Train to Accelerate Your Cloud Strategy

Cushing Anderson
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EXECUTIVE SUMMARY

Cloud technologies help organizations transform their businesses, and there is no doubt that cloud adoption is growing quickly. IDC forecasts that within the next three years, well over two-thirds of all IT infrastructure and software will be consumed as cloud services. In IDC's 2016 *CloudView Survey* of over 11,000 customers around the world, 70% of CIOs identified themselves as having a "cloud first" IT strategy either today or for the future. Over the next several years, even more organizations will move steadily closer to "cloud only" strategies.

As cloud becomes the new normal, some organizations are looking to accelerate their cloud adoption to remain competitive in their markets. We set out to discover whether cloud technology training and by extension cloud skills have a significant influence on the rate of cloud adoption. Adoption of cloud by itself isn't the goal, but faster adoption allows organizations to accelerate the achievement of business benefits from the cloud. We found that training enables organizations to accelerate cloud adoption and achieve their business objectives sooner, as well as overcome concerns related to cloud adoption.

Our research also shows organizations that invest in "comprehensive training" benefit most. Comprehensive training includes both cloud fundamentals training for a wide range of stakeholders and deep cloud training for key technical teams. Organizations that invest in comprehensive training see significant benefits over those that invest only in minimal training. This is true regardless of the organization's cloud provider. Comprehensive cloud training helps:

- **Accelerate cloud adoption:** Comprehensively trained organizations are 80% faster to adopt cloud and are 1.9x more likely to move beyond limited deployment to more complete deployment.

- **Achieve business and internal objectives:** Comprehensively trained organizations are 2.7x more likely to realize that cloud can help jump-start innovation and are 4.7x more likely to agree cloud can improve IT staff productivity.

- **Overcome internal concerns:** Comprehensively trained organizations are 3.8x more likely to meet cloud ROI requirements and are 4.4x more likely to overcome operational/performance concerns.

While some organizations can easily leverage cloud and realize benefits quickly from limited cloud deployment, many organizations have complex needs with cloud environments that require careful planning and management. Training can provide the deep understanding of cloud technology that these more complex environments often require. Based on our research, we recommend that organizations that want to get the most out of cloud should train a wide range of stakeholders on cloud fundamentals and provide deep training to key technical teams.

Methodology Overview

This research included both a quantitative survey and qualitative interviews. We conducted a web survey in November 2016, with 502 randomly selected cloud managers and IT leaders in North America, Europe, and Asia. A broad range of cloud service providers had significant client representation in the survey, including Amazon Web Services, Inc. (AWS), Google, HPE, IBM, Microsoft, Oracle, Rackspace, and VMware. We also conducted five in-depth interviews with U.S. and European IT leaders who have implemented cloud to understand their experiences and get their recommendations.

For more details about the methodology, see the Methodology section.

In this white paper, we explore how investing in training can have a positive impact on an organization's cloud adoption.

COMPREHENSIVE TRAINING HAS THE GREATEST IMPACT

Our research shows a clear pattern: training has a significant impact on cloud adoption, and this is especially true for organizations that invest in more comprehensive training.

For this project, we defined "comprehensively trained" organizations as offering significant training (defined as eight plus hours of training in a topic) across multiple target audiences (individual team members, IT teams, non-IT employees and teams, and groups of related teams) and across four primary topics (cloud technologies or platforms, methodologies or processes, organizational objectives, and potential use of cloud) (see Figure 1). On the other hand, we defined "minimally trained" organizations as offering training for a single target audience in a single training topic.

FIGURE 1

Comprehensive Training for Adoption of Cloud: Topics and Targets

Topics for training

- Cloud technologies
- Methologies or processes
- Organizational objectives
- Potential use of cloud

Comprehensive Training

Targets of training

- Individual team members
- IT teams
- Non-IT employees and teams
- Groups of related teams
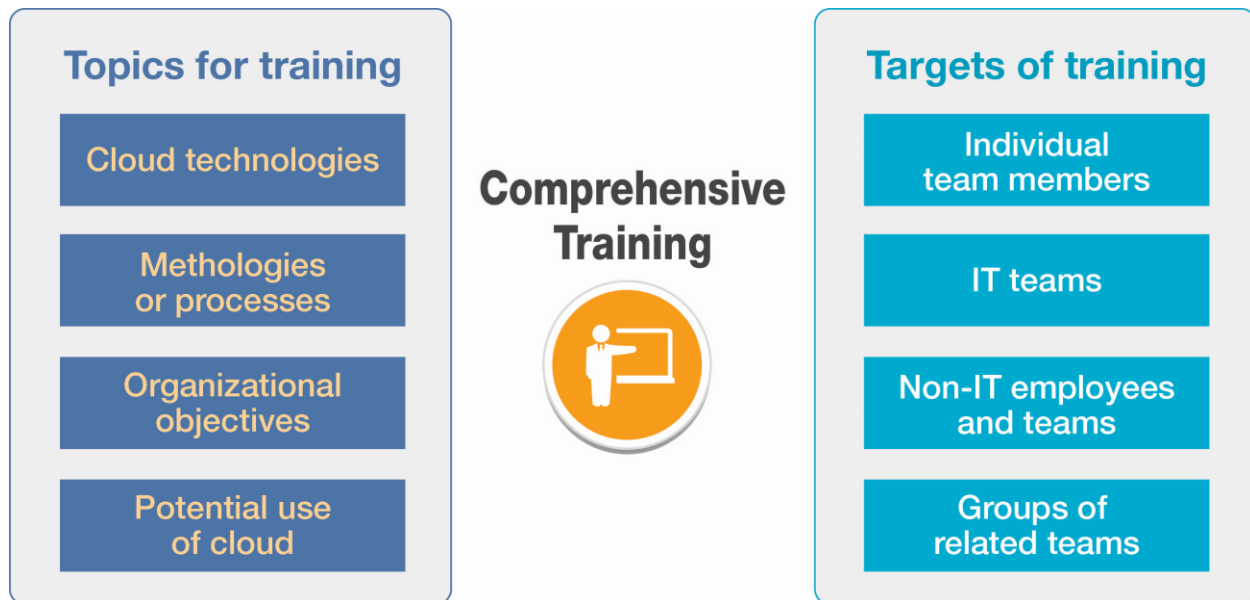
Source: IDC, 2017

