# 27. Enhancement Online Education in Pandemic Era about Cloud Computing with AWS

*by* Kapin Proceeding

**Submission date:** 15-Jul-2021 01:37AM (UTC+0900)
**Submission ID:** 1619593201
**File name:** 27._Ratnadewi_dkk.pdf (515.97K)
**Word count:** 2099
**Character count:** 11484

# Enhancement Online Education in Pandemic Era about Cloud Computing with AWS

Ratnadewi Ratnadewi[1], Agus Prijono[2]
ratnadewi@maranatha.ac.id[1], agus.prijono@eng.maranatha.edu [2]
Electrical Engineering - Universitas Kristen Maranatha

**Abstract**. During the COVID-19 pandemic, all participants in the education sector from Kindergarten - to Higher Education levels were forced to do things that were rarely done before, namely online or distance learning. This has led to the emergence of new problems, such as the unpreparedness of lecturers and students in carrying out Teaching and Learning Activities online, the absence of an online platform that can support learning, especially in the Faculty of Engineering, Electrical Engineering Study Program, and very different from ordinary teaching and learning activities. These things cause inconvenience for both the lecturers / teachers, as well as students. In addition, the emergence of websites that offer online simulator services, programming, and other things will help lecturers in carrying out the teaching and learning process. The constraints faced are the amount of memory that needs to be provided, and the problem of device memory that is not owned. With online education, basic knowledge about cloud computing with AWS can be provided to the academic community.

**Keyword:** Cloud Computing, AWS, Online Education

## 1 Introduction

Cloud Computing is a technology and program for storing information without the participation of physical media, whereas according to AWS (Amazon Web Services), cloud computing is defined as a computing service over the Internet that provides services on demand with pay as you go [1].

This is an advantage for companies because data and services do not have to be physically stored, but data is stored in a "cloud" that can be accessed anytime and anywhere. That way, companies do not need to consider financially procuring hardware to meet data storage needs, as well as providing services to customers [2] Cloud computing is not only related to database storage, but as a whole provides information technology resources through "cloud" services that can be accessed via the Internet [3]. CSP is a cloud service provider that offers network services, infrastructure and business applications [4].

Amazon Web Services (AWS) has experienced very rapid development compared to its competitors, and was once ranked first as a cloud infrastructure provider, judging by its high value shares [1] ], and is also tagged by multinational companies that use cloud services provided by AWS, among others, Netflix, Kellogg's and Unilever [5].

## 2 Cloud Computing

### 2.1 Types of Cloud Computing

There are three types of cloud computing, including: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

a. Infrastructure as a Service (IaaS), includes the basic components for building an information technology infrastructure in the cloud and generally provides access to network functions, computers (certain virtual or physical hardware), and data storage media. IaaS provides great flexibility and control over existing information technology resources.

b. Platform as a Service (PaaS), eliminates the need to manage infrastructure (usually hardware and operating systems), and provides space for companies to focus on implementing and managing business applications, namely: component procurement processes, hardware capacity management plans, maintenance software, and other heavy lifting jobs affecting the application.

c. Software as a Service (SaaS), by providing ready-to-use products that are run and managed by service providers, SaaS is also widely known as an end-user application. With SaaS, users no longer have to think about how to maintain or build the infrastructure, but about how the software is used. Examples of SaaS applications include web-based email.

### 2.2 Cloud Computing Implementation Model

There are three models for implementing cloud computing, namely: cloud-based, on-premise, and hybrid.

a. Cloud-based Deployment, with a cloud-based implementation model, users can design, build, run applications, and migrate applications to the cloud without the need for information technology staff to manage them so as to reduce the cost of procuring information technology infrastructure.

b. On-Premise Deployment, also known as private cloud, namely the application of resources using application management and virtualization technology in the data center.

c. Hybrid Deployment, namely cloud-based resources connected to the on-premise data center but the application is run through cloud services on the internet, this implementation model is generally applied if it does not allow database migration from the on-premise data center.

