

# Cloud Computing

Cloud computing has allowed the provision of some very useful services (SIP):

- SAAS
- IASS
- PAAS

## SAAS

### **Software As A Service**

Previously if you wanted to use some software on your computer, you would have to download it e.g. Microsoft Word.

More recently, software is available **in the cloud** - you do not need to download anything.

The service provider, e.g. Google, will provide the software hosted on their own servers. They may also provide storage space on their servers for the files/documents you generate using the software.

*All the user has to do is log in and manage their files and settings!*

### **Advantages of SAAS (from a user perspective)**

- Automatic updates
- Available from anywhere with an internet connection
- No installation required
- Minimal technical knowledge required

### **Disadvantages of SAAS (from a user perspective)**

- No control over updates eg a version of software that you are familiar with may suddenly be updated with a new, annoying interface
- Need an internet connection

- Data is stored on 3rd party servers - trust is required to ensure the provider (the 3rd party) stores and manages data securely and ethically.

# PAAS

## **Platform As A Service**

[PAAS](#)<sup>1</sup> provides a platform for developing ,testing and deploying new applications.

The provider manages:

- servers
- operating systems
- networking
- runtime environment

The user/developer manages:

- application code
- application related data

## **Advantages of PAAS (from a user perspective)**

- No need to manage hardware eg servers
- Faster application development - eg the development environment (databases, servers, deployment environments) have already been set up. Developers can focus on developing and testing code

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<sup>1</sup> <https://www.heroku.com/>

## Disadvantages of PAAS (from a user perspective)

- Provider Lock In - the developer may get used to developing applications using a particular PAAS provider's environment. In future, if the user wants to switch provider or the provider stops operating, it may be extremely difficult to continue development.

# IAAS

## *Infrastructure As A Service*

Imagine a school needs:

- a web server
- a database server
- file storage
- backup systems

Instead of buying physical servers, the **IT administrator** could use an [IAAS](#)<sup>2</sup> provider.

The **IAAS provider** would provide:

- virtual machines/servers
- Storage capability
- Networking capability

However the **IT Administrator (user)** would still need to:

- a) install:
  - server software eg Apache/Nginx
  - preferred operating system
  - database software eg MySQL/PostgreSQL

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<sup>2</sup><https://cloud.google.com/products/compute>

- security tools

b) Manage networking:

- Firewalls
- IP addresses
- VPN access
- Other permissions

c) Scale resources when needed eg:

- CPU power
- memory
- storage

So IAAS still involves a significant technical input from the user (IT Administrator).

### Comparison Table

|                  | SaaS               | PaaS                | IaaS                |
|------------------|--------------------|---------------------|---------------------|
| User manages     | Only data/settings | Applications        | OS + applications   |
| Provider manages | Everything else    | Infrastructure + OS | Hardware/networking |
| Main users       | End users          | Developers          | IT administrators   |
| Flexibility      | Low                | Medium              | High                |
| Complexity       | Low                | Medium              | High                |

## Further Reading

Visit [this](#) site (or your own research).

Make notes on other advantages of SAAS/IAAS/PAAS that you find:

| SAAS | IAAS | PAAS |
|------|------|------|
|      |      |      |

1. Which cloud computing opportunity have you experienced? Have you been satisfied with the experience? Why/Why not?
2. Which would you choose as a profession? A software developer using PAAS to develop and deploy apps? Or an IT Administrator working within a IAAS environment to manage servers, operating systems, networking etc? Explain your choice.