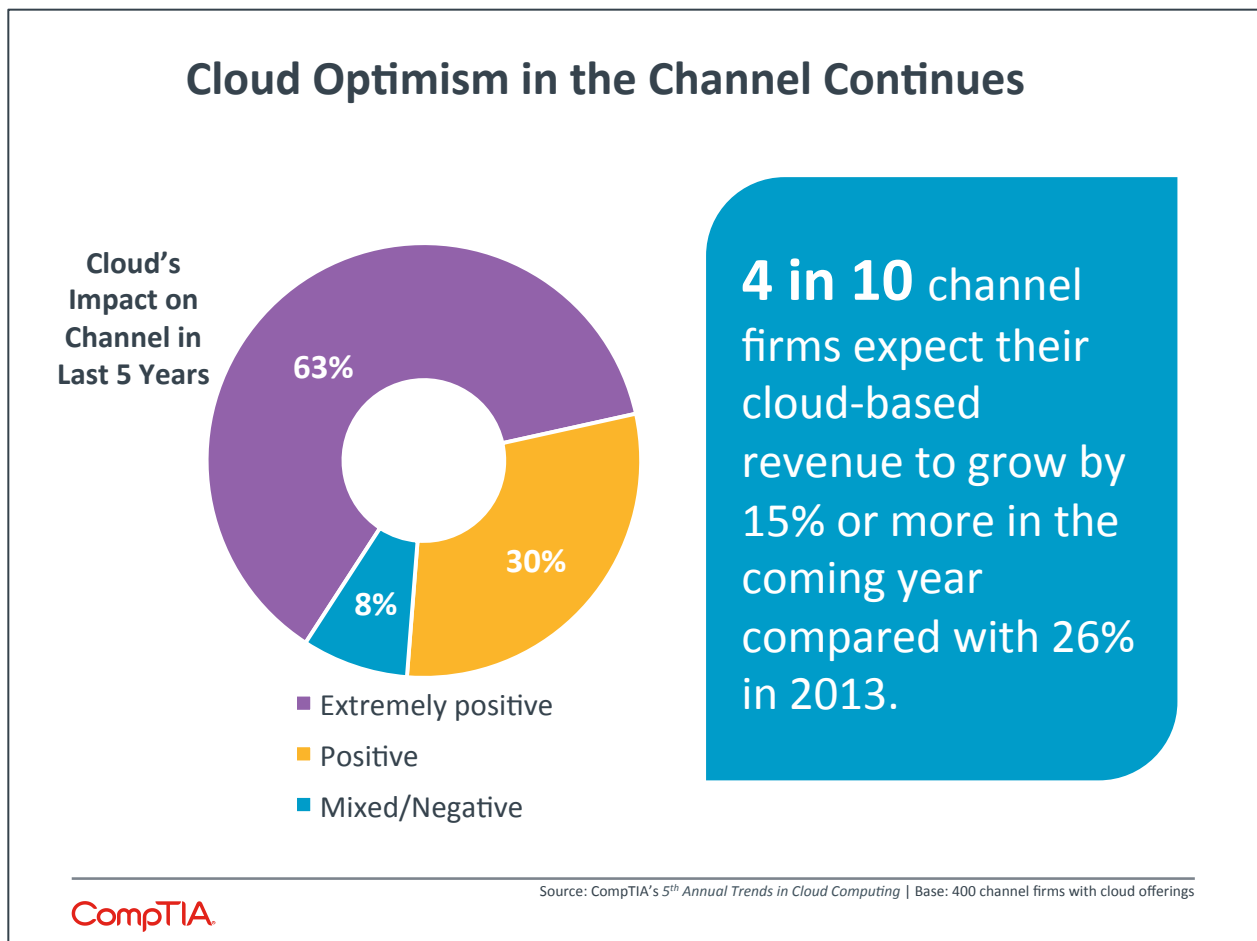
Along with greater adoption has come a more positive outlook. Nearly two thirds (63%) of channel firms described the impact cloud computing has had on the channel in the past five years as “extremely positive,” while another 30% deemed it “positive.” Smaller channel firms gave higher marks to cloud’s impact than medium and large-sized companies, 74% versus 52% and 48% respectively. This is perhaps reflective of the fact that they tend to sell to end user organizations that are also quite small in nature. For SMBs, many without their own IT department, cloud-based offerings open doors to technology that might not have been affordable or easy for them to scale and manage in traditional formats, while also providing access to less expensive sources of basic IT needs such as storage capacity.

Revenue classification is one caveat to note amidst the channel’s cloud enthusiasm. What constitutes cloud-based revenue vs. on-premises or non-cloud revenue can be blurry and defined differently depending on the channel firm in question. Consider a reseller that bundles a cloud-based BC/DR solution with a large on-premises hardware sale. That reseller might tally that deal as two different sources of revenue or conversely count the entire deal as a cloud-related. The latter accounting would

inflate that reseller’s cloud-classified revenue quite significantly. Down the road, when some customers decide not to upgrade on-premises solutions to the same degree they do today, there could be a negative effect on channel revenue reliant on cloud solutions only, absent other systems, for example.

Channel firms also have more confidence in their abilities with cloud and the role it plays in their overall portfolio. Fifty-seven percent of respondents described their cloud business as mature and strategic, compared with 46% with similar sentiment in 2013. Again, smaller channel firms assessed themselves as mature with cloud with greater frequency than either medium- or large companies. This could come down to what various companies are doing with cloud. For example, a small channel firm reselling cloud-based email for its customers – a relatively low-hanging-fruit solution – would rightly characterize that business as quite mature. On the other hand, a larger company attempting to put together more complex cloud offerings such as those that tie into business analytics or involve custom development for mobile apps may still have a ways to go to consider their functions all grown up.

Optimism about cloud is even evident among those channel firms reporting a low degree of maturity with the model today. Roughly half (46%) said they were confident they were on the right path with their cloud efforts, an increase from 2013. Another 46% expressed at least some degree of confidence in where they are headed.