### 2.3 Benefits of Cloud Computing

There are several things that are the advantages and benefits of using cloud computing technology: 1) Reducing Upfront Expenses which refers to upfront expenses such as procuring hardware and software components at the data center which are part of heavy-lifting jobs, by converting them to variable-expenses and the costs can change according to the computing service used; 2) Save on data center management and maintenance costs, namely by using cloud services, companies do not need to pay more for the management and maintenance of physical data centers such as electricity and security costs; 3) Increasing the scaling capability, namely the various resources offered so that there is no need to predict the capacity of information technology resources needed to support the company‘s operations and the scaling capability that can be changed at any time if additional or reduced resources are needed; 4) Reaching more customers in various parts of the world, namely the services provided can be accessed using the Internet, so companies do not need to build on-premise data centers to reach customers in other countries.

### 2.4 Amazon Web Services (AWS)

Amazon Web Services (AWS) is one of Amazon's Cloud Service Providers (CSP) that has provided cloud computing services since 2006. AWS serves users around the world in more than 190 countries by continuing to develop global infrastructure to ensure that data is stored in an AWS Region specific. AWS provides many cloud computing services that can be selected users, based on the type of cloud computing, including: 1) Infrastructure as a Service (IaaS): Amazon Virtual Private Cloud (Amazon VPC), Amazon Elastic Compute Cloud (Amazon EC2), and Amazon Simple Storage Service (Amazon S3); 2) Platform as a Service (PaaS): Amazon Relational Database Service (Amazon RDS); 3) Software as a Service (SaaS): Amazon Cloud9.

## 3 Methods

The method used here is descriptive qualitative and quantitative descriptive. Participants were given material in theory and practice using cloud computing with AWS. With the availability of AWS cloud computing for academics, it provides opportunities for academic activities to increase capabilities without limits. The facilities provided with comprehensive features provide opportunities for students, lecturers, teachers, to get services and applications provided by AWS. Of course this will increase the abilities and skills significantly for academics.

The objectives of this activity are: 1) conduct a basic introduction to AWS Cloud Computing online to students, lecturers, teachers in Indonesia, and even abroad; 2) give a demonstration of the use of AWS Cloud Computing, the installation of an operating system in the cloud; 3) as a form of concern for education in Indonesia; 4) as a form of concern for the state so that the next generation of the nation becomes a formidable human resource that can advance the Indonesian nation and continue the nation's continuity.

Online webinar about cloud computing with AWS held on May 8, 2021. Starting from providing materials on introducing AWS cloud computing, its service features, demonstrations of its use, and links to material and its use.

## 4 Results and Discussion

The online education speaker is Mr. Setia Budi, Ph. D (Figure 1) who coordinates with Mr. Agus Prijono and together with Dr. Ratnadewi, S.T., M.T. forming a committee for its implementation.


**Figure 1.** Cloud computing with AWS online education speaker

The result of this education exposure is by using cloud computing, the educational process can still take place (even though there is a pandemic). It is as if the lecture participants have a computer like a computer in a lab. by leveraging the cloud. Economically: college participants do not need to provide hardware or software with high specifications such as computers in the lab.comp (just standard specification computers and internet networks). in health (due to the pandemic), lecture participants can reduce the risk of being exposed to the Covid-19 virus.

The 146 participants were sign up, and those who attended were 59 participants from all over Indonesia and even from abroad. This is because cloud computing with AWS has just been launched, and still needs socialization among academics. Screen shots of participants who attend can be seen in Figure 2.

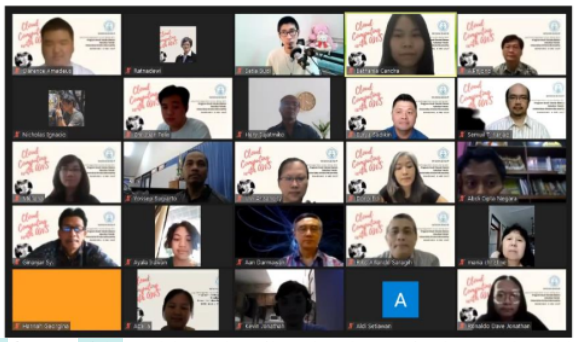

**Figure 2.** Most of the participants in online education on cloud computing with AWS

Participants are given a questionnaire about their knowledge of cloud computing, and there are also questions that are scored so that the participants' abilities can be measured after participating in this online education. The results of the assessment of the answers can be seen in Figure 3. It can be seen that this short online education still needs to be improved, because the average understanding is still at a value of 62.71 of the total maximum value of 100.This means that there has been an increase from the previous 0 to 62.71 and there are 20% of participants scored 100, which means that online education is very useful so that participants can answer all questions correctly.