Of course, some organizations we surveyed fell in between the "minimally trained" and "comprehensively trained" categories. Organizations do not need to invest in "comprehensive training" to see benefits. But, providing more topics of training to more types of employees progressively increases the value organizations gain from cloud adoption. Comprehensively trained organizations benefited the most from a deeper and more widely held understanding of both the potential and practical capabilities of cloud. Training leads to an understanding of how cloud technology can be used most effectively. It is important for all stakeholders, from C-level IT leaders to project team leaders to individual technical contributors to develop this understanding. While not every group of stakeholders receives the same type and depth of training, every group benefits from training to understand both the potential use and the application of cloud.

Organizations that were "comprehensively trained" were 80% faster to adopt cloud than those organizations that were minimally trained.

> **Organizations that were "comprehensively trained" were 80% faster to adopt cloud.**

Training Enables Organizations to Accomplish Cloud Goals

We conducted interviews with cloud leaders and heard several examples of business cases where training was essential for success.

GE embarked on a transformation initiative that required aligning technology platforms with IoT business objectives. To accomplish this, GE created GE Digital to develop software to design, build, operate, and manage the entire product life cycle. To move to the cloud, GE Digital realized that it first needs to build up cloud skills throughout its organization. Vincent Perfetti, VP, Product Strategy and Customer Engagement at GE Digital, said, "We trained as many people as possible on cloud basics because the benefits of understanding cloud extend beyond the IT organization."

Similarly, Siemens Building Technologies also needed to train its staff in order to leverage the cloud. The company wanted to use a "cloud first" strategy to build a new product and service that leveraged personal smartphones to act as "key cards" to grant controlled access to buildings. Peter Loeffler, head of Innovation and Industry Affairs at Siemens, told us, "Cloud training shows IT professionals, managers, and executives a new paradigm. Everyone needs to understand what cloud services (and tools) exist."

Another business unit within Siemens, Siemens Healthcare, had been using cloud for many years, but the unit wanted to further improve IT staff productivity and take greater advantage of cloud benefits. To accomplish this, Siemens Healthcare trained its leaders about the benefits of cloud. Moritz Onken, Siemens Healthcare, recommends cloud training for management. He says, "Because cloud development needs to consider experiences beyond current corporate memory, it needs an external perspective. Train C-level IT leaders and their direct reports. Without buy-in from upper management, there will be no trust in the solutions (and no money to try them)." If business leaders, IT leaders, and C-level executives don't have a common understanding of the true capabilities of a cloud-based infrastructure, the organization may hesitate. As Onken suggests, organizations need to build trust in the cloud to make this shift. Training can help build that necessary trust.

> "We trained as many people as possible on cloud basics because the benefits of understanding cloud extend beyond the IT organization." Vincent Perfetti, VP, Product Strategy and Customer Engagement at GE Digital

These enterprise examples demonstrate that an effective cloud strategy should incorporate training. Perfetti, Loeffler, and Onken all allude to the need to shift the corporate culture. Effectively leveraging cloud requires a change in mindset up and down the organization, and comprehensive training can help accomplish that goal.
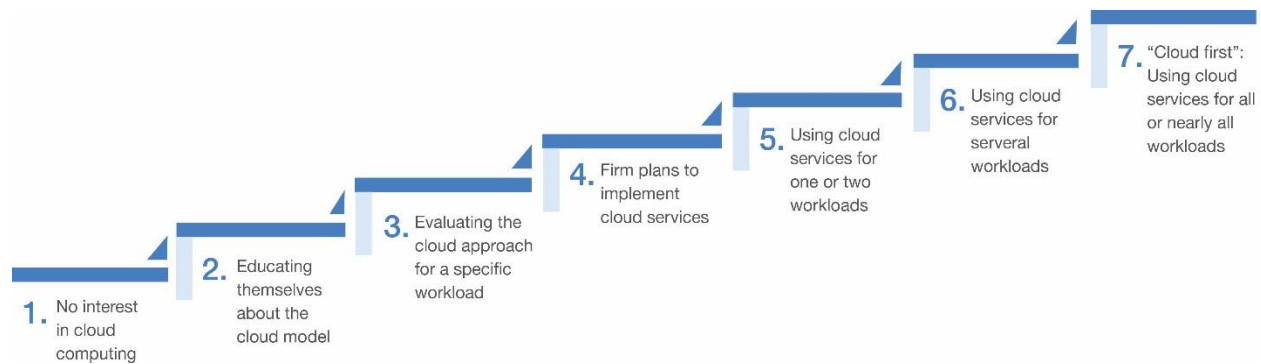
Stages of the Cloud Adoption Journey

