Could Computing

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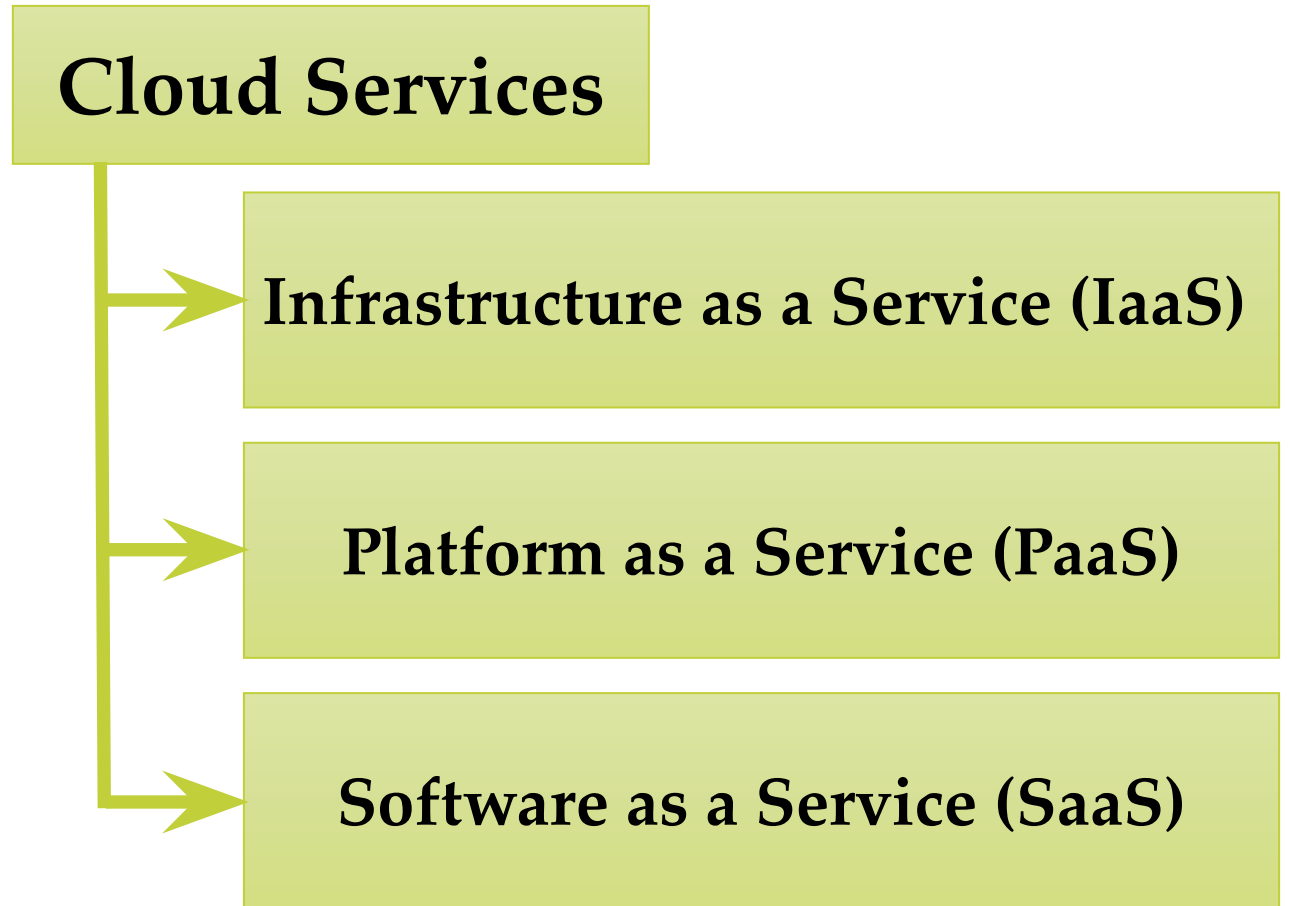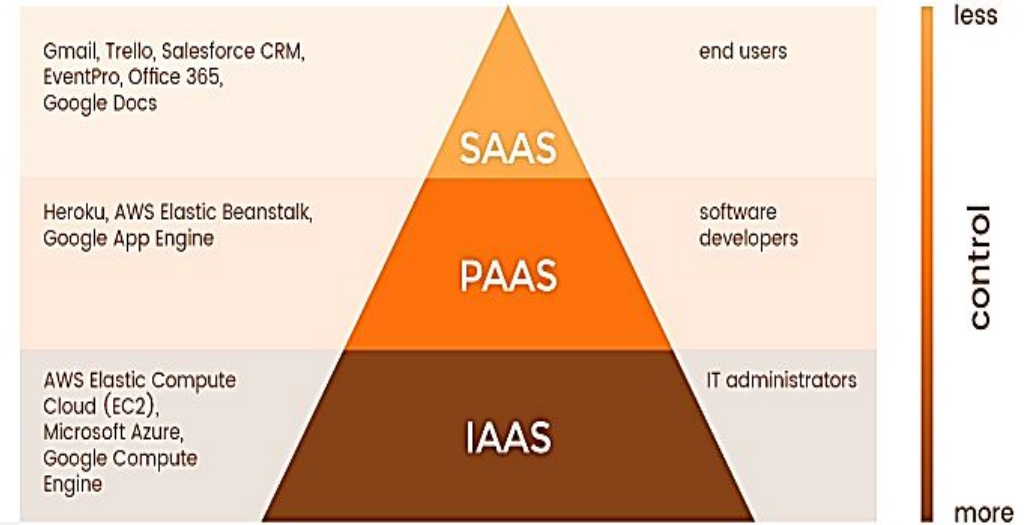**ITMC 422**