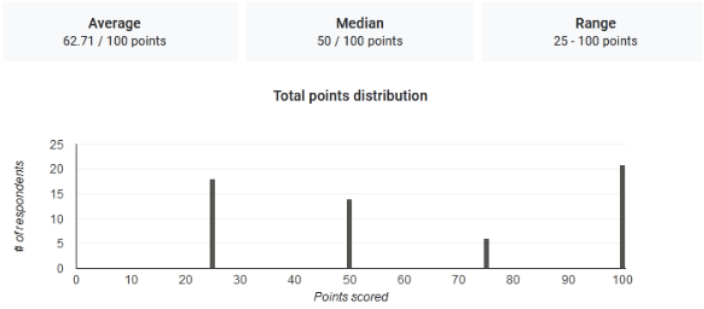


**Figure 3.** The value of the questionnaire results from the participants' answers

In online education activities, we also measure the visual quality that participants receive. Is the visual quality seen by the participants very clear? The results of the participants' input were 54.2% answered very well by giving a score of 5, 33.9% answered well by giving a score of 4, while the remaining 11.9% received visuals simply by giving a score of 3. This really depends on the internet signal used by the participants, committee, and speakers. This can be seen in Figure 4.

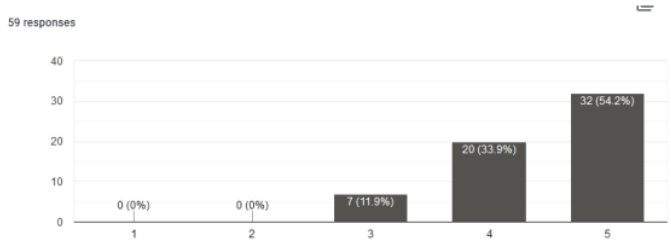


**Figure 4.** The value of the questionnaire results from the participants' answers

This online education activity was felt to be very useful and useful by the participants with 93.2% answers and no one felt that it was not useful. This is shown in the participants' answers in Figure 5.

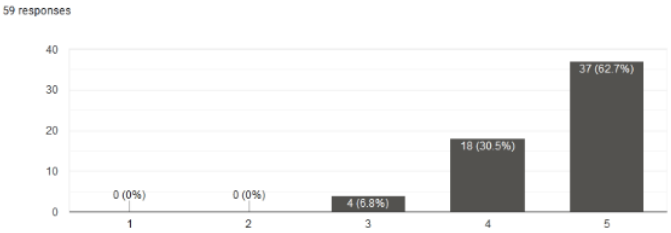


**Figure 5.** The answers to the material questions presented were very interesting and useful

The assessment of the delivery of material and ease of understanding was measured in a questionnaire and the participants answered very well and well with a percentage of 89.8%, this can be seen in Figure 6.

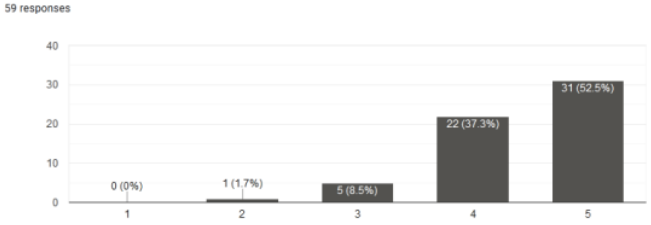


**Figure 6.** Participants' answers regarding the delivery of the material and its ease of understanding

At this online educational event, participants were given the opportunity to ask questions in the chat column or activate the microphone. The results of the participants' answers, the question and answer session was very effective and effective at 94.9% (Figure 7), this indicates that if the material is not clear, the participants can ask for answers from the presenters.