We envision the cloud journey to have seven "stages" (see Figure 2). Organizations pass from one degree of adoption to the next, and only rarely do organizations retreat to an earlier stage or skip a stage altogether. In our recent research, we asked organizations to identify which of the seven stages of cloud adoption they were in, and where they expected to be in two years.

FIGURE 2

IDC's Seven Stages of Cloud Adoption

1. No interest in cloud computing
2. Educating themselves about the cloud model
3. Evaluating the cloud approach for a specific workload
4. Firm plans to implement cloud services
5. Using cloud services for one or two workloads
6. Using cloud services for serveral workloads
7. "Cloud first": Using cloud services for all or nearly all workloads

Source: IDC, 2017

Our research shows that about 65% of organizations are using cloud for one or more workloads today (stages 5, 6, or 7). Only about 5% of organizations have no interest in cloud computing (stage 1). No matter where organizations are in their journeys, most expect to leverage cloud services to support even more workloads in the future. In fact, 70% of organizations expect to expand their use of the cloud in two years.

## Training Accelerates Rate of Cloud Adoption

Investment in training impacts how quickly organizations are able to adopt the cloud. Over the next 24 months, organizations that are only minimally trained on cloud will lag behind comprehensively trained organizations in how much they expand their use of cloud.

Comprehensive training enables organizations to move more quickly through the stages of cloud adoption. Comprehensively trained organizations are 81% more likely to "move up" a cloud adoption stage in the next 24 months. Figure 3 illustrates the impact comprehensive training has over minimal training in adoption speed.

Comprehensively trained organizations are 81% more likely to "move up" a cloud adoption stage in the next 24 months.

FIGURE 3

Comprehensive Training Accelerates Cloud Adoption
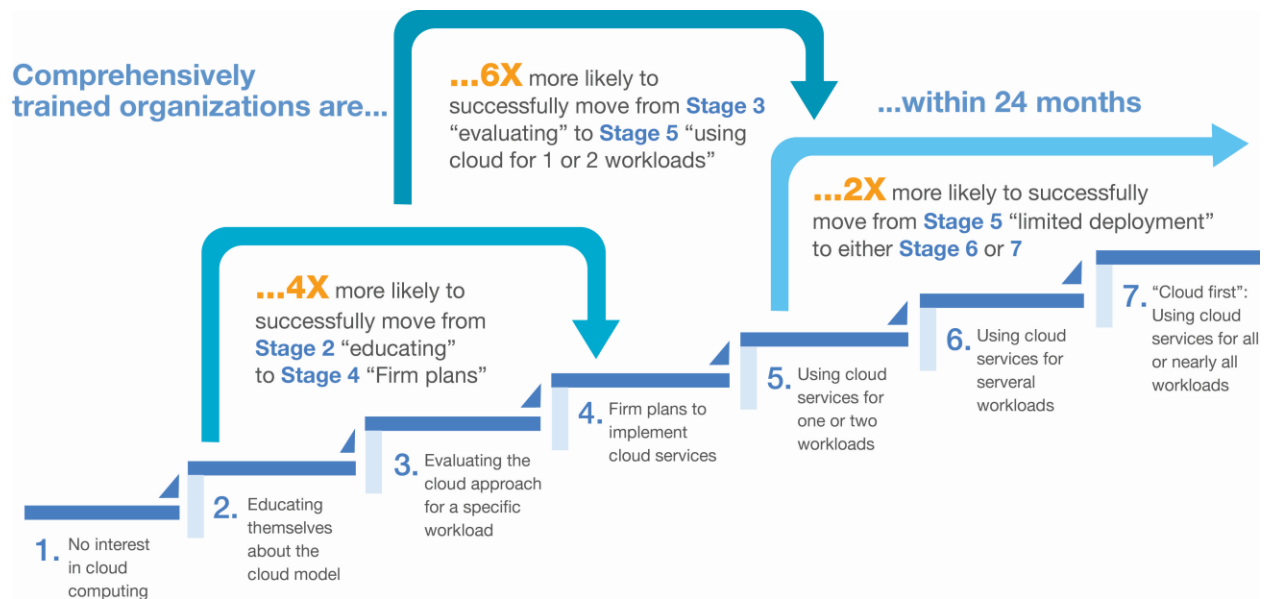
n = 502

Source: IDC's *Impact of Training on Cloud Benefits Survey,* 2016

The increased rate of adoption for comprehensively trained organizations depends on where the organization is on its cloud adoption journey, but training helps at every stage of adoption:

- 100% of comprehensively trained organizations that are currently at stage 2 (educating themselves on cloud) expect to move to stage 3 (have firm plans to implement cloud) in two years compared with just 25% of minimally trained organizations.
- 67% of comprehensively trained organizations that are currently at stage 3 (evaluating the use of cloud) expect to move to stage 5 (using cloud for one or two workloads) in two years compared with just 11% of minimally trained organizations.
- 85% of comprehensively trained organizations that are currently at stage 5 (using cloud for one or two workloads) expect to move to stages 6 (using cloud for several workloads) or 7 (using cloud for all or nearly all workloads) in two years compared with just 45% of minimally trained organizations.

