

Course Description

In this Hands-On extensive course you will gain a solid understanding of the fundamental concepts and architecture of cloud computing and of the design and deployment of a cloud computing platform.

You will learn about the evolution of the cloud and its ability to increase processing power and bandwidth capabilities, and you will learn who's who in cloud computing, the products and services offered, and common platforms and applications.

You will examine the pros and cons of implementing a cloud computing platform, including the financial benefits and the security risks, and you'll learn about cloud computing standards and best practices.

Students Will Learn

- **Essential Elements Of Cloud Computing**
- **Pros And Cons Of Cloud Computing**
- **Who's Who In Cloud Computing And The Products And Services They Offer**
- **The Business Case For Going To The Cloud**
- **Building Virtualized Environments**
- **Virtualization Architecture**
- **Products Used To Implement Virtualization Architecture**
- **Security And Privacy Issues With Cloud Computing**
- **Federation And Presence**
- **Cloud Computing Standards And Best Practices**
- **Platforms And Applications Used By Cloud Computing End Users**
- **How Mobile Devices Can Be Used In The Cloud**

Target Audience

IT management, support staff, and consultants, Business managers and analysts, Small and mid-sized business owners, Specialists (IT, security, infrastructure, services, systems, and test), Business process owners, IT developers, Service providers, System integrators, Architects and anyone interested, responsible and or working with Cloud Computing.

Prerequisites

Basic understanding of computers and or networking.

Course Outline

1. Introduction to Cloud Computing

- What is Cloud Computing?
 - Cloud Computing Defined
 - Cloud Computing Architecture
 - Cloud Computing Terms
 - Communication-as-a-Service (CaaS)
 - Infrastructure-as-a-Service (IaaS)
 - Monitoring-as-a-Service (MaaS)
 - Software-as-a-Service (SaaS)
 - Platform-as-a-Service (PaaS)
- Benefits and Limitations of Cloud Computing
 - Benefits
 - Limitations
 - Cloud Computing Case Studies
- How Companies Are Using Cloud Computing
 - Implementing Applications and Services in the Cloud
 - Using Your Company's Services vs. the Cloud Provider
 - A Cloud Service Provider Introduced
- Cloud Computing Risks and Issues

2. Who's Who in Today's Cloud

- Cloud Computing Companies
- Products and Services Provided by Cloud Computing Companies

3. The Business Case for Going to the Cloud

- Benefits of Cloud Computing
 - Operational
 - Economic
 - Staffing
- Should Your Company Invest in Cloud Computing?
 - What Should Not be Moved to the Cloud

4. The Evolution of Cloud Computing

- Early Mainframe Environment

- Virtualization in Mainframe Architectures and Operating Systems
- LANs and the Cloud
- Internet and the Cloud
- Web Services, Browsers, and the Cloud
- Thin Client
- Advances in Networking and Processing Speeds that Led to Cloud Computing
 - Networking Developments
 - Increased Processing Speeds
- Managed Service Provider Model to Cloud Computing and Software as a Service (SaaS)
 - Single Purpose Architectures Migrate to Multipurpose Architectures
 - Data Center Virtualization
- Collaboration
 - The Cloud as a Reach Extender
 - The Cloud as a Communication Enabler
 - The Cloud as an Employee Enabler
- Service-Oriented Architecture (SOA)
 - Evolving from SOA to the Cloud
 - Capacity: Limited Performance
 - Availability: Communications Failure and Performance Issues
 - Security: Newer Security Protocols Provide More Protection
- What's Next in Cloud Computing