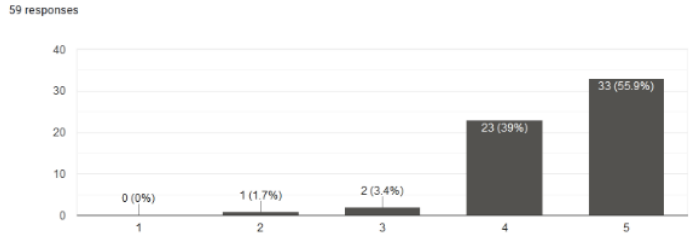


**Figure 7.** what participants think about the question and answer session

## 5 Conclusion

The results of online education during the Covid-19 pandemic regarding cloud computing with AWS have been felt by the benefits for participants from the answers to the opinions given by participants. And the participants' knowledge about cloud computing is expected to help with hardware and software limitations, because AWS cloud computing has provided applications that participants can easily install. The use of cloud computing is as if the participants have their own computers only by registering themselves in a cloud computing application with AWS. The application provided also makes it very easy for users to improve their academic abilities. Participants gave suggestions so that this activity could be continued for other materials.

## References

[1] A. Alqahtani and H. Gull, "Cloud Computing and Security Issues-A Review of Amazon Web Services," *Int. J. Appl. Eng. Res.*, vol. 13, no. 22, pp. 16077–16084, 2018, [Online]. Available: http://www.ripublication.com.

[2] A. Chatzakis and P. Armstrong, "Architecting for the Cloud," 2018. [Online]. Available: https://d1.awsstatic.com/whitepapers/AWS_Cloud_Best_Practices.pdf.

[3] J. Varia and S. Mathew, "Overview of Amazon Web Services (Survey Report)," 2014. [Online]. Available: http://media.amazonwebservices.com/AWS_Overview.pdf.

[4] A. Angadi, A. Angadi, and K. Gull, "Security Issues with Possible Solutions in Cloud Computing-A Survey," Int. J. Adv. …, vol. 2, no. 2, pp. 652–661, 2013, [Online]. Available: http://www.ijarcet.org/index.php/ijarcet/article/view/755.

[5] S. Karimunnisa and V. S. Kompalli, "Cloud computing: Review on recent research progress and issues," Int. J. Adv. Trends Comput. Sci. Eng., vol. 8, no. 2, pp. 216–223, 2019, doi: 10.30534/ijatcse/2019/18822019.

[6] T. & C. AWS, "AWS Cloud Practitioner Essentials," 2020. https://aws.amazon.com/training/course-descriptions/cloud-practitioner-essentials/.

# 27. Enhancement Online Education in Pandemic Era about Cloud Computing with AWS

ORIGINALITY REPORT

| 7% | 5% | 4% | 5% |
|---|---|---|---|
| SIMILARITY INDEX | INTERNET SOURCES | PUBLICATIONS | STUDENT PAPERS |

PRIMARY SOURCES

| | | |
|---|---|---|
| 1 | blog.dwwtc.com<br>Internet Source | 1% |
| 2 | Submitted to University of Houston System<br>Student Paper | 1% |
| 3 | de.slideshare.net<br>Internet Source | 1% |
| 4 | Sidhartha Chauhan, James Devine, Alan Halachmi, Matt Lehwess, Nick Matthews, Steve Morad, Steve Seymour. "AWS® Certified Advanced Networking Official Study Guide", Wiley, 2018<br>Publication | 1% |
| 5 | www.learntek.org<br>Internet Source | 1% |
| 6 | Submitted to Sri Lanka Institute of Information Technology<br>Student Paper | 1% |
| 7 | www.edx.org<br>Internet Source | <1% |

| | | |
|---|---|---|
| 8 | Submitted to University of North Florida<br>Student Paper | <1% |
| 9 | arrow.tudublin.ie<br>Internet Source | <1% |
| 10 | rajpub.com<br>Internet Source | <1% |

| | | | |
|---|---|---|---|
| Exclude quotes | On | Exclude matches | Off |
| Exclude bibliography | On | | |