It is fair to assume some of these organizations may move even faster than they estimate in this survey, but this research shows that comprehensively trained organizations *expect* to adopt cloud more quickly.

Faster Adoption Leads to More Rapid Benefits

Siemens Building Technologies was able to adopt the cloud more quickly and thus realize benefits of the cloud faster as a result of training. Loeffler of Siemens Building Technologies said, "Training speeds up the innovation process… After training, we rolled out a cloud-enabled product from concept to delivery in four months." He explained that this training helped Siemens take advantage of an emerging market opportunity related to intelligent building management. Loeffler said, "If we hadn't done training beforehand, it would have taken much longer."

> "After training, we rolled out a cloud-enabled product from concept to delivery in four months." Peter Loeffler, Siemens Building Technologies

Training helps organizations get more out of the cloud. Our results showed that comprehensively trained organizations realized business benefits faster and also achieved internal objectives more easily.

Significant business benefits for comprehensively trained organizations include:

- **Simplified IT infrastructure:** Comprehensively trained organizations are 2.2x more likely to agree that cloud can be configured to successfully simplify and standardize their IT infrastructure and applications.
- **Faster addition of new capabilities:** Comprehensively trained organizations are 2.5x more likely to agree that cloud can help them accelerate the addition of new compute and business process capabilities.
- **Improved resource utilization:** Comprehensively trained organizations are 4x more likely to agree that cloud can improve IT resource utilization.
- **Improved scalability:** Comprehensively trained organizations are 3.7x more likely to understand how to successfully increase and decrease capacity on demand.
- **Faster innovation:** Comprehensively trained organizations are 2.7x more likely to realize that cloud can help jump-start innovation.
- **Improved global reach:** Comprehensively trained organizations are 5.3x more likely to agree that cloud can improve global reach of products and services to better serve client requirements.

Training Leads to More Rapid Innovation with Cloud

GE Digital's experience demonstrates how training helps fuel the pace of innovation as the organization progresses through the cloud journey. Once the process of innovation starts, it can become self-reinforcing. Perfetti of GE Digital believes innovation is like a muscle that needs to be exercised: "With experience, business owners become more comfortable trying new ideas. Failing to continually innovate causes atrophy and is a missed opportunity." And, he adds, "As you learn how to automate implementation of new capabilities with cloud, you will become more innovative." Training can also help an organization increase its rate of innovation: "With practice, you can reduce the time it takes to innovate," says Perfetti.

Siemens Healthcare was also able to leverage training to innovate faster. "Training kick-starts the organization into using new technology," says Onken of Siemens Healthcare.

Comprehensive training improves an organization's ability to achieve internal objectives, too. Comprehensively trained organizations are:

- **More productive:** Comprehensively trained organizations are 4.7x more likely to agree cloud can improve IT staff productivity.
- **Better problem solvers:** Comprehensively trained organizations are 3.5x more likely to agree that their teams can conceive of new ways to get work done.
- **More cost efficient:** Comprehensively trained organizations are 4.0x more likely to agree cloud can help optimize IT spending.

Siemens Building Technologies needed tools and capabilities to innovate faster. Training on cloud enabled teams to work together more productively. According to Loeffler of Siemens Building Technologies, "Training speeds up the innovation process and improves the relationship between IT and line of business because there is more familiarity of what the technology can do."

Also, with training, "product managers and process managers understand enough capabilities of cloud to propose innovative approaches" further increasing the rate and direct benefit of innovation, says Loeffler.

Training Helps Overcome Adoption Concerns

Some organizations have concerns that could impact broad organizational adoption of cloud. The most significant concern cited by organizations across the cloud journey is related to security. About 60% of organizations include security among the top three concerns their organization has regarding adopting cloud. Others have concerns related to the reliability of the cloud-based application, IT governance of cloud services, and the performance potential of the cloud infrastructure.

Overall, comprehensively trained organizations are much more confident than minimally trained organizations that these concerns can be overcome (see Figure 4).