ITWT 307

Service Model

- IaaS , PaaS and SaaS are the three most popular types of cloud service offerings. (They are sometimes referred to as cloud service models or cloud computing service models.)

Cloud Services

Infrastructure as a Service (IaaS)

Platform as a Service (PaaS)

Software as a Service (SaaS)

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IaaS, PaaS and SaaS

Gmail, Trello, Salesforce CRM, EventPro, Office 365, Google Docs — end users

SAAS

Heroku, AWS Elastic Beanstalk, Google App Engine — software developers

PAAS

AWS Elastic Compute Cloud (EC2), Microsoft Azure, Google Compute Engine — IT administrators

IAAS

less — control — more

IaaS vs. PaaS vs. SaaS Examples

IaaS	PaaS	SaaS
Amazon Web Services	Google App Engine	HubSpot
Google Cloud	Red Hat OpenShift	JIRA
Microsoft Azure	Heroku	Dropbox
IBM Cloud	Apprenda	DocuSign

HubSpot

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Infrastructure as a Service (IaaS)

- IaaS (Infrastructure as a Service) is **on-demand** access to cloud-hosted computing infrastructure service, storage capacity and networking resources that customers can provision, configure and use in much the same way as they use on sites hardware.

- The **difference** is that the cloud service provider hosts, manages and maintains the hardware and computing resources in its own data centres.

- IaaS customers use the hardware internet connection, and pay for use on a subscription or **pay-as-you-go basis**.

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Platform as a Service (PaaS)

- PaaS (Platform as a Service) provides a **cloud-based platform for developing**, running and managing applications.

- The cloud services provider **hosts**, **manages** and **maintains** all the **hardware** and **software** included in the **platform-server** (for development, servers, operating system (OS) software, storage, networking, databases, middleware, runtimes, frameworks, development as well as related services for security, OS, and software upgrades backups and more.

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Platform as a Service (PaaS)

- Users access the PaaS through a **graphical user interface** (**GUI**), where **development teams** can **collaborate** on all their work across the entire application **lifecycle** including **coding**, **integration**, **testing**, **delivery**, **deployment**, and **feedback**.

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Examples of (PaaS)

- Google Cloud

- Microsoft Azure

- AWS

- IBM Cloud

- Red Hat OpenShift

- VMware (Pivotal) Cloud Foundry

- Oracle Cloud Platform (OCP)

- Heroku container-based PaaS

- Mendix aPaaS

- Engine Yard Cloud PaaS

- OpenStack

- Apache CloudStack

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Software as a Service (SaaS)

- SaaS (sometimes called Cloud Application Services) **is cloud-hosted, ready-to-use application software**.

- Users pay a **monthly** or **annual fee** to use a complete application from within a web browser, desktop client or mobile app.

- The application and all of the infrastructure required to deliver it-servers, storage, networking, middleware, application software, data storage.

