Chapter 15

Virtualization and Cloud Computing

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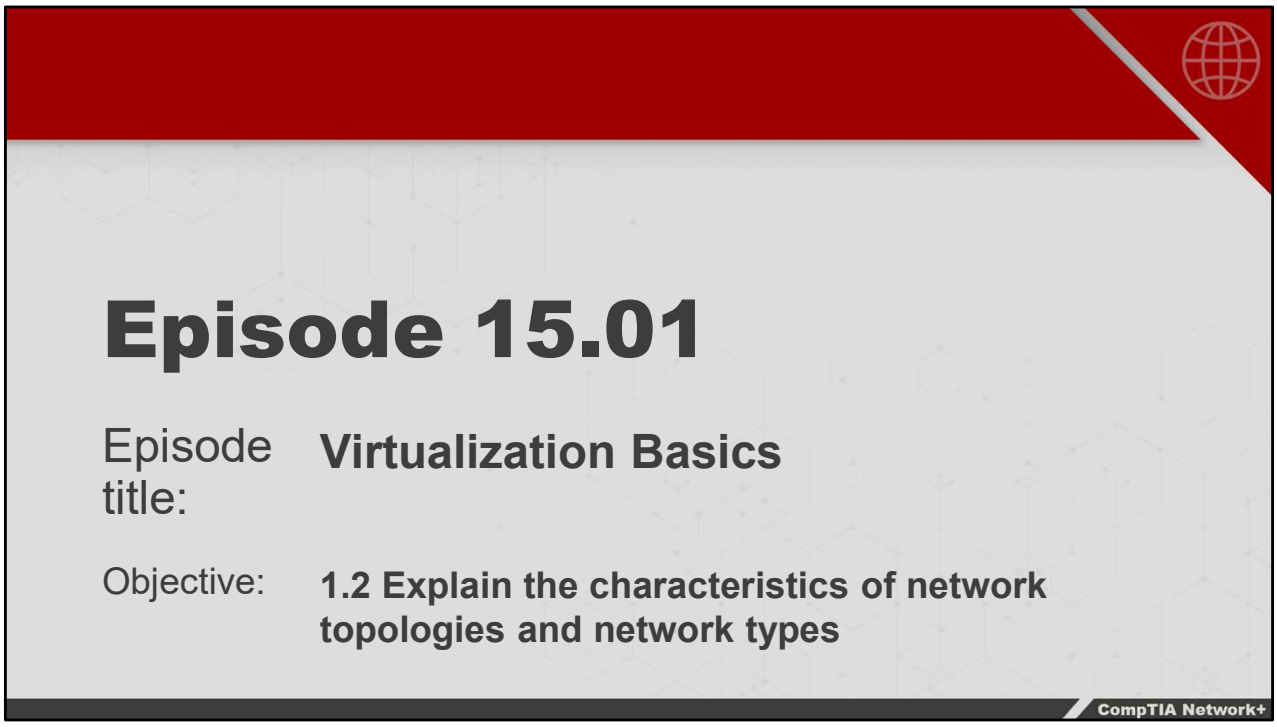
Episode 15.01
Episode title:
Virtualization Basics
Objective:
1.2 Explain the characteristics of network topologies and network types
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Key Terms

- Virtualization
- Emulation
- 1. Computer
- 2. Hypervisor
- VMware, ESXi, Virtual Box, Microsoft Hyper-V
- 3. Virtual machine
- 4. Virtual hard disk (VHD or VHDx)
- Type 2 hypervisor
- Type 1 hypervisor

Quick Review

- Don’t confuse virtualization with emulation
- The benefits of virtualization include saving power, hardware consolidation, and system recovery
- There are two types of hypervisors: type 1 (bare metal) and type 2 (hosted)

Episode 15.02

Episode title: **Your First Virtual Machine**

Objective: **1.2 Explain the characteristics of network topologies and network types**

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Quick Review

- Virtual machines need an operating system
- Before installing a virtual machine, be sure to check your available hard drive space
- Most virtual hardware can be changed