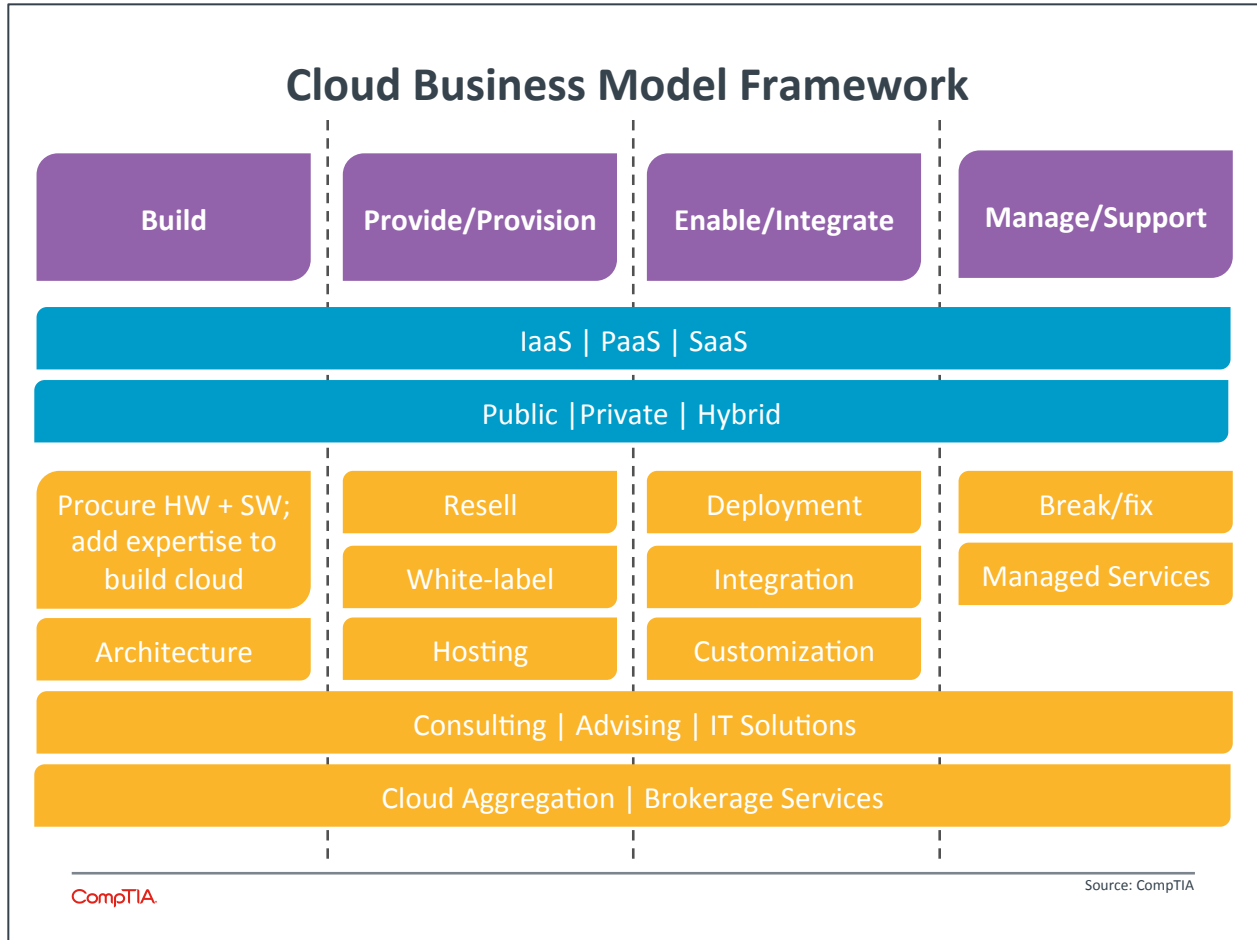


It's not all roses, however. On a few fronts, namely within two of the more complex cloud business models, the findings show some retrenchment. This trend will be discussed in more detail in the business model sub-sections below, but the pullback seen in cloud models dealing with integration and enablement as well as management and support could be attributed to degree of difficulty encountered. In particular, smaller channel firms reported these activities at much lower rates in 2014 than in 2013, which could indicate that their initial enthusiasm may have been tempered as they encountered either resource issues, skills gaps or other obstacles that caused them to rethink their level of commitment.

No matter the pace of change, all of these firms have had to make strategic and tactical decisions about which cloud business model or models to pursue. They base these directional choices on a number of factors, including the company's current operating model, specific capabilities and staffing, as well as focus areas in the market. It's not an easy exercise. In fact, it appears to be getting more difficult. Nearly 6 in 10 channel firms (59%) cited the need to determine the correct business model as a challenge to launching a cloud business, up from 45% in 2013. That suggests a degree of trial and error going on, with channel firms still casting about for the right fit for their company.

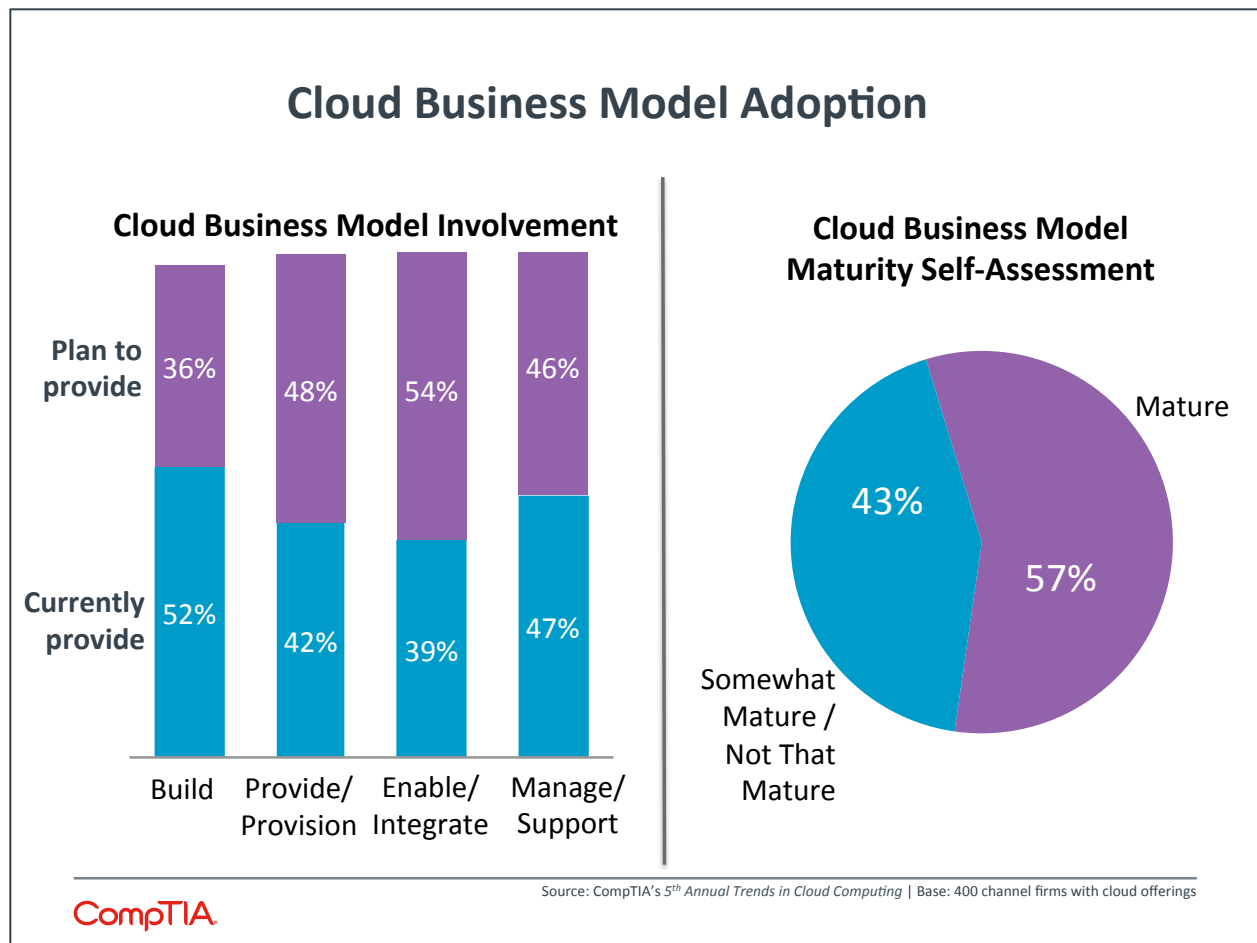
The questions are myriad:

- Resell a vendor's cloud solutions?
- Aggregate and broker cloud services from a variety of different sources?
- Integrate and customize cloud-based apps and services, or simply sell the infrastructure to an end user and provide consulting?
- Act as a managed services provider for cloud solutions?