"Training kick-starts the organization into using new technology," Moritz Onken, Siemens Healthcare

"Training speeds up the innovation process and improves the relationship between IT and line of business." Peter Loeffler, Siemens Building Technologies

FIGURE 4

Overcome Adoption Concerns by Comprehensive Training

Q.   How likely are you to overcome your concerns related to …?
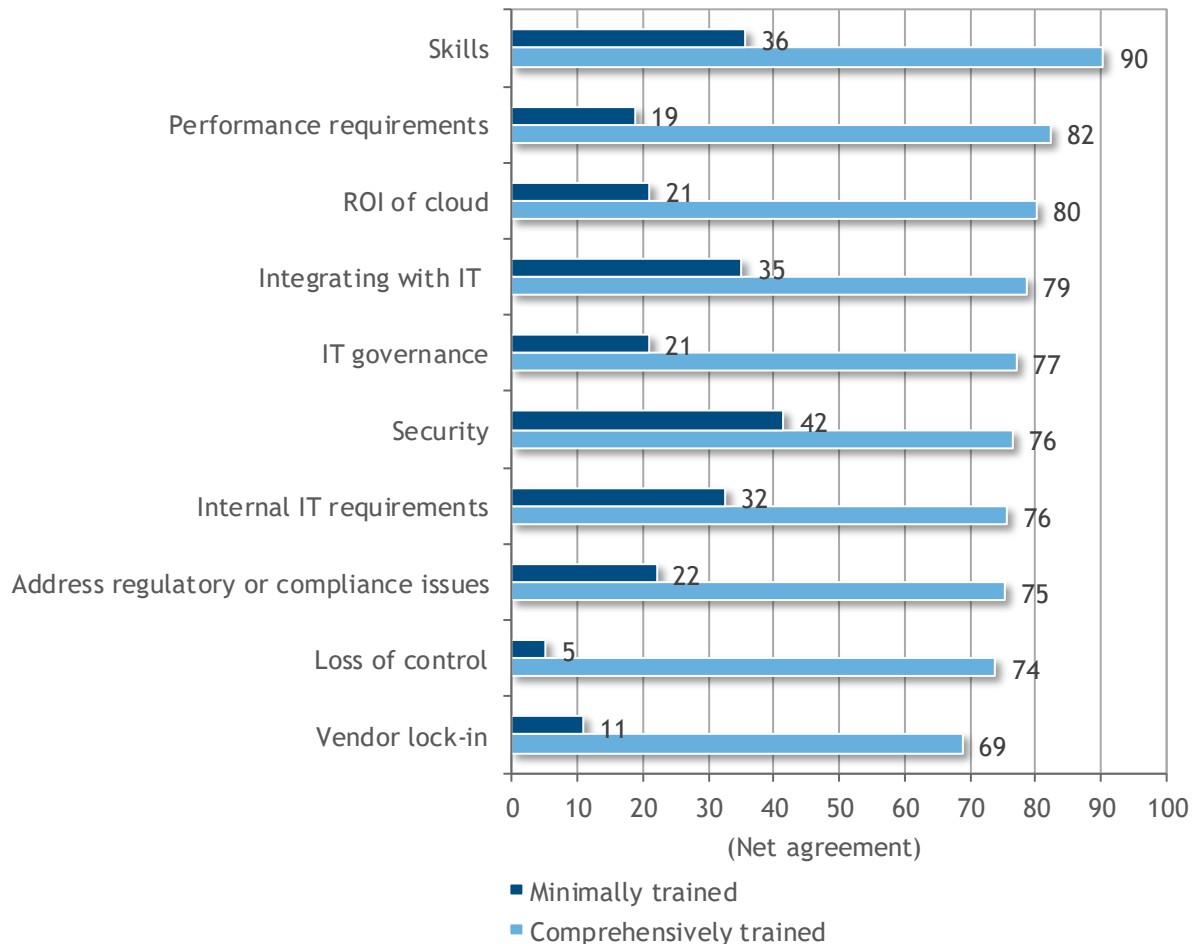
n = 459

Note: Net agreement is the difference between the share of organizations that believe it is likely (top 2 boxes) from the share of those organizations that believe it is unlikely (bottom 2 boxes).

Source: IDC's *Impact of Training on Cloud Benefits Survey,* 2016

Across all of the concerns regarding cloud adoption we studied, comprehensively trained organizations consistently had a lower sense of concern and a greater belief that the cloud environment could be configured or administered to sufficiently mitigate the concern. That finding makes intuitive sense: the more the organization understands both the potential and the application of cloud, the more easily the organization can address or overcome its concerns.

For example, comprehensively trained organizations are better able to realistically assess security concerns, to implement security safeguards, and to build improved or additional security processes or procedures, if necessary.

Comprehensively trained organizations are:

- 3.7x more likely to overcome IT governance concerns;
- 3.8x more likely to meet the ROI requirements that make cloud a feasible option;
- 4.4x more likely to overcome operational/performance concerns;
- 1.8x more likely to resolve security concerns;
- 6.3x more likely to overcome concerns regarding vendor lock-in; and
- 14x more likely to overcome operational control concerns stemming from moving compute and storage activities to the cloud.

> **Comprehensively trained organizations are 3.8x more likely to meet cloud ROI requirements.**

The U.S. Intelligence Community wanted to leverage cloud to create a scalable and resilient IT infrastructure. Stakeholders were concerned that a simple "lift and shift" of workloads to the cloud would realize only a small portion of the benefits of cloud and only partially meet the goals of the project. To more fully achieve its goals, the team needed a more complete understanding of the potential of cloud and the skills to properly redesign applications, workloads, and workflow to take advantage of the built-in capabilities of a fully cloud-enabled environment. Matt P, Deputy Chief Information Security Officer at the CIA, says, "Without effective training, we would have adopted cloud the same way as any new technology — lift and shift, with big vertical stacks and no re-architecting, no elastic demand, no load balancing, or failover. With training, we learned to adopt cloud smartly."

