Missing Component: Education on Cloud Computing Technologies and Engineering

Yuri Demchenko, Adam Belloum, Ana Oprescu, Cees de Laat (University of Amsterdam)

Cloud Computing Course Structure

Part 1.1. Cloud Computing definition and general usecases
Part 1.2. Cloud Computing and enabling technologies
Part 2. Cloud Architecture models and industry standardisation: Standard interfaces
Part 3.1. Major cloud provider platforms
Part 3.2. Major cloud provider platforms: Research and Community Clouds
Part 4. Cloud middleware platforms (architecture, API), usage examples
Part 5.1. Cloud Infrastructure as a Service (IaaS): Architecture, platform and providers
Part 5.2. Cloud Infrastructure as a Service (IaaS): IaaS services design and management
Part 6.1. Cloud Platform as a Service (PaaS): Architecture, platform and providers
Part 6.2. Cloud Platform as a Service (PaaS): PaaS services design and management
Part 7.1. Security issues and practices in clouds
Part 7.2. Security services design in clouds; security models and identity management
Part 8 (Advanced). InterCloud Architecture Framework (ICAF) for Interoperability and Integration: Architecture definition and design patterns

Course Components in Relation to Cloud Services Models [1]

Cloud Computing Common Body of Knowledge (Full)

Common Body of Knowledge (CBK) in Cloud Computing

CBK refers to several domains or operational categories into which Cloud Computing theory and practices breaks down

1. Cloud Computing Architectures, service and deployment models
2. Cloud Computing platforms, software/middleware and APIs
3. Cloud Services Engineering, Cloud aware Services Design
4. Virtualisation technologies (Compute, Storage, Network)
5. Computer Networks, Software Defined Networks (SDN)
6. Service Computing, Web Services and Service Oriented Architecture (SOA)
7. Computing models: Grid, Distributed, Cluster Computing
8. Security Architecture and Models, Operational Security
9. IT Service Management, Business Continuity Planning (BCP)
10. Business and Operational Models, Compliance, Assurance, Certification

Professional Education in Cloud Computing - Principles

• Provide knowledge both in Cloud Computing as a new technology and background technologies
• Empower the future professionals with ability to develop new knowledge and build stronger expertise, prepare basis for new emerging technologies such as Big Data
• Bloom's Taxonomy as a basis for defining learning targets and modules outcome
• Provides a basis for knowledge testing and certification
• Andragogy vs Pedagogy as instructional methodology for professional education and training
• Course format: On-campus education and training, online courses, self-study

Course Components in Relation to Bloom’s Taxonomy [3]

Bloom's Digital Taxonomy

Professional level of knowledge includes:

• Knowing basic concepts and major application areas
• Knowing similar concepts (and concepts inter-relation) and alternatives, as well as application specific areas
• Knowing basic technologies and their relation to basic concepts
• Knowing authoritative sources of information and how to evaluate quality of information
• Ability to work with standards, beneficially contribution to standardisation
• Ability to critically evaluate and filter inconsistent information, e.g. news, blogs etc.
• Critically evaluate vendors’ information that sometimes doesn’t provide enough background information
• Practical development and experience with few projects, writing reports, technical documents

Related Links


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