To capture information about their cloud business, the CompTIA study presented respondents with four broad types of cloud operating models and asked which, if any, they have engaged in during the past year. The above diagram depicts the four business model areas, along with the subcategories of work activity that are associated with them. The longer bars, such as IaaS/PaaS/SaaS and Consulting/Advising/IT Solutions represent activities that can accompany any of the four main business models. It should be noted that these four models are by no means reflective of every possible type of channel model applicable to cloud; however they do represent a fairly complete picture of the type of cloud work being done across today's channel.

Many solution providers are involved with more than one of the models, including a population that reports activity in all four buckets. Across the board, channel firms reported significant increases in the strategic importance of each of the cloud business models they operate in compared with a year ago. Below, each business model is broken out in detail.



Cloud Model Element 1: Build

A strong starting point for the cloud for many firms is the category of Build, which is defined in the study as:

Typically this involves firms procuring vendor-based hardware and software products to construct private and/or hybrid clouds for customers. They may also offer consulting guidance on the best IT architecture, configuration and product choices for the project.

The Build category saw a slight increase in participation in 2014, with 52% of channel firms doing work in this area compared with 48% last year.

The bump up is a bit surprising. The Build category represents a bit of a cloud launching pad for solution providers. For example, of those firms that are also operating one of the other three cloud business models, 7 in 10 started with a with Build practice before adding the others. This makes sense given that this model maps to traditional non-cloud-related strengths in infrastructure products sales and implementation work. It's not a leap out of the comfort zone for most channel players.

But with five years and counting under our belts with cloud, it would seem to make sense that we'd hit a ceiling on new Build entrants. Clearly that's not the case. One explanation lies in the actions going on at the customer level. As outlined in Section 2 of this report, end user cloud migration patterns have accelerated, which has included a percentage of companies that are pulling their solutions back from an initial stay in the public cloud to a private cloud installation within their own four walls. Savvy channel firms keeping a tab on these types of customer trends may have seen an increased revenue opportunity in this model this past year.

The commitment to the Build model is evident in the fact that 64% of respondents described this part of their cloud business as strategic and core, compared with 46% who did so in 2013. This jump suggests that operations in this category have reached a maturity level that is delivering revenue results beyond the nice-to-have variety. Labeling their Build activities in cloud as strategic skewed slightly higher for small channel firms, while a full 8 in 10 respondents that operate mature cloud businesses identified this piece of their business as strategic and core.

In terms of focus areas within the Build framework, the findings show a sizeable increase in those that are mainly procuring hardware and software tools, then reselling to customers to build private clouds. Sixty-four percent of channel firms in this category are doing this activity, compared with 31% last year. Again this may point to end users demanding more private cloud implementations after experimenting with their workloads and applications in the public cloud. Among small channel firms, 86% are procuring and reselling private cloud infrastructure to clients today. Many of today's vendors, including VMware and Hewlett-Packard, have taken to market "cloud out of a box" type solutions that enable customers to construct private clouds in a relatively turnkey manner. It's likely that the small channel firms making up that 86% are reselling solutions like this, along with typical hardware.

Far fewer (13%) report that their Build business is primarily about leveraging an existing customer's on-premise hardware and layering software and management tools to build a private or hybrid cloud solution.

Cloud Model Element 2: Provide/Provision

This category saw a slight drop in participation in 2014, from 49% of channel firms doing cloud in 2013 to 42% in 2014. And yet, those involved in Provide/Provision consider this activity much more strategic than last year. Two thirds pegged this model as core to their business, up from 49% in 2013. Clearly, for those making the commitment to particular cloud business models, they are experiencing some positive traction.

A quick definition:

Typically these firms are reselling and provisioning IaaS offerings such as storage and compute capacity from Amazon Web Services or SaaS offerings such as Google Apps. They are also evaluating and aggregating various cloud services for customers.

Within this model, there are several subcategories of activities that channel firms pursue today. Consistent with 2013 findings, 6 in 10 channel firms doing cloud report white labeling a vendor's cloud offerings, leading with their own brand on what is typically a SaaS deal. As channel firms look to elevate their own branding and improve marketing and sales expertise as they move away into services models,

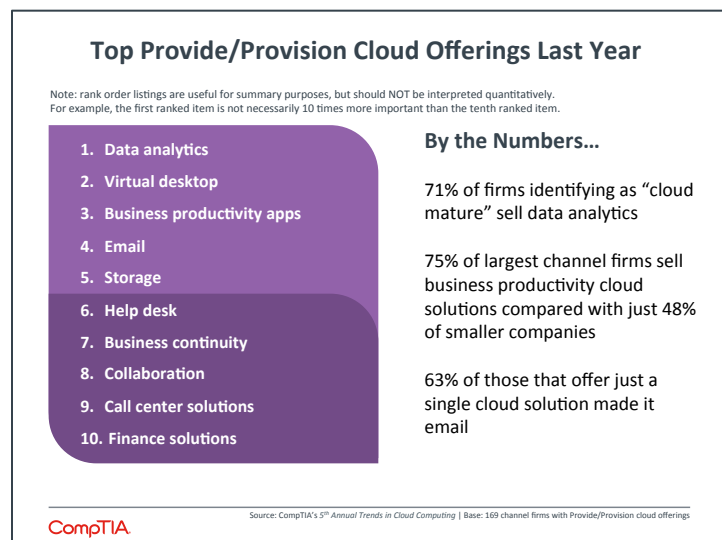
white labeling makes sense. See CompTIA's 4th *Annual State of the Channel* report for a deep dive on current efforts within the channel to drive sales and marketing change within their organizations.

Also within Provide/Provision, a significant amount of activity occurs in the reselling of vendor cloud-based solutions. Think about a business built around selling Microsoft Office 365 or Google Apps. Half of channel firms in this category do so today, including two thirds of the largest channel entities.

Most surprisingly, 67% of channel firms said they were operating their own cloud and selling services direct to customers in this fashion. This high percentage seems counterintuitive to what appears to be happening in the market place today, where channel firms are eschewing the building of their own NOCs in favor of using the much lower-priced services of the mega-providers such as Amazon Web Services. It's possible that this is exactly what respondents are talking about here. They resell services that reside in the public cloud today directly to their customers. It is also possible that channel firms offering managed services today operate in this fashion, using a PSA tool to run their customer's systems, storage and other operations, but tying the PSA tool into Amazon or another large public cloud provider to serve as its backend. Technically, the backend isn't really the MSP's own, but they may count it as part of their cloud services.

Which cloud services are they selling?

Among the 42% of channel firms involved in Provide/Provision model for cloud, the usual suspects of storage, email, business productivity apps and virtual desktop are among the most popular cloud services moving through the channel today. Between half and two-thirds of channel firms have these services in their cloud portfolio, although the number offering email and storage solutions declined slightly. This could be attributed to the growing number of end users that simply access such services directly from the likes of Amazon or Google.



The No. 1 solution reportedly being sold is cloud-based business intelligence and data analytics, which could indicate a moving upstream to more sophisticated solutions in the cloud. With cloud versions of analytics tools now available, solution providers have an opportunity to sell predominantly SMB customers solutions that may have been beyond financial reach in the on-premises form. Nonetheless it is a surprising category to land at the top of this list of cloud solutions being sold by the channel. One further explanation could be that channel firms are including revenue generated by building managed services dashboards or using Web analytics such as Google Analytics in some of the work that they provide to customers and do internally.

The Provide/Provision model has perhaps the lowest barrier to entry of all four of the cloud business frameworks. It's not a big leap to resell a vendor's SaaS applications if you are already reselling that vendor's other products and services. However, the margins on vendor SaaS sales tend to be on the lower side, which requires channel firms to find ways to add value to increase profitability.