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Software as a Service (SaaS)

- Above are managed by the SaaS vendor where all upgrades and patches to the software, usually invisibly to customers.
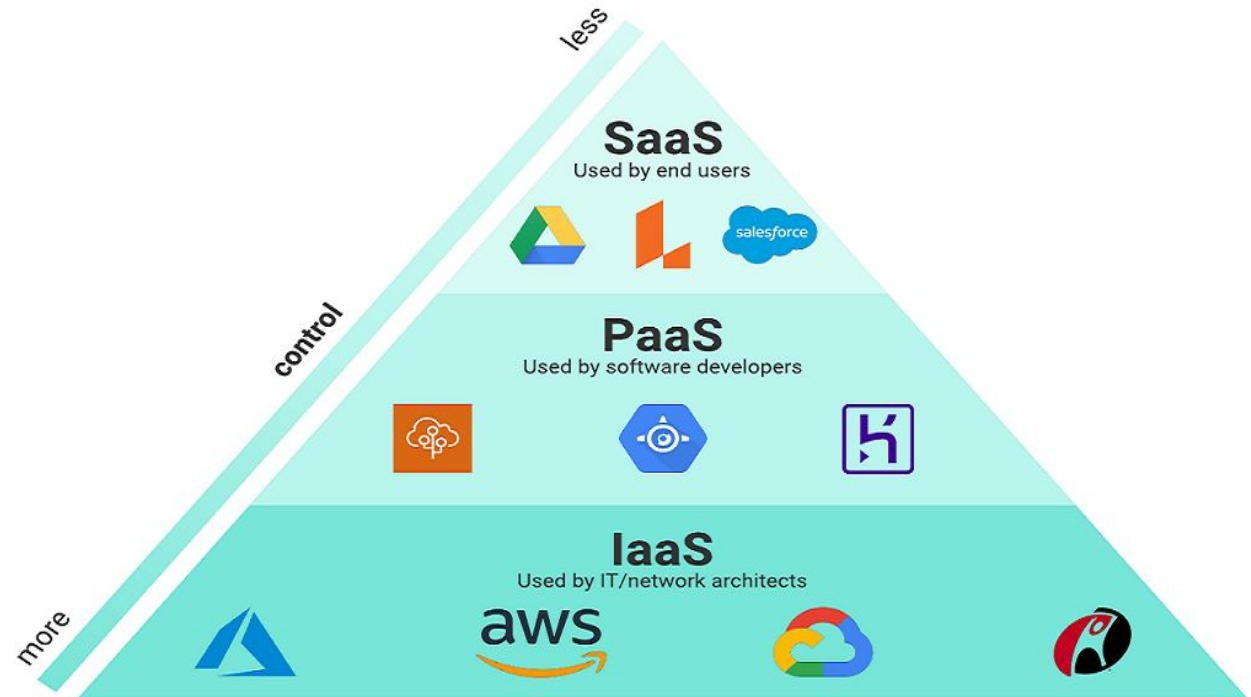
- The vendor also ensures a level of availability, performance and security.

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Examples of (SaaS)

Examples of SaaS
From sources across the web

Salesforce	Slack	HubSpot
Google Workspace	Zoom	Adobe
Box	Dropbox	Microsoft
Shopify	Docusign	Google
Mailchimp	Accounting SaaS	Buffer
Netflix	Zendesk	Accounting software
Atlassian	AWS Elastic Beanstalk	Canva
CultureIQ	Human resources software	SAP Concur