GE Digital was also able to overcome organizational concerns with training. Perfetti at GE Digital believes that training helps the organization overcome concerns by more fully understanding how to properly design and deploy cloud services. He says without training, "the risk is you move to an environment where you spent too much money mis-architecting the solution." But by fully training as many people as possible in the basics of cloud, the whole organization supports the cloud approach. This makes it more likely for an organization to reach full potential with the cloud.

Developing a Comprehensive Training Program

The most effective training plan will be based on your organization's cloud strategy and business objectives. You should engage with a training provider as early as possible in your cloud adoption. Integrating training as part of your overall cloud strategy will help you achieve your objectives. Work with your training provider to consider your organization's level of expertise, your timeline for cloud adoption, and the objectives you hope to achieve. Look across both technical and nontechnical stakeholders to develop a plan that is relevant to each audience. In many cases, a successful training strategy will involve a combination of training resources and may involve multiple training partners to develop and provide training to all target learner populations.
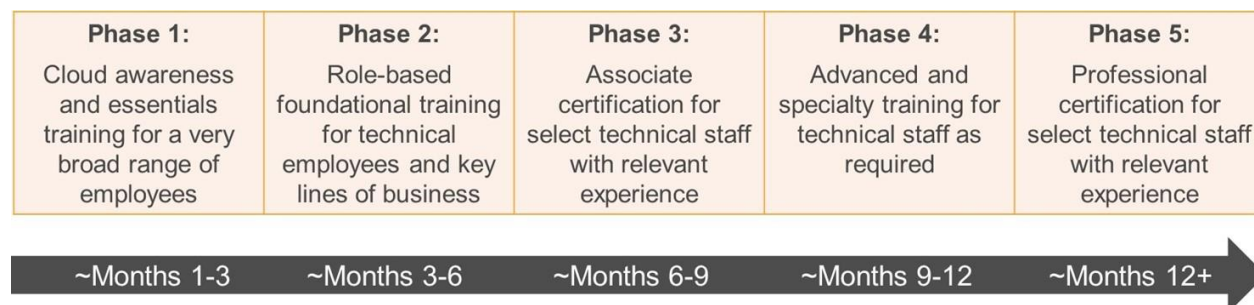
About AWS Training and Certification

AWS Training and Certification offers a range of resources, including classroom and online training, self-paced labs, white papers, and certifications, to help organizations build the cloud skills they need. AWS Training courses are built by AWS experts, and content is available across the globe in many languages. AWS trainers can also come directly to you to deliver private onsite training.

AWS suggests a phased approach to AWS Training and Certification to train your team (see Figure 5).

FIGURE 5

Illustrative Cloud Training Plan Outline and Timing

Phase 1:	Phase 2:	Phase 3:	Phase 4:	Phase 5:
Cloud awareness and essentials training for a very broad range of employees	Role-based foundational training for technical employees and key lines of business	Associate certification for select technical staff with relevant experience	Advanced and specialty training for technical staff as required	Professional certification for select technical staff with relevant experience
~Months 1-3	~Months 3-6	~Months 6-9	~Months 9-12	~Months 12+

Source: AWS, 2017

AWS offers foundational training to help your team learn cloud fundamentals, including two one-day foundational-level classes (*AWS Business Essentials* and *AWS Technical Essentials*), introductory videos, and online labs. A combination of essentials training and online resources will help give your team the knowledge it needs to get started quickly and efficiently.

AWS also offers intermediate and advanced technical training for teams that will be using the cloud. AWS has three role-based learning paths for technical professionals looking to build and validate their skills, including:

- **Architecting.** For solutions architects, solution design engineers, and anyone who wants to learn how to design applications and systems on AWS.
- **Developing.** For software developers who want to learn how to develop cloud applications on AWS.
- **Operations.** For SysOps administrators, systems administrators, and those in a DevOps role who want to learn how to create automatable and repeatable deployments of applications, networks, and systems on AWS.

These paths outline foundational, intermediate, and advanced training most relevant to each of these three roles. In addition, specialty courses like *Big Data on AWS* and *Security Operations on AWS* can give your team the specific knowledge it needs to succeed. AWS can work with your organization to determine who on your team would benefit most from each training and can also work on a customized learning path and training strategy based on your team's cloud knowledge and goals.

AWS Certifications validate cloud knowledge and recognize IT professionals with the technical skills to design, deploy, and operate applications and infrastructure on AWS. AWS offers a range of certification types including Associate, Professional, and Specialty. These certifications are trusted in the industry. In fact, our research showed that 90% of organizations that employ an AWS-certified IT professional say they trust the certification to prepare a candidate or an employee for a cloud-related role in the IT organization.

Consider working with the AWS Training and Certification team on an education strategy so you can get the most out of your cloud investment. As we have seen, a comprehensively trained organization can make all the difference.

ESSENTIAL GUIDANCE

For many organizations, adopting the cloud is a path to competitive advantage and greater success. To successfully adopt the cloud, organizations need individuals with cloud skills on their teams.