Cloud Model Element 3: Enable/Integrate

The Enable/Integrate business framework for cloud took a hit in 2014 in terms of the number of channel companies with offerings in this category. And yet for those firms in this space, the commitment runs deep and the solutions they are providing – for example, mobile application development -- are the kind of robust, high-margin offerings that boost profitability significantly.

Consider the following definition for the model:

Typically they are providing integration and implementation services that may include tying a customer's on-premise IT solutions to its cloud-based solutions or customizing cloud-based solutions to fit a particular business need or vertical.

In 2013, half of channel firms with cloud in their portfolios offered services that fall within the Enable/Integrate framework. These run the gamut from deployment of cloud solutions and integration with on premises systems to customization and consulting. The percentage working in this model dropped to 39% this past year, a notable decline. Additionally, a quarter of respondents in 2013 said this business model category had greatest growth potential among the four frameworks for cloud, just behind Provide/Provision and Build. Just 9% did this past year.

Why the retrenchment? As mentioned above, this might be a case of biting off more than you can chew. Many of the activities and services in the Enable/Integrate stable require a complex set of skills. Some of the channel firms that initially rushed into this market may have found the work either exceeded their capacity to address while continuing to balance their legacy business or that the necessary resources to train or retrain staff on these services was too costly. One of the key challenges of doing cloud-based integration is having a working knowledge of a morass of Web-based APIs, a development skill that is not in the wheelhouse of the majority of the channel.

Smallest channel firms were least likely to participate in this business framework. Just 23% of them do so currently, compared with just more than half of medium and large counterparts. The fact that 90-plus percent of channel firms fall into the small-size category might also help to explain the low participation rates in this category.

For those that are involved with Enable/Integrate, the work can be lucrative. The business model encapsulates a number of activities. Roughly two-thirds of companies involved in Enable/Integrate are currently providing the following: deployment of cloud solutions, integration of on-premise tools and infrastructure to cloud solutions and customization, often to meet vertical industry needs. Another third are engaged in cloud-based application development, most likely building SaaS apps or extensions to apps that tie cloud in with an end customer's current environment. Many of the PaaS platforms in the cloud simplify this type of work. The level of involvement in these areas remains on a par with the percentages from last year's version of the study.

More channel firms this year have gone down the road of mobile application development to synch and interact with cloud solutions. Sixty-four percent of respondents offer these services currently, compared with 54% in 2013. As mobile continues to grow in stature across all types of applications, expect that category to accelerate. Another growth area that illustrates the relative maturity of cloud as a solution today focuses on migration services. Channel firms in this realm are either moving a customer from one

public cloud provider to another – often because of dissatisfaction with Provider #1 -- or reorienting apps and infrastructure back on premises for security or other reasons.

Cloud Model Element 4: Manage/Support

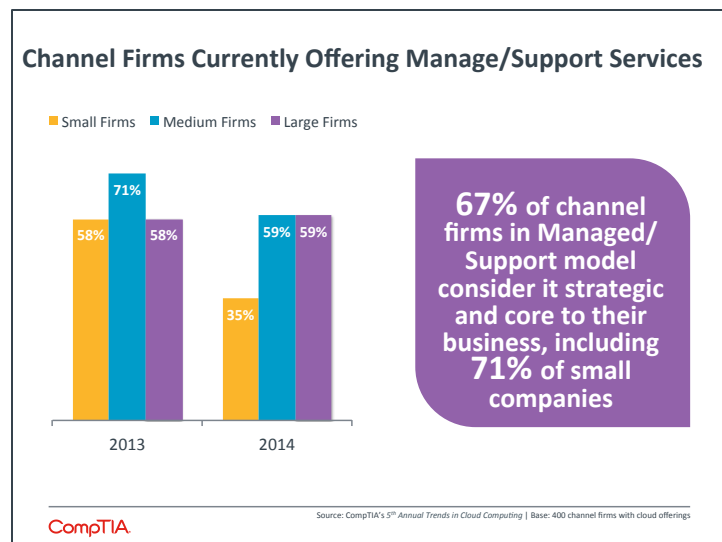
Ongoing management and support for operational cloud environments should, in theory, present a major opportunity area for channel firms that serve on the front line to their customers. And yet, similar to the downward trajectory of the Enable/Integrate category, the Manage/Support model saw a sharp decline in the number of channel companies currently providing those services.

A quick definition:

Typically they are delivering the ongoing management and support of cloud-based services as project work or in a contractual, recurring revenue model. They are also adding, scaling or troubleshooting cloud services as needed.

In 2013, 61% of respondents involved in cloud reported activities in this business model. That dropped to 47% this past year, though the number that said they plan to offer these services in the coming year came in at a healthy 46%.

One explanation for the retrenchment from last year could also be that some channel firms rushed in too quickly, only to find they did not understand the underlying business model, which in some cases requires a shift from transactional to recurring revenue. With that comes a host of changes that need to be made inside an organization, including a retraining of sales reps used to selling products to now push services-related contractual deals. It's not a low bar for many organizations. Implications for marketing and branding also exist when moving to a services provider type of business. See CompTIA's 4th Annual State of the Channel report for an in-depth look at the impact moving to recurring revenue models has on a company, including the significant shift is prompts in sales and marketing structure.