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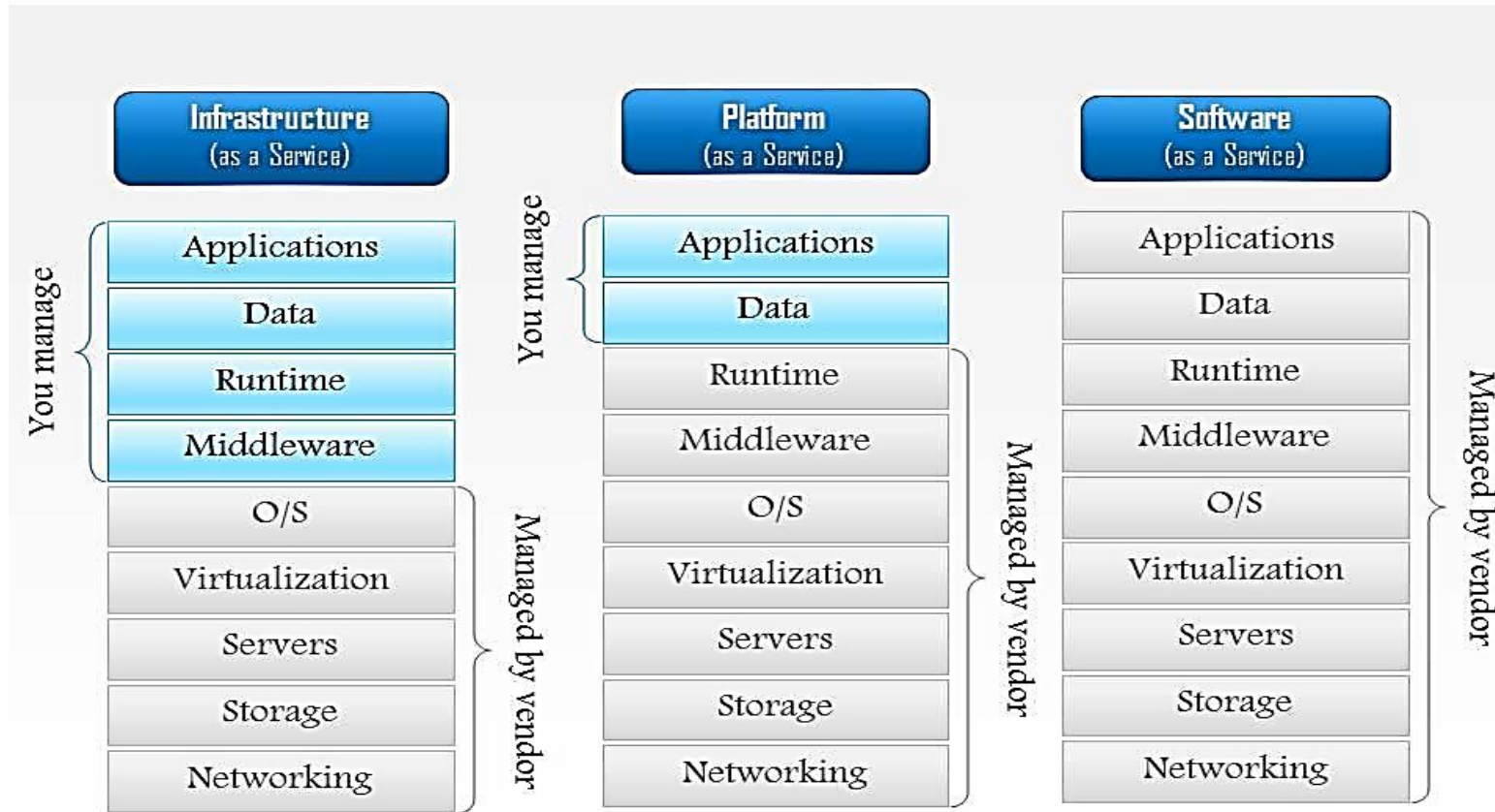
IaaS , PaaS and SaaS Management

