THE CLOUD AND ITS EFFECTS ON WEB DEVELOPMENT

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The arrival of the Cloud
Comparing the environments
Effects on Web Development
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- Cloud computing has gained notable popularity in a few years
- Cloud services are rather easy to use
  - Especially cloud platforms require zero setup effort
  - Makes cloud hosting available to many developers
The arrival of the Cloud

• Cloud platforms have been rather naively advertised
  – Advertising oversimplifies the cloud
  – Causes difficulties in understanding what is happening under the hood
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Comparing the environments

• Single-server environment
• Clustered environment
• Cloud computing in a nutshell
Single-server environment

Illustration based on Tanenbaum & Van Steen (2007, p. 547)
Clustered environment

Cloud computing in a nutshell

• A definition of cloud computing (Mell & Grance 2011 & Armbrust et al. 2010)
  – Rapid provisioning of configurable, on-demand computing resources
  – Minimal management effort or service provider interaction

• It is required of a cloud application that it is hosted in a way that meets the above requirements
Cloud computing in a nutshell

• Common service models in cloud computing
  – Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), Infrastructure-as-a-Service (IaaS)
  – Each model abstracts the underlying implementation

• Benefits of using cloud services are obvious
  – IaaS: Scalability, elasticity, instant allocation of resources, ...
  – PaaS: Deployment automation, zero maintenance, ...
  – SaaS: Software on-demand, integration via HTTP APIs, ...
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• Web frameworks are often used as a basis in web application projects
  – Frameworks include built-in practices and assumptions regarding e.g. the server setup
• Features such as sessions and file uploading may not work out-of-the-box in cloud context
Effects on Web Development

• Key problems:
  – Web frameworks have matured in the single-server environment
  – Cloud’s architecture and practices invalidates framework features that are valid in single-server context
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• Developing with web frameworks requires acknowledging the new environment
• Web frameworks are evolving in a direction that may complicate their use in cloud context
• Lack of proper cloud support in web frameworks
  – Support is often provided by the cloud provider
  – Easy-to-follow tutorials and framework support make cloud services attractive to developers
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References and further reading


