

# ISE Cloud Computing Index Gets Methodology Revamp

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## Nasdaq Partners with the Consumer Technology Association to Better Position the Index for Future Growth

### What is “the Cloud”?

Cloud computing (“the cloud”) refers to the way data is stored and processed. Before the cloud, you used to have to store data and run programs locally on your computer’s hard drive—called local computing. Cloud computing, on the other hand, enables access and storage from any device connected to the Internet (Griffith, 2016). Therefore, the cloud is not a physical entity, and instead is a large collection of remote servers around the world that are interconnected to work in a single environment. Some of the most widely used products delivered through the cloud are Dropbox, Amazon Web Services (AWS) and Salesforce.

Some of the first companies that come to mind when trying to picture organizations that leverage the cloud to scale or optimize their business are in the Tech industry. Yet, many companies outside of Tech are also moving to the cloud. McKinsey research mentioned that “Capital One is running the bank’s mobile app on AWS; GE Oil & Gas is migrating most of its computing and storage to the public cloud, and Maersk [the world’s largest shipping company] is migrating its legacy systems to reduce cost and operational risk while enabling advanced analytics to streamline operations” (Bommedevara et al, 2018). Thus, cloud companies have current and potential customers in numerous industries. As a result, the potential revenue growth opportunity for subscription-based products delivered through the cloud is exponential.

### The Methodology Revamp

The main change made to the Index methodology is a different set of three categories within the cloud space that Index-eligible companies are classified in:

OLD METHODOLOGY - INDEX CATEGORIES	NEW METHODOLOGY - INDEX CATEGORIES
Pure Play	Infrastructure-as-a-Service (IaaS)
Non-Pure Play	Platform-as-a-Service (PaaS)
Technology Conglomerates	Software-as-a-Service (SaaS)

## The Old Methodology

The previous methodology selected companies that were involved in one of the following three business activities that support or utilize the cloud computing space:

1. **PURE PLAY** companies directly provide services for the cloud (network hardware or software, storage, or cloud computing services) or have business models that rely on delivering goods and services that utilize the cloud
2. **NON-PURE PLAY** companies focus outside the cloud computing space but provide goods and services in support of the cloud
3. **TECHNOLOGY CONGLOMERATE** companies are large, broad-based organizations whose business model indirectly utilizes or supports the use of cloud computing technology

The Index used to cap the Tech Conglomerate subset to 10%, and the Pure Play and Non-Pure Play sections were capped according to market capitalization. Within each category, components were equal-weighted and finally, optimized for liquidity.

Making the distinction between companies that were directly, indirectly and only tangentially involved in the cloud space made sense as the cloud industry was starting to take off. Yet, as the industry matures, a better approach is to switch from this classification system to one that is reflective of the main types of cloud-delivered services.

## The New Methodology

There are three main ways that businesses can monetize cloud computing to offer their clients different types of services online. The new Index methodology replaced the three categories above with these three main categories, which are Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS), defined below:

1. **IaaS** is a way of delivering cloud computing infrastructure—servers, storage network and operating systems—online as an on-demand service, rather than purchasing that physical infrastructure.
  - IaaS examples are Amazon Web Services (AWS), Cisco Metacloud, and Microsoft Azure
2. **PaaS** is a platform for the creation of software in the form of virtualization, middleware, and/or operating systems that is delivered over the internet. PaaS provides a platform that allows customers to develop and manage software development that can be focused on workflow management and utilize data from an application.
  - PaaS examples are Cloudera, NetApp, and Domo
3. **SaaS** is a process for delivering software applications over the internet, on-demand, and typically on a subscription basis. Cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, such as software upgrades and security patching.
  - SaaS examples are HubSpot, Workday, and Intuit's TurboTax

The Consumer Technology Association (CTA) classifies companies in one, two or all three of the cloud categories (IaaS, PaaS and SaaS). The Index methodology then assigns a certain number of points to companies involved in each category.

Each eligible company receives:

- 3 points for **IaaS**
- 2 points for **PaaS**
- 1 point for **SaaS**

It is important to note that companies can be involved in more than one cloud category. For instance, Microsoft is involved in all three, so it receives the maximum score of 6 points (3 points for IaaS + 2 points for PaaS + 1 point for SaaS). On the other hand, Appian, which develops business process and cash management solutions, receives a score of 2 points for PaaS only. The Index then weights the eligible components by the total cloud scores. Last, all components are capped at a 4.5% weight.

As a result, there are two reasons why a company might receive a higher weight. First, it could be involved in a more relevant category within the cloud. To develop software delivered through the cloud, companies need a platform to create it. Thus, SaaS is dependent on PaaS. Similarly, companies require a robust infrastructure to develop a platform that serves as the environment to create web applications, which means that PaaS is dependent on IaaS. Therefore, Infrastructure is the building block of cloud-delivered services, followed by Platform-as-a-Service. This logic is the basis of the IaaS > PaaS > SaaS hierarchy employed for weighting the Index components.