IaaS , PaaS and SaaS Management

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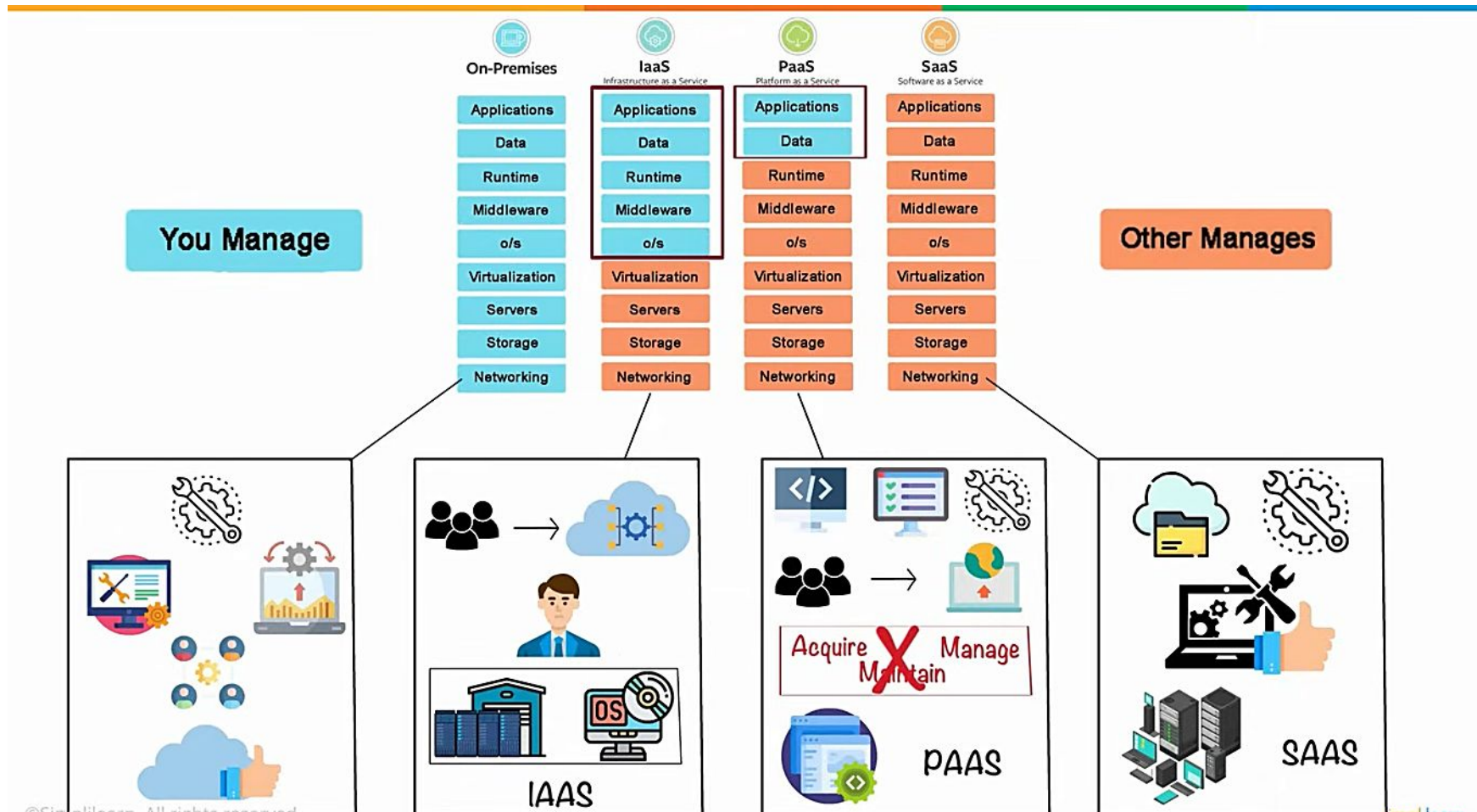
IaaS , PaaS and SaaS Management

- So, while cloud computing is really great and you're probably already using it, either for business or for personal means, here's what we've learned from taking a look at the pros and cons:

- Cloud computing is a really **cheap** way for companies to have all the resources they need in one place.

- It's a much better way to spread your resources, and it becomes **easier to access things from longer distances.**

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Cloud Software as a Service (SaaS)

- The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure.

- The applications are accessible from various client devices such as a web browser (e.g., web-based email).

- The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage,…

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benefits of the SaaS model include: (cont.)

- SaaS is a software distribution model in which a third-party provider hosts applications and makes them available to customers over the Internet.

- **Flexible payments:** Rather than purchasing software to install, or additional hardware to support it, customers subscribe to a SaaS offering.

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Benefits of the SaaS Model Include: (cont.)

- **Automatic updates:** Rather than purchasing new software, customers can rely on a SaaS provider to automatically perform updates.

- **Accessibility and persistence:** Since SaaS applications are delivered over the Internet, users can access them from any Internet-enabled device and location.

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Cloud Platform as a Service (PaaS)

- The capability provided to the consumer is to deploy onto the cloud infrastructure *consumer-created* or *acquired applications* created using *programming languages and tools* supported by the provider.

- The **consumer does not manage** or control the underlying cloud infrastructure.

- Consumer has control **over the deployed applications** and possibly application hosting environment configurations.

- Examples: **Windows Azure, Google App.**

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Cloud Platform as a Service (PaaS)

Code

Deploy

Enjoy

Code your app

Push-button Deploy, and your App is running in the Cloud!