Organizations that are moving workloads to the cloud can leverage training to accelerate their adoption, overcome concerns, and extend the benefits of cloud. Our research and interviews with successful cloud adopters discovered three benefits that deserve emphasis. These are benefits that are difficult to quantify but represent particularly beneficial returns. The cloud, particularly when properly architected and deployed, helps organizations:

- Accelerate successful addition of new capabilities;
- Conceive of new ways to get work done; and
- Jump-start innovation to support business objectives.

To achieve these benefits and others, organizations should establish a training program that includes both cloud fundamentals training for a wide range of stakeholders and deep cloud training for key technical teams. Organizations should train the IT organization, product and operations teams, business and IT leaders, and other groups. And they should leverage the various ways to train on both the potential use and the general application of cloud, in addition to the technical specifics of the cloud and processes specific to the organization.

The AWS training customers we interviewed agree:

- Perfetti of GE Digital recommends, "Train as many people as possible on cloud basics."
- Matt P of the CIA suggests, "Everyone should get at least 30 minutes of familiarity training to learn the vocabulary of cloud."
- Onken of Siemens Healthcare suggests, "Train C-level IT leaders and their direct reports. The CIO needs to reinvent his/her team."
- Loeffler of Siemens Building Technologies believes, "It's important to have everyone speaking the same language – not just the direct [cloud] team but also their managers and executives."

We recognize that many organizations will need to start with relatively small investments in training. Even organizations that invest in minimal training see some benefits over organizations that invest in no training at all. However, investing in a comprehensive training plan gives the widest possible group of stakeholders a more complete understanding of cloud.

To build an effective training program, work with your training provider to consider your organization's level of expertise, your timeline for cloud adoption, and the objectives you hope to achieve. With comprehensive training, organizations can adopt cloud more quickly, overcome or mitigate concerns, and maximize the benefits of cloud adoption.

LEARN MORE

Methodology

We conducted a web survey in November 2016, and received 502 responses from randomly selected cloud managers and IT leaders in North America, Europe, and Asia, asking about their organization's cloud adoption and training. 70% of respondents were in IT management and IT operations or security,

and 89% of respondents had greater than $500 million in revenue. A broad range of cloud service providers had significant client representation in the survey, including AWS, Google, HPE, IBM, Microsoft, Rackspace, and VMware. See Figure 6 for more demographic details of survey respondents.

Survey questions were related to current and future use of cloud and cloud services, key benefits achieved, significant obstacles to the adoption of cloud, and characteristics of the training provided to the IT organization and the broader enterprise related to cloud. We also conducted more in-depth interviews with five U.S. and European IT leaders who have implemented cloud to understand their experiences and get their recommendations.

We compared benefits, concerns, and current and future cloud adoption strategies between cohorts of respondents based on questions related to training topics and targets of training. Organizations that offered some type of training to their target learners were able to respond to the largest majority of the questions. Organizations that didn't train anyone only completed a small number of sections of the survey. Based on our analysis, we identified two characteristics that strongly correlated to greater use of cloud and accelerated realization of business benefits: the breadth of offered training content and the scope of the target learners. There were four possible organizational classifications for breadth of offering and four possible organizational classification for targeted learners. Of the 16 possible permutations, when organizations had *both* breadth of offering and broad *scope* of target learners, the average performance was significantly more successful than all other combinations. We described those organizations as "comprehensively trained." We categorized organizations that only trained a single learner population in a single cloud content area as "minimally trained" and the average of that cohort underperformed all other training combinations (see Figure 7).

Note: All numbers in this document may not be exact due to rounding.