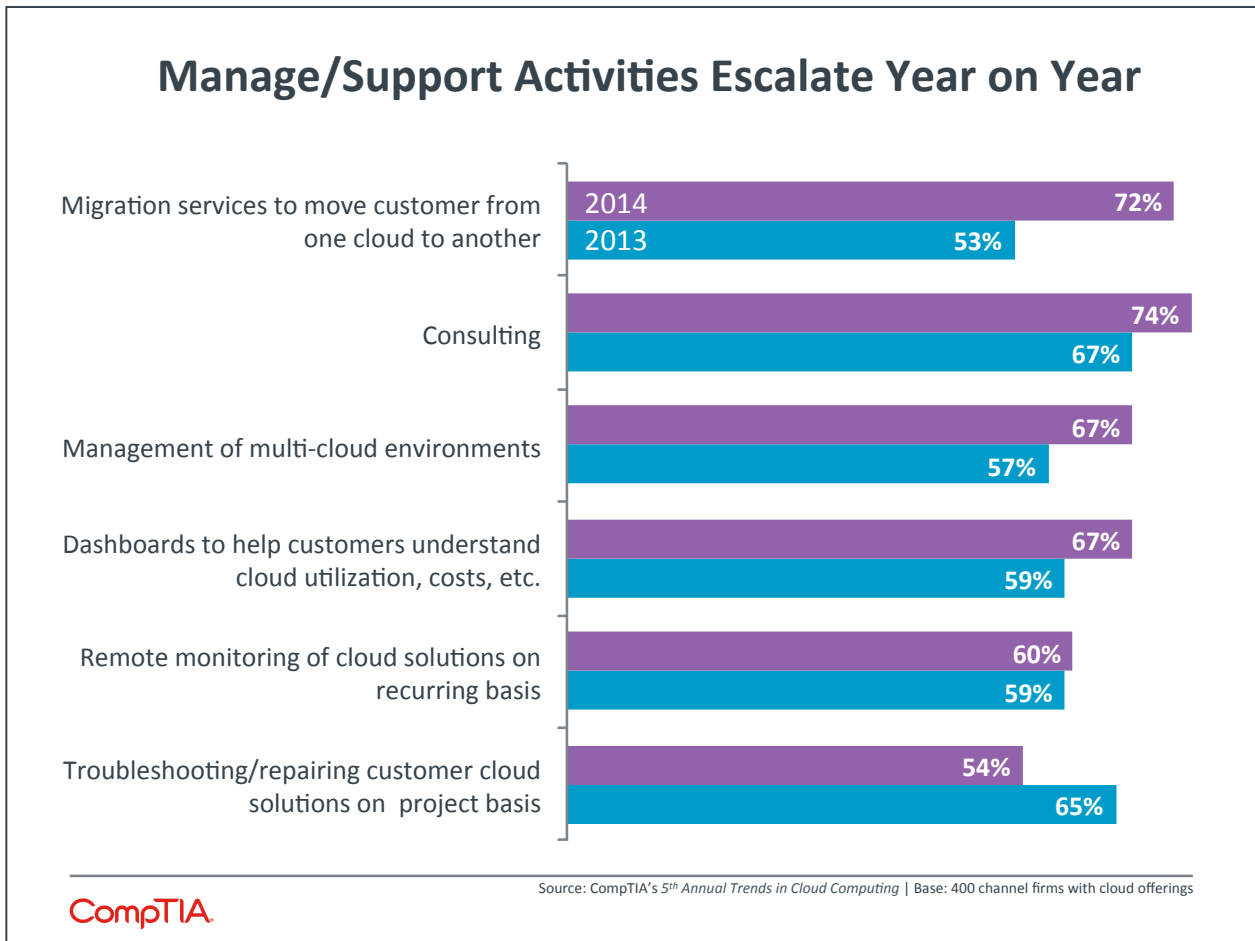


Among companies that pulled back from the Manage/Support framework this year, small firms did so most precipitously. Nearly 6 in 10 participated in this bucket in 2013. This year that was down to 35%. Medium sized firms also saw a drop from 71% to 59% year on year. Large firms held steady in their year on year adoption.

For companies involved in Manage/Support, the commitment is high, similar to what is being seen in the Enable/Integrate arena. Activities in this category confer companies in many cases with a contractual relationship to the customer, like managed services, and the much-desired recurring revenue stream.

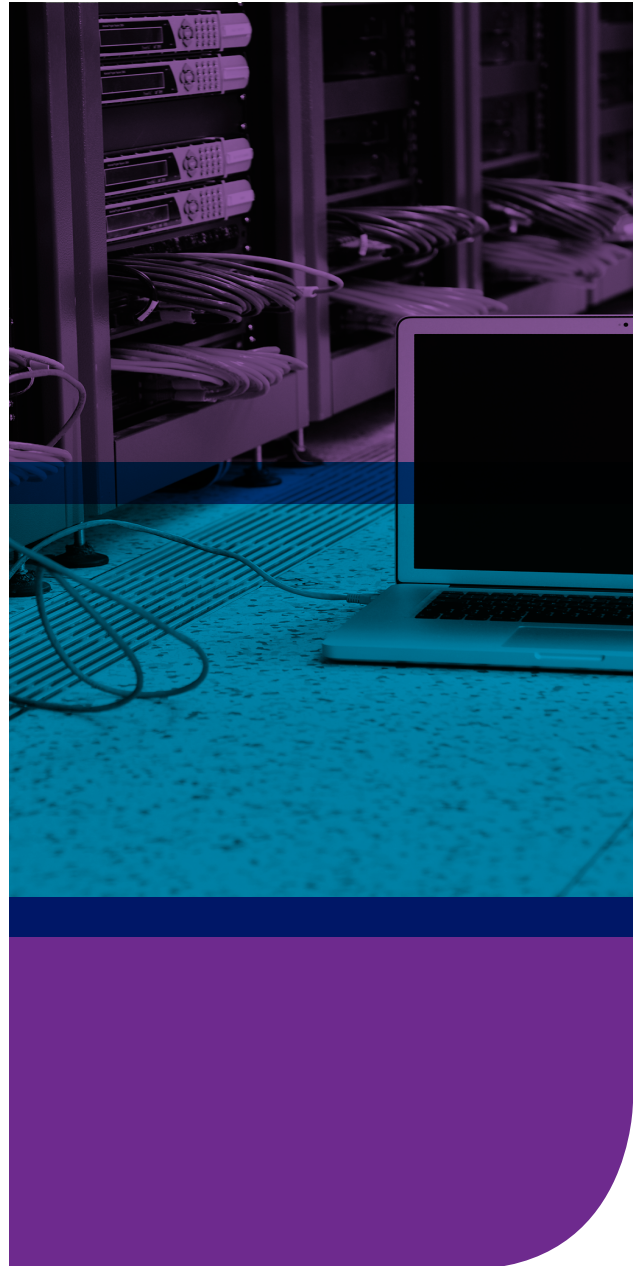
This can help eliminate the highs and lows associated with product sales and/project work and ensure a longer-term customer relationship. Two thirds of players here consider this work strategic and core to their business, including upwards of 80% of companies that assessed their cloud activities as mature.

A variety of services fall into this category, and channel activity increased in all areas despite the pool of overall participants diminishing.



SECTION 5:

Channel Dynamics



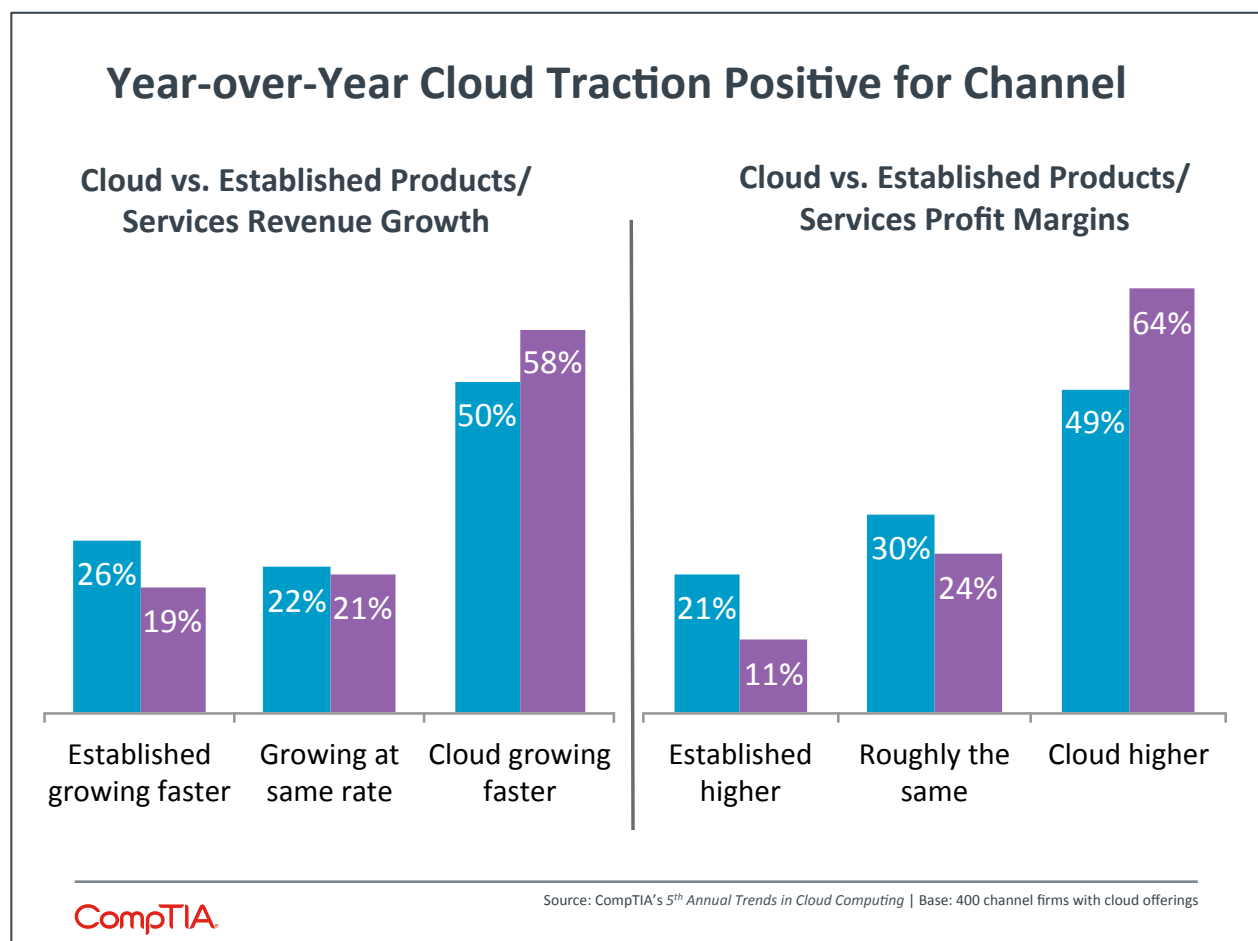
Key Points

- Compared with non-cloud business offerings by channel firms, cloud solutions and services are growing faster in terms of revenue and delivering higher profit margins. And while that was also the case in 2013 based on the self-assessment of study respondents, the number reporting such positives for cloud activities jumped this year. This year, two thirds of respondents reported higher profit margins on cloud business than non-cloud, up from half last year. The revenue growth rate for cloud vs. non-cloud solutions also shot up eight percentage points from 2013.
- Two thirds of channel firms maintained the same mix of business models for their cloud practices among the four outlined in Section 4 of this report: Build, Provide/Provision, Enable/Integrate and Manage/Support. But another third, including half of medium and large-sized companies, respectively, took on additional cloud business model frameworks, suggesting they had reaped positive results from their existing cloud streams and felt confident about branching out into more.
- Four in 10 respondents predicted cloud revenue to grow significantly (15% or more) in the coming year. That compares with 26% that responded similarly in 2013. This sunny outlook was shared consistently across all channel firm sizes, and regardless of the number of business model frameworks they participate in for cloud.
- Challenges remain in adopting cloud. The list remains largely unchanged from years past: determining the correct business model, balancing cloud vs. non-cloud businesses, initial costs, sales restructuring and the like. But the number of respondents distinguishing these challenges as “very significant” rose by an average of about 10 percentage points across all items. It seems more time with cloud has revealed its complications.

Taking Stock of the Cloud-based Business

Regardless of the business model or models that channel firms are embracing around cloud, the bigger question over the last five years has concerned monetization. In other words, how to turn cloud into a sizeable revenue stream, generate profits and satisfy customers. This section of CompTIA's 5th *Annual Trends in Cloud Computing* report takes stock of the current revenue and profit picture for the channel's cloud activities, as well as examines the challenges that firms have faced as they have added a cloud practice. Additionally, we examine customer demand and habits with respect to cloud, two factors that obviously influence the channel's actions and potential success in this area.

Unlike the nascent days of cloud when simple definitions dominated the debate and discussion, enough time and experience today have afforded channel firms a degree of hindsight and set of metrics to begin understanding the true value of their cloud activities, whether minor or major in scope. Channel firms largely report a positive trajectory with respect to their cloud-based lines of business, which unlike previous years now comprises a larger – and growing -- piece of their overall revenue picture.



In fact, when compared with non-cloud business offerings by channel firms, cloud solutions and services are growing faster in terms of revenue and delivering higher profit margins. And while that was also the case in 2013 based on the self-assessment of study respondents, the number reporting such positives for cloud activities jumped this year. In the case of profit margins for cloud vis-a-vis non-cloud products

and services, the leap was quite significant. Roughly half of 2013 respondents said cloud reaped higher margins, which grew to two-thirds offering that assessment this year. Margin reporting can be fuzzy, which should be noted. Channel firms are bundling in a number of non-cloud activities and solutions with their cloud sales – non-cloud integration work, for example – that might significantly boost the profits on a SaaS deal that in and of itself is not high margin. Likewise, perception might be at play here, as channel firms note the commoditization and declining margins on hardware and assume higher profits coming from their cloud sales.

The revenue growth rate for cloud vs. non-cloud solutions also shot up eight percentage points from 2013. Among channel firms that identify their cloud-based business as mature and strategic (See Section 4 for additional detail on cloud maturity rates), the numbers run even higher. Approximately three quarters of this population report that both revenue growth rate and profit margins on cloud wares are higher than non-cloud products and services. Makes sense as this category of firm is often invested in more than one of the cloud business model frameworks outlined in Section 4 and has committed heavily to cloud as a foundation.

The channel upswing mirrors what many vendors they work with are seeing in their own cloud efforts. Microsoft, for example, released quarterly results in October that showed its commercial cloud revenue from business customers (not consumers), grew by \$662 million, or 128%. CEO Satya Nadella says the company's cloud computing business is moving in the direction to reach \$4.4 billion in revenue this year, and while still a fraction of the sales generated from its conventional software-licensed products it is expanding at a faster pace. And that's good news for the channel, considering that a healthy portion of Microsoft's cloud revenue results from its partners selling cloud-based Office 365.

One caveat. It must be mentioned that self-reporting on financials – profitability, revenue growth, etc. – is not a 100% true barometer, as respondents can at times tend to inflate results lack complete transparency into the hard numbers. That said, the trajectory in the study findings is undeniably moving in an upward direction for cloud when compared directly to conventional lines of channel business. And unless a company is a bona fide “born in the cloud” entity, most will remain hybrid in nature, operating with a mix of revenue streams from cloud and non-cloud sources.

The revenue mix for channel firms is indeed quite a hybrid of varying sources from hardware sales and managed services to cloud sales and consulting. Cloud revenue has established a larger presence than in past years within the channel revenue-generating activities. This includes not only the cloud solutions themselves, but also any consulting work and infrastructure – e.g. hardware and software to build a private cloud – that goes along as part of the sale.