LAUNCH

Save Time and Money
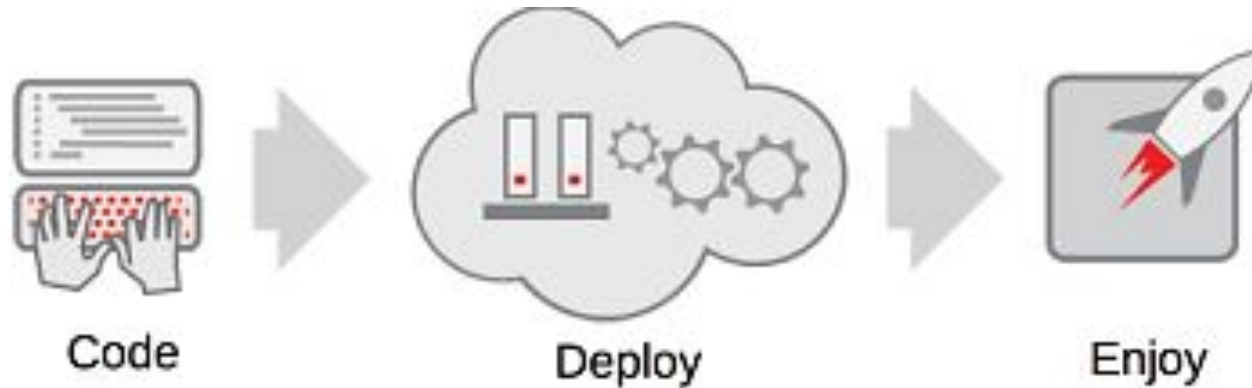
Benefits of the PaaS Model Include: (cont.)

- **Innovate Faster:** deploy and run an application enhances its suppleness. The Web is accelerating the step of innovation. **To compete**, a needs to quickly **transform new ideas into real apps and progress those applications with suppleness**. in order to meet fast-changing business and technical requirements.

- **Get the Best Technology:** A PaaS typically employs **specialists** who constantly tune, optimize, load-balance, reconfigure, and so on.

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Benefits of the PaaS Model Include: (cont.)

- **Stay Up to Date:** With PaaS, you not only get the best possible stack as of the moment you deploy, you also get a stack that keeps up with you over time, ensuring that your application is always running on the latest and greatest.

- **Scale Easily:** With a PaaS, the benefit of a great scaling mechanism developed by experts over time and in response to the needs of many customers.

- **Strengthen Security:** A PaaS offering provides continual security updates for individual stack components.

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Cloud Infrastructure as a Service (IaaS)

- The capability provided to the consumer is to provision processing, storage, networks, and other **fundamental computing resources**.

- The consumer is **able** to **deploy** and run arbitrary **software**, which can **include operating systems** and **applications**.

- The **consumer does not manage or control the underlying cloud infrastructure** but has control over **operating systems, storage, deployed applications, and possibly limited control of select networking components** (e.g., host firewalls).

Cloud Infrastructure as a Service (IaaS)

Examples: Amazon EC2, GoGrid, iland, Rackspace Cloud Servers, ReliaCloud.

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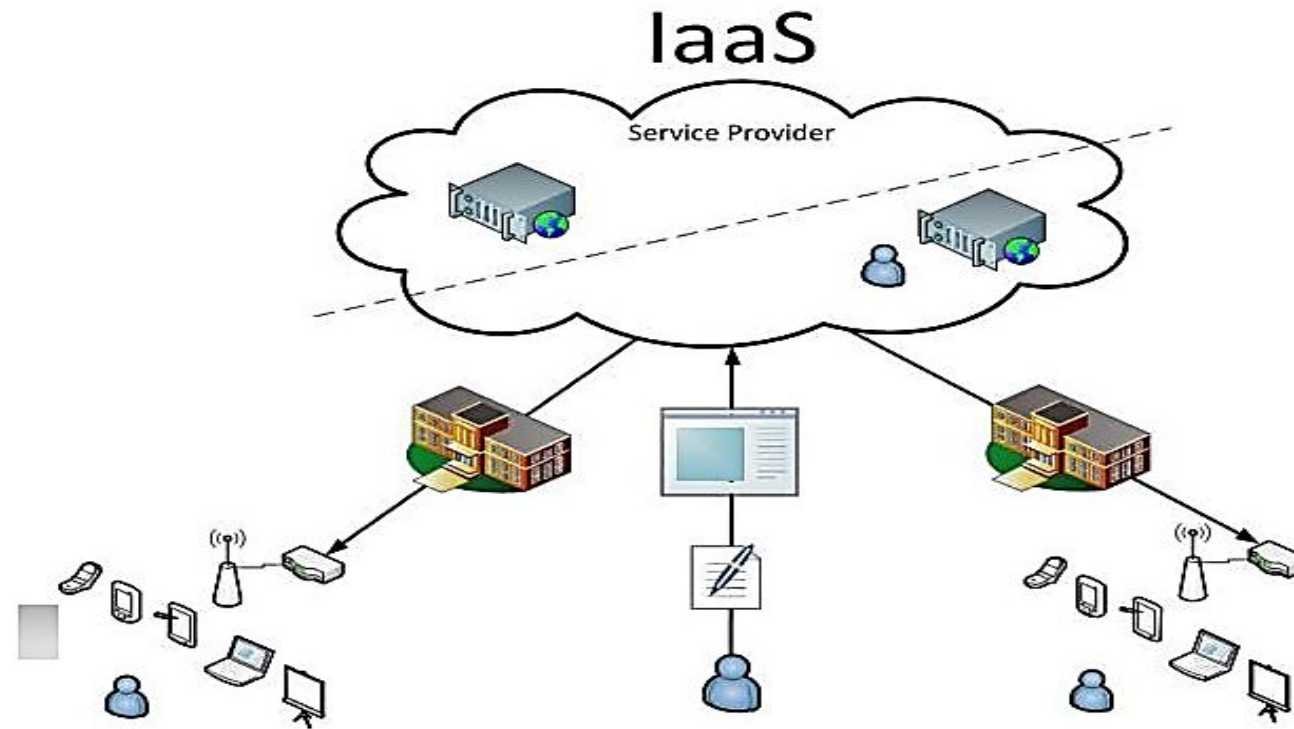
Benefits of the IaaS Model Include: (cont.)