Episode 15.03
Episode title:
Cloud Basics
Objective:
1.8 Summarize cloud concepts and connectivity options
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Key Terms

- Scalability
- Elasticity
- Multitenancy
- Security implications
- Principle of least privilege

Quick Review

- Scalability enables quickly increasing resources without the investment of more on-site hardware by utilizing the cloud's resources
- Elasticity is the ability to increase or decrease resources based on the demand of your application, service, etc.
- Multitenancy refers to a cloud provider's ability to host multiple tenants on the same infrastructure

Episode 15.04

Episode title: **Cloud Services**

Objective: **1.8 Summarize cloud concepts and connectivity options**

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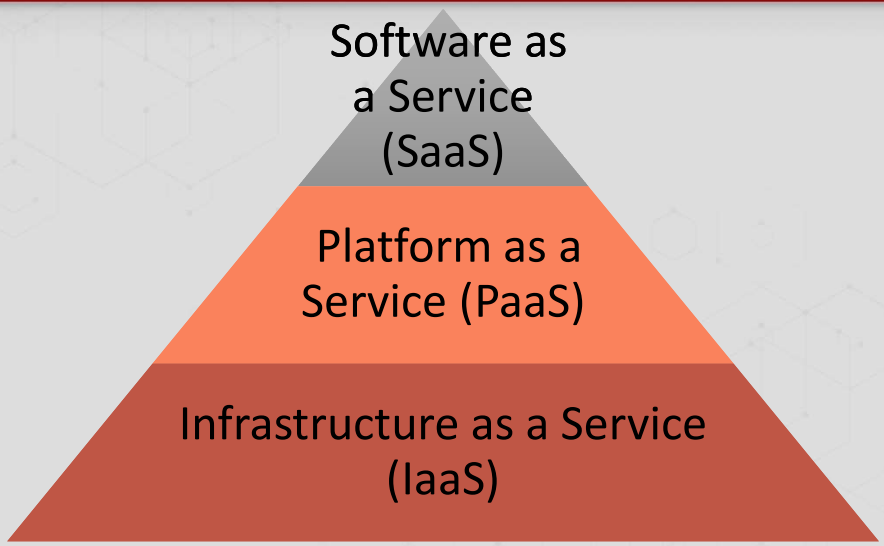
Key Terms

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)
- Desktop as a Service (DaaS)
- Virtual desktop interface/infrastructure (VDI)

Cloud Services



Quick Review

- Infrastructure as a Service (IaaS) enables setting up whole infrastructures for you without the on-site resources, maintenance, and troubleshooting
- Platform as a Service (PaaS) provides a complete deployment and management system
- Software as a Service (SaaS) provides subscription-based access to software
- Desktop as a Service (DaaS) isn't as much a service model as it is just a service that enables moving users' workstations into the cloud

Episode 15.05

Episode title: **Cloud Ownership**

Objective: **1.8 Summarize cloud concepts and connectivity options**

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Quick Review

- Private clouds allow access to members only
- Public clouds are available to anyone
- A private cloud with contracted management is considered a hybrid cloud
- Four clouds to remember: public, private, community, and hybrid

Episode 15.06

Episode title: **Infrastructure as Code (IaC)**

Objective: **1.8 Summarize cloud concepts and connectivity options**

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Key Terms

- Infrastructure as Code (IaC)
- Automation
- Orchestration

Quick Review

- Infrastructure as Code (IaC) is the management of infrastructure in a descriptive model, using the same versioning as developers use for source code
- Automation is using code to set up (provision) and maintain systems in a consistent manner without having to make manual changes
- Orchestration is composing smaller automated tasks into longer sequences