Two thirds of channel firms maintained the same mix of business models for their cloud practices among the four outlined in Section 4 of this report: Build, Provide/Provision,

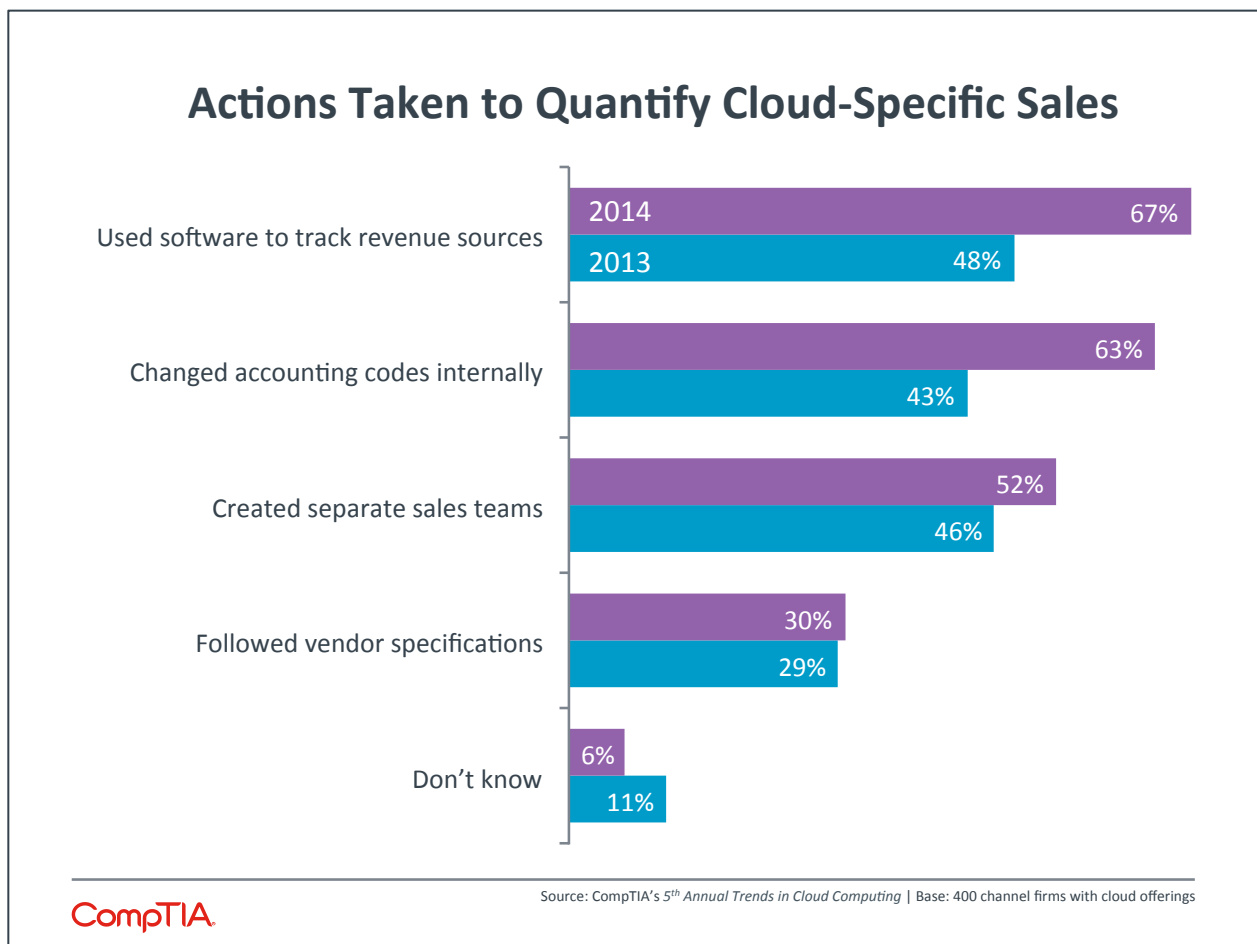
Channel Revenue Split Last 12 Months

25%	Non-cloud software sales
21%	Cloud-based sales, including infrastructure and consulting
20%	Non-cloud hardware sales
13%	Non-cloud consulting
11%	Managed services
10%	Non-cloud break/fix
9%	Non-cloud integration
7%	Non-cloud telecom services

Enable/Integrate and Manage/Support. But another third, including half of medium and large-sized companies, respectively, took on additional cloud business model frameworks, suggesting they had reaped positive results from their existing cloud streams and felt confident about branching out into more.

Expectations for continued revenue growth expansion also soared. Four in 10 respondents predicted cloud revenue to grow significantly (15% or more) in the coming year. That compares with 26% that responded similarly in 2013. This sunny outlook was shared consistently across all channel firm sizes, and regardless of the number of business model frameworks they participate in for cloud.

Operationally speaking, another indicator that the channel is taking the metrics around cloud seriously is the attention they are paying to the manner in which cloud-based revenue is distinguished from non-cloud revenue. This exercise allows for far more accurate tracking of where their sales are coming from.



Of particular note is the jump in firms that have implemented commercial PSA (Professional Services Automation) tools to track their various revenue sources. PSA software is not inexpensive. In fact, in a *CompTIA Trends in Managed Services Operations* study from 2012, just 46% of MSPs were using commercial PSA software to run their operations – and that population has been the primary target for these platforms. So the fact that today's firms are shelling out the dollars and deploying these systems as a way to track their cloud revenue streams is telling and speaks volumes about their commitment.

The incidence rate of the various actions taken on the revenue-tracking front, including altering accounting codes and creating separate sales teams assigned to cloud and non-cloud business, is consistent across all sizes of channel companies, though medium-sized businesses did show a higher propensity for following specific vendor specifications for tallying cloud sales.

Challenges and Transition Logistics

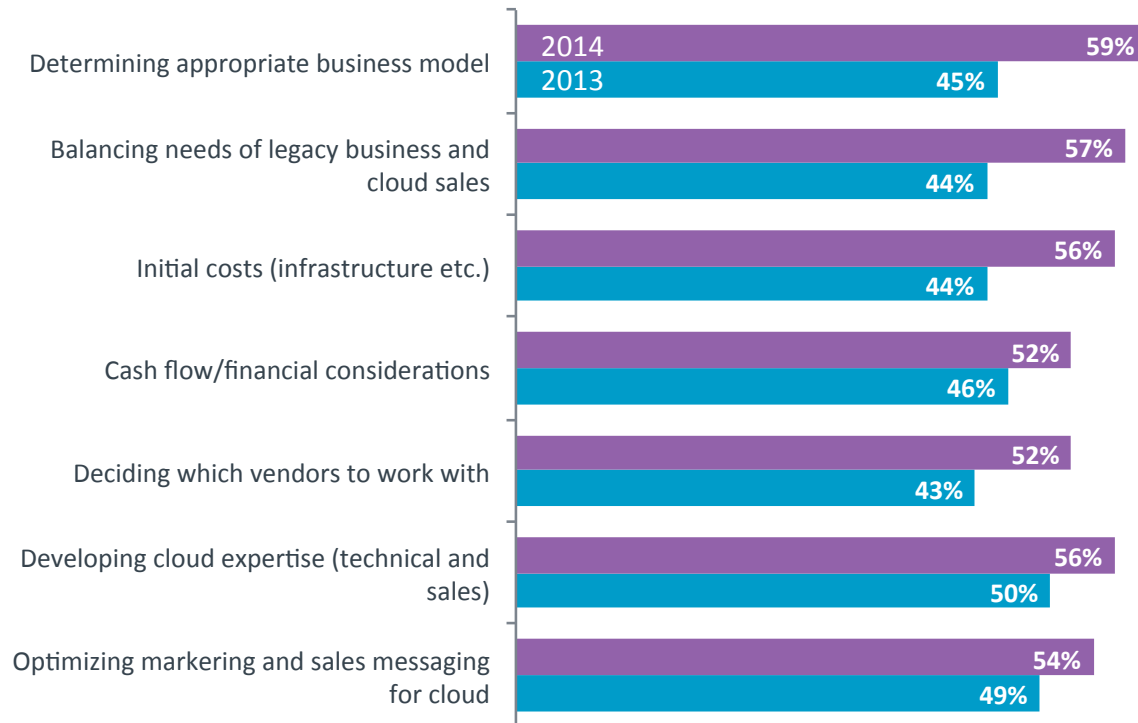
While five years working with cloud has clearly injected more confidence and better results into the channel, it's also allowed enough time for problems and challenges to bubble up to the surface, and in some cases cause channel firms to retrench a bit in their activity level (See Section 4 for more details).