- **No Capital Investments:** Using the service provider's servers, storage and networking hardware that is located in their secure off-site data center, there is no need to make capital investments in a computing infrastructure, maintenance or office space to store the equipment. Most IaaS solutions are offered using a "pay-as-you-go" subscription-based plan that allows users to only pay for what they need at that time.

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Benefits of the IaaS Model Include: (cont.)

- **Expand as You Grow:** By paying for only what you need and leveraging the infrastructure of the service provider, **IaaS allows organizations to scale as they grow** and **even scale back if they downsize** or have seasonal changes in their operations.

- **Flexible Options:** No two organizations have the identical computing requirements and keeping up with ever-changing needs can be challenging. With IaaS, **organizations can choose the computing power and storage capacity that fits their specific needs** at that time.

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Benefits of the IaaS Model Include: (cont.)

- **Focus on What You Do Best:** By relying on the service provider's team of experts to handle all of your computing infrastructure needs, your organization can focus on what you do best and your internal IT team can focus on more strategic initiatives rather than day-to-day maintenance.

- **Latest and Greatest Technology:** Hosting infrastructures for hundreds or thousands of organizations, IaaS providers must keep up with the constant changes in technology to best serve their clients. They are able to offer more advanced technologies than what most organizations would be able to afford or manage in house.
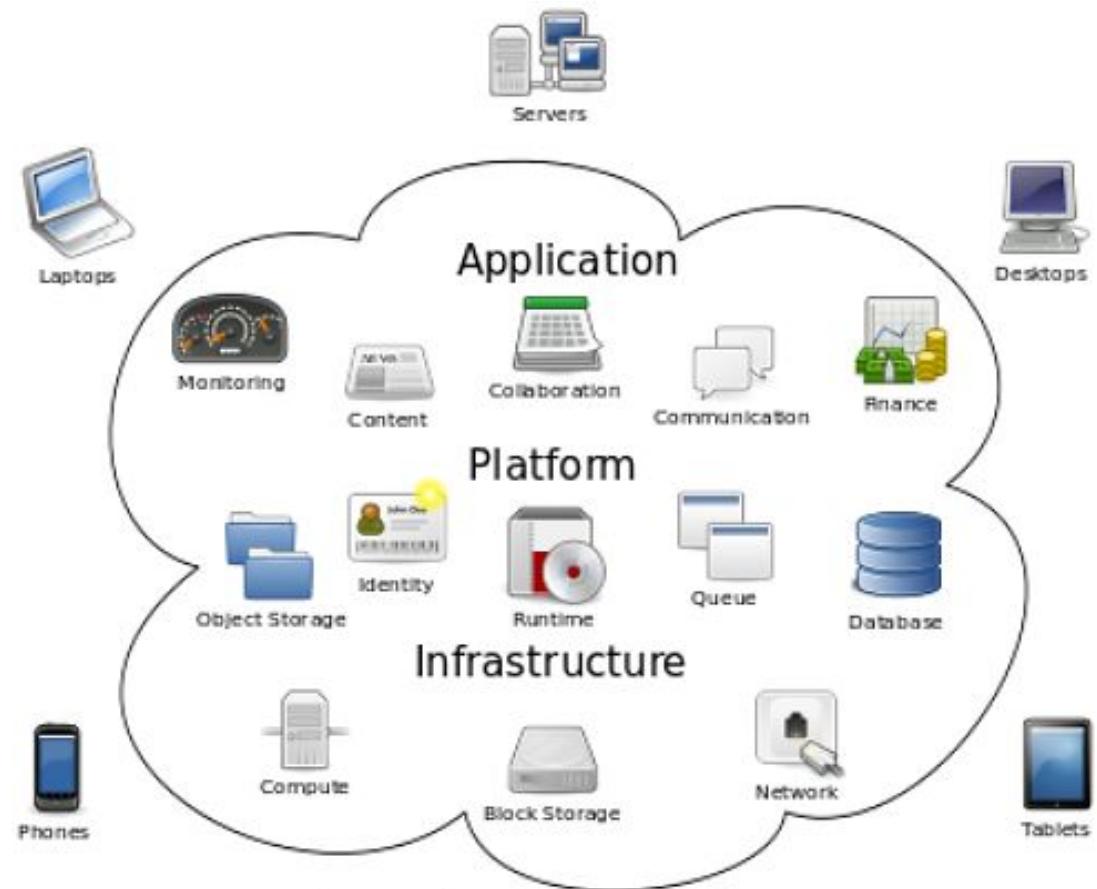
Benefits of the IaaS Model Include: (cont.)

