Cloud Hosting Security

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## Provide a brief description of Paas, SaaS, and IaaS services. List their similarities and differences.

**PaaS is an acronym for "platform as a service".** These cloud platform services provide developers with frameworks, software, and tools for building apps and software that are accessible via the Internet, (BigCommerce). In general, PaaS refers to online hardware and software tools. This can include providers such as Heroku, OpenShift, or Windows Azure. Among the characteristics of PaaS are that it is accessible by multiple users, scalable, built upon virtualization technology, and is easy to use without extensive technical knowledge, (BigCommerce).

**SaaS is an acronym for "software as a service".** These cloud application services make software available to users over the internet, usually for a monthly subscription fee. In essence, it is a full-featured service delivered by vendors through the internet, which can be accessed from any web browser, (BigCommerce). SaaS eliminates the need for IT review and streamlines business processes. This can include providers such as Google Workspace, BigCommerce, and Etsy. Among the characteristics of SaaS are that it is available everywhere on the internet, hosted by a remote third-party, scalable, and generally less of a hassle overall, (BigCommerce).

**IaaS is an acronym for "Infrastructure as a service".** Businesses can use these scalable and flexible cloud solutions to manage storage, networking, and virtualization on a usage-based model, (BigCommerce). A SaaS cloud server can be accessed via an API or dashboard to offer complete control over a business's computing infrastructure. This can include providers such as Google Drive, OneDrive, and Amazon Web Services. In addition to its high flexibility and scalability, IaaS is cost-effective and accessible to many users, (BigCommerce).

IaaS solutions are more flexible and scalable than PaaS and SaaS, which allows them to be replaced at any time without incurring any losses on their initial investment, (BigCommerce). By knowing exactly how much the software will cost upfront, you will be able to budget accordingly and eliminate the risk of hidden costs. While PaaS and SaaS delivery methods are similar, they differ in that customers do not have access to online software, but rather a platform, (BigCommerce). With IaaS, you will be able to host custom-built applications as well as store data in a general data center with a broader degree of versatility. In most cases, PaaS is built on top of an IaaS platform with the advantage that system administration is reduced, (BigCommerce). This allows app developers to focus on the development of their applications instead of managing their infrastructure. The SaaS model provides ready-to-use, ready-to-deploy solutions for a specific business need (e.g., a website or email). It is typically based on an IaaS or PaaS platform, (BigCommerce).

## Explain which of the three (PaaS, SaaS, and IaaS) most closely matches the hosting requirements for our Jokes Database application.

As for the Jokes Database application, the program and database are relatively straightforward. IaaS is the preferred solution as it is flexible, cost-effective, and easily accessible to many users. Using IaaS, you are able to host your own custom applications as well as store your data in a general data center with greater flexibility, (BigCommerce). The usage-based model makes it ideal for databases that don't receive a lot of traffic. Additionally, storage, networking, and virtualization are easy to manage, which is very beneficial.

## Contrast the services provided by Godaddy with those of Microsoft Azure.

Despite being two of the largest and best-known hosting companies in the world, Microsoft Azure and GoDaddy are best known predominantly for their other services, (Levanduski 2022). Despite this, without a doubt, Microsoft Azure outperforms GoDaddy across the board when it comes to hosting. One of the biggest disadvantages of GoDaddy is that they don't even offer cloud hosting, (Levanduski 2022)! The Microsoft Azure platform is much more stable and can provide an excellent overall environment to run your website. Although GoDaddy is a good service for convenient and intuitive website building, Microsoft Azure comes out on top in the field of hosting, (Levanduski 2022).

## Explain at least three best practices for safely hosting a company network in the cloud.

**Perform due diligence.** Generally, cloud service providers (CSP) accept responsibility for some aspects of security, while other aspects remain the consumer's responsibility, (Faatz, 2018). In order to deploy cloud-based applications and systems with the necessary features, stability, and security, cloud consumers must fully understand their networks and applications. Application and system deployment to the cloud should be conducted with due diligence throughout the entire lifecycle, from planning and deployment to operations and eventual retirement, (Faatz, 2018). The process of moving applications and systems to the cloud presents new risks that weren't present in the onsite deployment. A company will need to identify and mitigate these new risks in order to move to the cloud smoothly, (Faatz, 2018).

**Identify and Authenticate Users.** An extremely critical aspect of access management is identification. It is recommended that you use multifactor authentication in order to reduce the risk of compromised credentials, (Faatz, 2018). If privileged user credentials are stolen, an attacker has the ability to control and configure cloud consumer resources from a remote location. Multiple factors reduce the likelihood of a compromise because they require an attacker to acquire multiple separately authenticated elements, (Faatz, 2018).

**Assign User Access Rights.** A collection of roles should be designed to cover both shared and consumer-specific responsibilities. CSPs and other industry experts, such as Gartner, can provide guidance when defining roles, (Faatz, 2018). As part of the design of these roles, it should be ensured that no single individual will be able to adversely impact the entire virtual data center. Having limited access to resources can limit the impact of a credential compromise or a malicious insider, (Faatz, 2018). The scope of developers' access should be confined to their assigned projects. The use of role-based access control is a useful method for establishing privileges for system administrators and developers, (Faatz, 2018).

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# References

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