Episode 15.07
Episode title:
Heroku Demo
Objective:
1.8 Summarize cloud concepts and connectivity options
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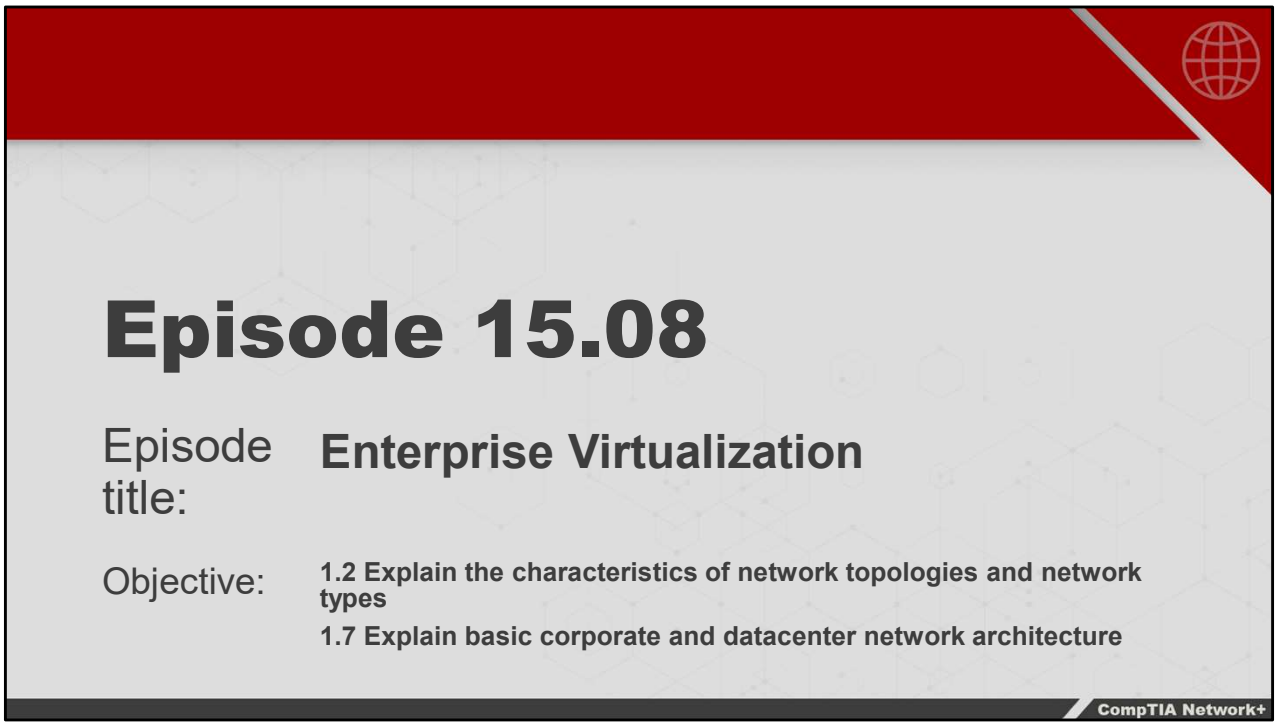
Key Terms

- Platform as a Service (PaaS)

Quick Review

- PaaS enables access to a software development platform without the need to personally host it
- Heroku is a great example of PaaS
- A PaaS allows very quick access to software running live on the Internet


Episode 15.08
Episode title:
Enterprise Virtualization
Objective:
1.2 Explain the characteristics of network topologies and network types
1.7 Explain basic corporate and datacenter network architecture
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Key Terms

- Virtual switch (vSwitch)
- Distributed switching
- Network function virtualization (NFV)
- Software-defined networking (SDN)
- Management plane/layer, control plane/layer, data plane/layer

Quick Review

- Virtual switches need to be configured in the same manner as physical switches
- Distributed switching is the centralized installation, configuration, and handling of every switch in the network
- Network function virtualization (NFV) enables virtualization of network hardware
- Software-defined networking (SDN) controls a device from a remote location

Episode 15.09

Episode title: **Cloud Implementation**

Objective: **1.8 Summarize cloud concepts and connectivity options**

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Key Terms

- Virtual private cloud (VPC)
- Connection methods
- AWS Elastic Beanstalk

Quick Review

- VPC (virtual private cloud) depends on the services requested, including IaaS (Infrastructure as a Service) and PaaS (Platform as a Service)
- VPC services are very flexible, expandable, and can provide many types of services
- Building Web servers on cloud applications is very easy, but there can be costs associated with the service