- **Get Started Immediately:** The IaaS provider already has an infrastructure in place, enabling organizations to easily get their computing environment up and running in the cloud.

- **Anytime, Anywhere Access:** With your computing infrastructure in the cloud, you are able to access your computing infrastructure via a simple Internet connection.

- **Tight Security Controls:** Hosting systems for multiple organizations, IaaS providers must have tight security measures in place to ensure that their customers' infrastructures are protected from potential breaches.

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Service Models (cont.)
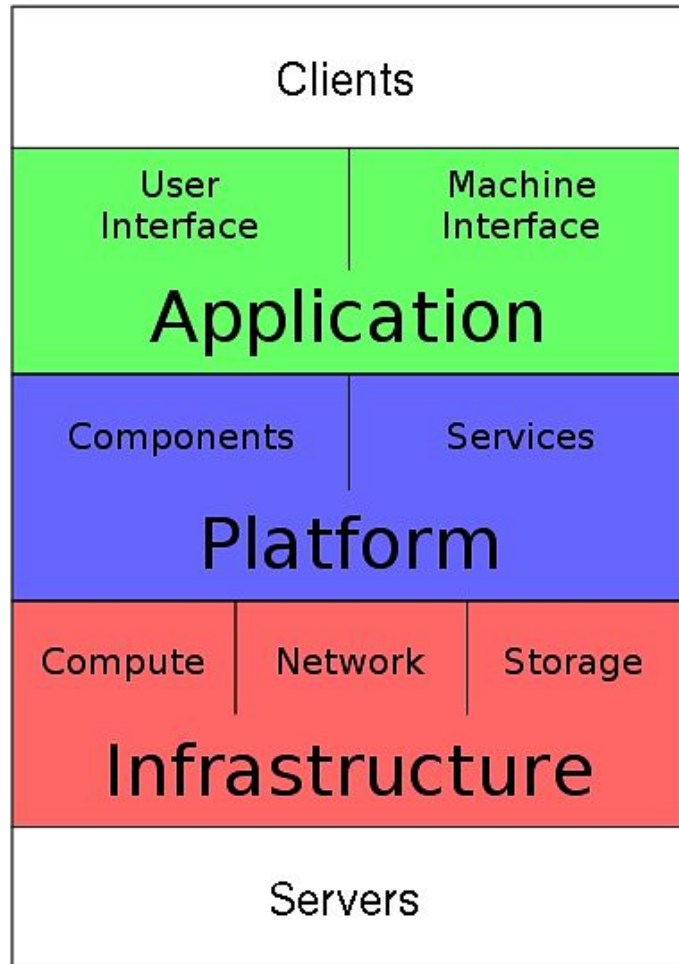
Cloud Computing Stack

Cloud computing

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