First, let's review the transition path that firms are taking to add cloud to their portfolios. The findings reveal a change that suggests a bit more caution for newcomers. Fifty-six percent of firms doing cloud today got there by proactively pursuing a single segment of the market – SaaS sales, for example – that they found to be a natural extension to their existing business. That number doubled from 2013 when 28% of firms charted their course this way. Meanwhile this year, 36% of firms said they pursued multiple cloud business model segments at once in a quest to get to market rapidly, down from 57% in 2013.

The trend toward a more measured approach suggests that companies are adopting a realistic attitude about their capabilities and resources to move wholesale into a new business model arena and tackle all that entails. The smallest channel firms (70%), in particular, opted to pursue a single cloud business segment that complemented their current activities, compared with 4 in 10 medium and large-sized entities, respectively. Smaller firms tend to be more risk-averse, given considerations around cash flow and credit, so this finding is not surprising.

As mentioned above, extended experience with a new business line is both the avenue to improve and become skilled while also the playing field for trial, error and tribulation. The cloud transition is no different and with several years under their belts, channel firms today have a more sobering viewpoint when asked about the various obstacles they have faced.

Challenges Deemed “Very Significant” by Channel on Rise



Source: CompTIA's 5th Annual Trends in Cloud Computing | Base: 400 channel firms with cloud offerings

The list of challenges remains largely unchanged from years past: determining the correct business model, balancing cloud vs. non-cloud businesses, initial costs, sales restructuring and the like (see chart above). But the number of respondents distinguishing these challenges as “very significant” rose by an average of about 10 percentage points across all items. It seems more time with cloud has revealed its complications. So despite all the optimism noted in this year’s findings around cloud revenue growth and profit margins, it appears that the channel is still struggling a bit with settling into the right model.

While these findings were largely consistent across all respondents, small channel firms identified cash flow and other financial considerations to be a more significant hurdle than medium or larger firms. And confirming that more experience with something opens you up to more growing pains, the firms with mature and strategic cloud businesses pegged the above challenges as “very significant” in greater numbers than any other respondent type.

Steps Taken to Mitigate Cloud Transition Challenges

Note: rank order listings are useful for summary purposes, but should NOT be interpreted quantitatively. For example, the first-ranked item is not necessarily 7 times more important than the seventh-ranked item.

1. Invested in technical, sales and business training
2. Transitioned just a portion of business to cloud; scale later
3. Used third-party data center provided rather than build own NOC
4. Accessed vendor-provided training
5. Hired new sales reps to sell cloud services
6. Partnered with other solution providers to combine skill sets
7. Pursued additional credit/capital

Roughly half of respondents turned to a third-party data center provider for cloud in 2014, up from 31% last year.

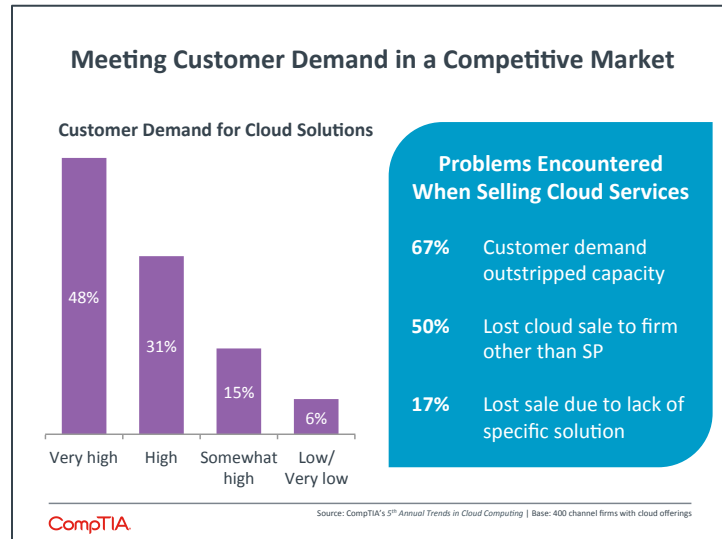
Channel firms tackled the various cloud challenges in a number of ways. First, through investment, including technical and sales training, the pursuit of credit, hiring anew etc. They also exercised restraint as a tactic, transitioning only a portion of their business to cloud at first with plans to scale later as needed. These actions were undertaken consistently across all channel firm sizes, but with a greater incidence among companies identifying as cloud mature.

Most interesting is the white flag being waved when it comes to the data center decision. Early on in the cloud march, many in the channel proclaimed that they would build and operate their own NOCs to serve up cloud solutions and essentially act as another piece of the public cloud. Today, with the public cloud market coalescing around several mammoth providers such as Amazon, Google and Microsoft, the channel is backing down. They can never expect to reasonably compete on pricing for cloud compute services that the Amazons of the world drop routinely. This year, half of channel firms said they are contracting with a third-party provider for use of a data center for cloud, compared with 31% in 2013. Expect that percentage to rise in successive years.

Customer Dynamics

End user customers are the other major piece of the cloud equation for the channel. From the channel’s point of view, both demand for cloud and understanding of it have climbed upward among customers. Compared with 2013 when a net 63% characterized demand as either high or very high, nearly 8 in 10 did so this year. See Section 1 for a more detailed breakdown of cloud market size and projections for future.

Small channel firms are hearing the customer cloud-clamoring twice as loudly as their medium- and large-sized brethren. Two thirds of small firms reported the demand they are seeing as “very high,” compared with a third of the other two, respectively. As discussed in Section 4 of this report, smaller channel firms – which represent the plurality of the channel ecosystem – tend to sell to SMB companies like themselves. And cloud opens doors for SMBs that might not open in the past; namely access to applications and other tools that are otherwise cost-prohibitive in their conventional software-licensing format. Hence the model’s attractiveness and one potential reason for high demand.



Small channel firms also credited their customers as more knowledgeable in general around cloud, which is a big change from five years ago when CompTIA research found essentially little awareness of what cloud was at the customer level.

Greater demand brings its own set of challenges, chiefly around capacity to deliver. Unless a channel firm has adequate capacity and skills to meet that demand, they will have to either turn away or lose business. This was a problem in 2014; with 67% of channel firms claiming that customer demand for cloud solutions outstripped their ability to deliver in certain instances. That is up sharply from 4 in 10 that ran into the same problem in 2013. Also more prevalent this year: losing a cloud deal to another solution provider, vendor or distributor, which half of respondents experienced vs. a third last year. Clearly with demand growing, the players are scrambling a bit to determine best routes to market and optimal levels of internal staffing. In particular, the demand-to-capacity balancing act will be a struggle.

With customers curious about cloud and demand up, fresh conversations have been sparked between channel firms and their existing clients, while doors are opening to potential new customers seeking, in some instances, a better mousetrap to meet their technology needs.

Case in point? Seven in 10 channel firms say that cloud has generally strengthened their customer relationships, up slightly from last year, with just 15% on average claiming it has weakened ties. This is encouraging news given the fact that many in the channel have feared publicly that cloud would drive a wedge between them and their customers. There’s been rampant apprehension about such ill effects as

a resurgence in vendor direct sales and end user customers choosing a self-service model for their IT solutions, i.e. procuring SaaS applications online. And while both of these trends are happening to a certain extent, CompTIA data suggest not at such dire expense to most of the channel, especially those that have reached a high level of cloud maturity today and intend to remain committed.

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