FIGURE 6

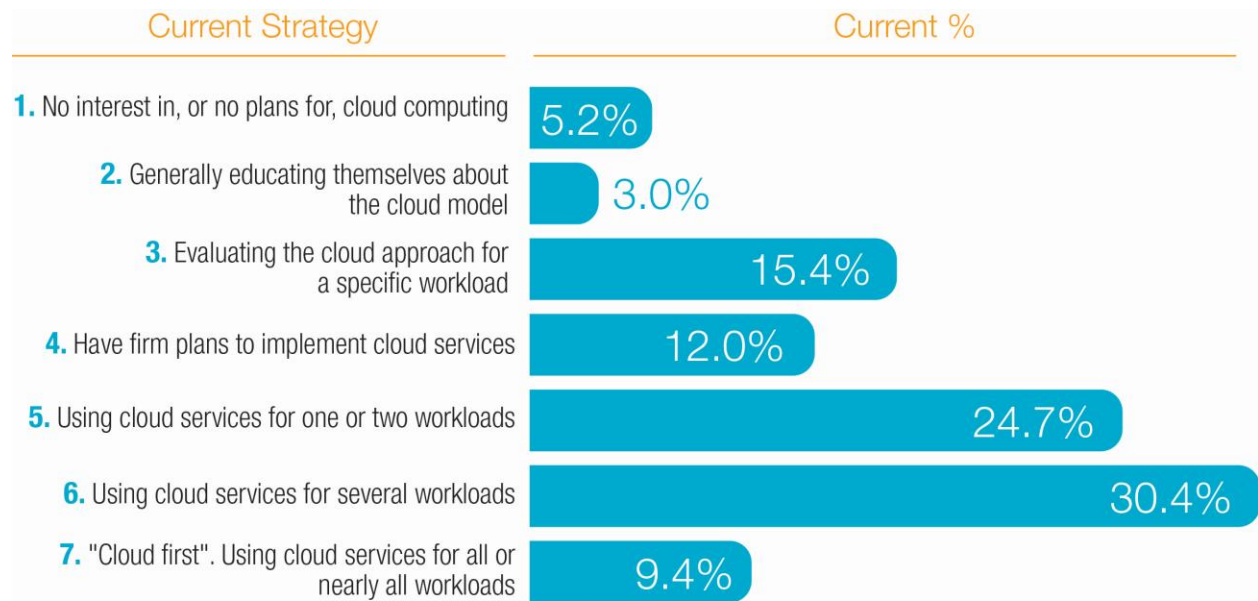**Demographics of Respondents: Impact of Training on Cloud Benefits Survey, 2016**
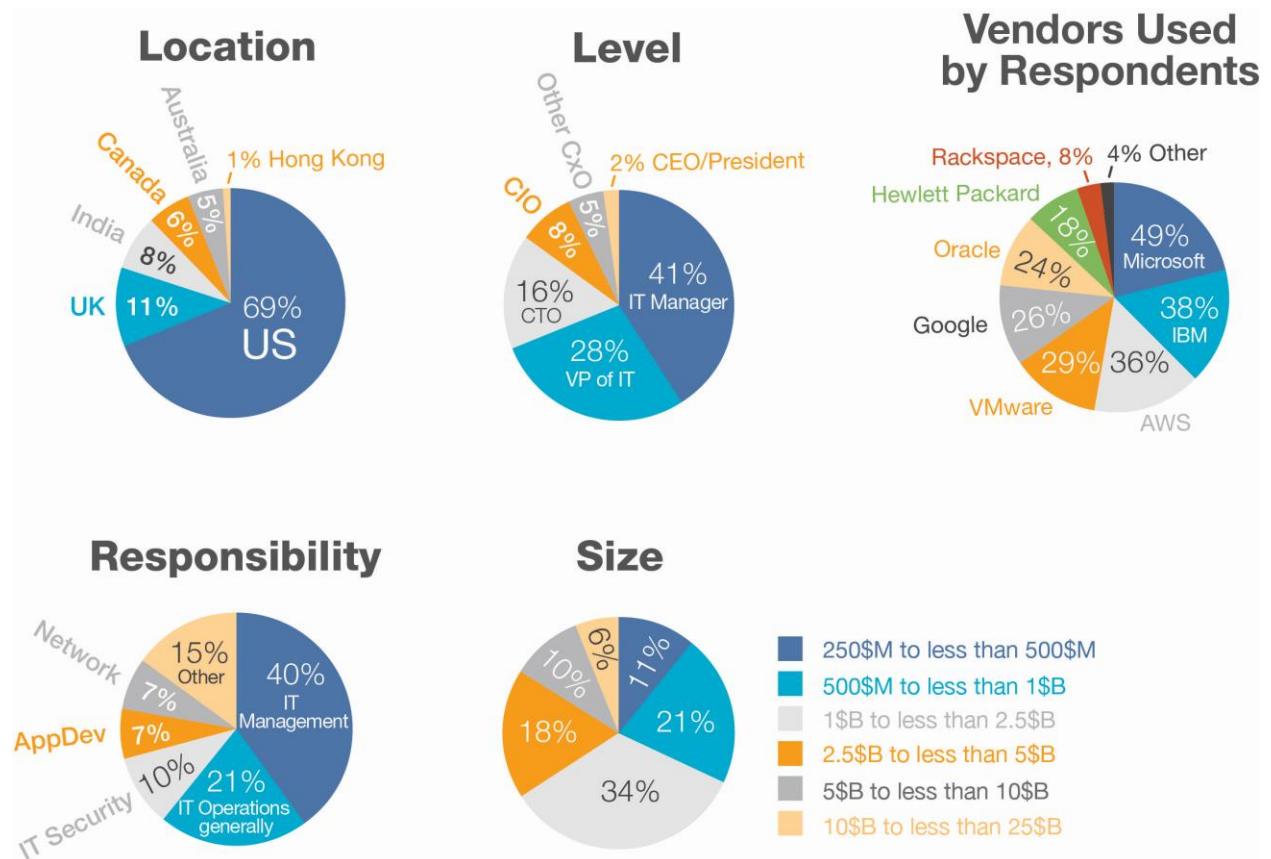
n = 502

Source: IDC's *Impact of Training on Cloud Benefits Survey*, 2016

FIGURE 7

Cloud Maturity

Q. *Which statement best describes your organizations cloud strategy?*

Current Strategy	Current %
1. No interest in, or no plans for, cloud computing	5.2%
2. Generally educating themselves about the cloud model	3.0%
3. Evaluating the cloud approach for a specific workload	15.4%
4. Have firm plans to implement cloud services	12.0%
5. Using cloud services for one or two workloads	24.7%
6. Using cloud services for several workloads	30.4%
7. "Cloud first". Using cloud services for all or nearly all workloads	9.4%

n = 502

Source: IDC's *Impact of Training on Cloud Benefits Survey,* 2016

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-community.com
www.idc.com