Second, a company receives a higher total cloud score from being involved in more than one cloud category. IBM, for example, offers IaaS but is not involved in either PaaS or SaaS and therefore receives a score of 3 points. Conversely, Mongo DB is involved in both IaaS and PaaS, so it gets a score of 5 points. This reasoning ensures that companies that offer a wider range of cloud-delivered services are more heavily weighted in the Index.

## Change in the Underlying Companies

The methodology change significantly impacted the underlying companies in the Index after it went into effect during the Index evaluation on June 24, 2019. Some of the companies in the Index in the old methodology that are heavily involved in IaaS, PaaS or IaaS stayed, while many others were removed because they were not involved in any one of the three cloud computing categories. In fact, out of the 28 companies in the Index prior to the methodology change, 15 remained after the methodology change went into effect. This means that almost 50% of the underlying companies were deleted from the Index. In more exciting news, the Index now captures 47 new cloud companies. The new 47 companies in addition to the 15 remaining in the index prior to the methodology change totals 62 companies (after the methodology change).

In the two tables below, we compared the top 10 companies by weight in the old Index to the top 10 companies in the new Index. These are the companies in the Index before and after the June 2019 Index evaluation. Out of the top 10 companies in the old Index on the left, five remained in the new Index—the five companies that were deleted from the Index are highlighted in orange below. SAP SE and VMware, for example, remained in the Index, albeit not in the top 10. Similarly, the table on the right shows the top 10 companies in the new Index, and we highlighted the newly added companies, including MongoDB and CenturyLink, in green below.

**TOP 10 COMPONENTS IN OLD INDEX METHODOLOGY  
AS OF MARKET CLOSE ON JUNE 21, 2019**

COMPANY NAME	INDEX WEIGHT (%)
Zynga	6.88
Facebook	5.59
Equinix	5.43
SAP SE	5.33
Netflix	5.31
VMware	5.13
Cisco Systems	4.90
Open Text	4.78
Oracle	4.74
Akamai Technologies	4.70

**TOP 10 COMPONENTS IN NEW INDEX METHODOLOGY  
AS OF MARKET OPEN ON JUNE 24, 2019**

COMPANY NAME	INDEX WEIGHT (%)
MongoDB	4.87
Oracle	4.75
Microsoft	4.74
Amazon	4.61
CenturyLink	4.37
Alphabet	4.36
Cisco Systems	3.53
Citrix Systems	3.41
Alibaba Group	2.71
MicroStrategy	2.66

Some of the new companies going into the Index that are not in the top 10 are Nutanix, Twilio, Appian, Zuora, Shopify and Dropbox. The increase in components from 28 to 62 will provide diversification benefits within the industry and, more importantly, this change will provide exposure to a wider and more suitable spectrum of companies involved in cloud computing as of today.

## Why did Nasdaq partner with the Consumer Technology Association (CTA)?

CTA is the trade association representing the nearly \$400 billion U.S. consumer technology industry, and provides market research, technical education and industry promotion to more than 2,200 member companies. Notably, CTA organizes and hosts CES—the largest consumer technology conference in the world. In 2018, CES gathered over 180,000 participants in Las Vegas, where next-generation innovations were introduced to the marketplace. Specifically in the cloud space, CTA runs numerous working groups and division boards comprised of companies engaged in IaaS, PaaS and SaaS. Each of these contributes toward the development of technical standards, education and policy support in areas including 5G cellular data connectivity, Internet of Things (IoT) and Wireless. As the industry leader in the consumer technologies space paired with direct exposure to the cloud market, CTA brings a holistic understanding of the cloud industry and its tangible application to consumer products.

Business intelligence practitioners and data experts at the CTA Industry Intelligence team leverage cloud computing technology including data warehousing, machine learning and artificial intelligence, and data scraping through Microsoft Azure, Google Cloud and AWS. The team has not only integrated cloud into its own development practice, but has also closely tracked changes in cloud hardware deployment, development tools, pricing strategies and major vendor partnerships. The team is well versed in the creation and deployment of cloud-related workloads like containerization, command-and-control systems like Kubernetes and the development of game-changing compute paradigms like functions-as-a-service, including AWS Lambda and Google Cloud Functions. Therefore, CTA brings valuable market insight to capture the evolving nature of the cloud space and the convergence of related ecosystems—including edge computing and 5G—as the industry continues to grow.

Nasdaq is committed to bringing promising, untapped and exciting corners of the market for investors to track via indexes. A number of these corners are niche, nascent industries within Tech. Because of this deep conviction to pioneering technology and innovation, Nasdaq has partnered with CTA since 2010 on a number of indexes in the technology thematic space, co-creating strategies in the following fields: Cybersecurity, Artificial Intelligence & Robotics, Smartphones, and now extending the partnership to Cloud Computing. We believe that the methodology change to the ISE CTA Cloud Computing Index through the partnership with CTA will better capture the evolving nature of the cloud industry and will better position the Index for future growth.

Investors can gain exposure to the ISE CTA Cloud Computing Index through the First Trust Cloud Computing ETF (Nasdaq: SKYY).

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