5. Building Cloud Networks

- Designing and Implementing a Data Center-Based Cloud
 - Using Industry and International Standards
 - Independent Components
 - Message Base
 - Location Independence
- Communication Requirements for Cloud Implementation
 - Public Internet
 - Private Internet
 - Routing to the Datacenter
 - Switching within the Data Center
 - Bandwidth
 - Tools Used to Measure Network Performance
 - Using the Protocol Analyzer to Measure Bandwidth
 - Using Ping and Traceroute to Measure Network Performance
 - Security
 - SSL
 - VPN
 - Overhead
- Storage Options for Cloud Computing
 - Storage Capacity
 - Data Protection and Partitioning
 - NAS
 - SAN
 - CAS
 - Redundancy
 - Replication
 - Multisiting
 - Backup and Recovery
- Server Software Environments that Support Cloud Computing

- Server Capacity
 - Virtualization
 - Clustering
 - Expansion
 - Server Functions
 - Application
 - Web
 - Database
- Vendor Approaches to Cloud Computing
- Role of Open Source Software in Data Center
 - Cost Reduction vs. Reliability
 - Open Source Server Software
 - Open Source Database Software
 - Open Source Applications Software
 - Open Source System Management Software
 - Open Source Load-Balancing Software

6. Virtualization

- Student Virtualization Architectures
 - The Hypervisor
 - Virtualization as the "Operating System"
 - Virtualization with a Host Operating System
- Virtualization Infections on Virtualized Environments
 - Type 1 Virtualized Environment
 - Type 2 Virtualized Environment
- Virtualization Environments
 - Microsoft Virtualization
 - Sun xVM VirtualBox
 - Linux/UNIX Virtualization
 - VMware Products
 - Data Center and Cloud Infrastructure Products
 - End-User and Desktop Products
 - IBM Virtualization
 - Using VMware to see a Virtualized Server Environment

7. Federation, Presence, Security, and Privacy in the Cloud

- Federation in the Cloud
 - What It Is
 - Permissive Federation
 - Verified Federation
 - Encrypted Federation
 - Trusted Federation
 - Using XMPP in the Federated Environment
- Presence in the Cloud
 - What It Is
 - Presence Protocols
 - Leveraging Presence
 - Presence Enabled

- The Future of Presence
- The Interrelation of Identity, Presence, and Location in the Cloud
- Identity Management
 - What It Is
 - Future of Identity in the Cloud
- Privacy and Its Relation to Cloud-Based Information Systems
 - Personal Information
 - Privacy-Related Issues
 - Finding Your Private Information

8. Cloud Computing Standards and Best Practices

- Open Cloud Consortium
 - What It Is
 - Open Cloud Consortium Working Groups
 - Project Matsu
 - Project Comet
 - HPC in the Cloud
 - The Open Cloud Testbed
 - The Open Science Data Cloud
 - Intercloud Testbed
 - Reporting on an Open Cloud Consortium Working Group
- Distributed Management Task Force (DMTF)
 - What It Is?
 - DMTK Working Groups Associated with Cloud Computing
- Standards for Application Developers
 - Protocols
 - Scripting Languages
 - Content Formatting Standards and Languages
- Standards for Security in the Cloud
 - Confidentiality, Integrity, Availability
 - Authentication, Authorization, Accountability
 - Regulations for Privacy
 - Security Protocols
- Establishing a Baseline for Cloud Performance
- Best Practices for Selecting a Vendor and Implementing Cloud-Based Applications
 - Choosing the Right Vendor
 - Implementing Cloud-Based Applications

9. End-User Access to Cloud Computing

- Cloud Access Methods Available to End Users
 - Citrix
 - Windows Remote Desktop
 - Vnc
 - Web Browsers
 - Server Extensions
 - Thin Clients
 - Smart Phones, Pads, Pods, etc.
- Virtual Terminal Security Strengths and Weaknesses

- Strengths
- Weaknesses

10. Mobility and the Cloud

- Mobile Operating Systems for Smartphones
 - iPhone
 - Android
 - BlackBerry
 - Windows Mobile
 - Ubuntu Mobile Internet Device
- Mobile Platform Virtualization
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Delivery Method

Instructor-Led with numerous Hands-On labs and exercises.

Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

4 Days