

**COMPTIA SERVER+:** The Server+ course is designed to help the student take and pass the CompTIA Server+ certification exam. It consists of Book information, plus real world information a student could use in their day to day career.

As part of this course, the student will build two servers, one Windows 2008 server, and one Centos server. They will practice configuration techniques on both. Additionally, they will build an OpenFiler SAN and connect that to their Windows and Linux Servers. There will be numerous exercises along the way, and tests. The course will cumulate with a practice test that will give them an idea of what to expect on the actual exam.

What the student will need:

- Computer with at least 70 GBs of free space on the hard drive. Processor that can take advantage of virtualization, at least 3-4 GBs of RAM. The students should have access to VISIO or some other type of Network Drawing Program (If they don't, they can use Open Office which has a VISIO like program).

### 1: Pre-Planning and Installation

- Plan the installation.
- Verify the Plan
- Verify hardware vs. OS
- Verify the physical aspects.
- Verify everything is accounted for.

### 2: Building our Virtual Playground

- Our lab environment
- VMPlayer
- Building your Windows 2008 Virtual Server
- Building a Linux Virtual Server

### 3: Servers

- CPUs
- The Motherboard
- The bus (and not the one you catch for downtown).

- Storage connectors
- The BIOS
- And the Boot Process

#### 4: The Server Chassis

- Cooling
- Form Factors
- Understanding power
- Case features
- Expansion bays

#### 5: Memory

- Memory pairing
- Error Detection and Correction
- Registered vs Non-Registered
- RAID memory and Hot Spares
- Memory Types
- Memory considerations
- Memory Package types

#### 6: Hardware Compatibility Lists

- Vendor Standards and System Hardware
- Memory & Processor Compatibility
- Expansion Cards
- Virtualization requirements

#### 7: Processors

- Processor Technologies
- Speed Considerations

- Virtualization Technologies
- Memory Protection and CPU Versioning
- CPU Packages
- Processor Architectures and Slot Types

## 8: Expansion Cards

- Controllers and Interfaces
- Small Computer System Interface (SCSI)
- SCSI Cables and Connections
- Different SCSI Interfaces
- Integrated Drive Electronics
- Drive Capacities
- Port Expansion Cards
- Video Adaptor Cards
- Audio Adaptor Cards
- Manufactures Specific Cards
- Card Installation

## 9: Network Operating Systems

- Linux Install Methods
- Linux Filesystems
- Install and Configure Linux
- The Bootloader
- Windows Server Install Methods
- Windows Server Filesystems
- Other Filesystems
- Install and Configure Windows
- Drivers Installation
- Patch Management

## 10: Network Security

- What is a Firewall
- Software Firewalls
- Configure Windows Firewall
- Malware Protection
- File and Share Permissions

#### 11: Network Operating System Management

- Components of System Security
- Authentication Factors
- User Accounts
- Password Policies
- Adding and Removing Users
- Permissions
- Policies and Logon Scripts
- Disk Management
- Shadow Volumes
- Disk Quotas
- Resource Management
- Network Monitoring

#### 12: server Roles

- Deconstructing the LAN
- Types of Networks
- Authentication Types
- Network Equipment Differences
- Understanding Server Roles
- Virtualized Services
- Start up/Shut Down

#### 13: Server Virtualization

- What is Virtualization

- Virtualization Resources
- Interconnectivity
- Virtual Management Server
- Virtualization and Security
- Virtualization Advantages and disadvantages
- Best Practices

#### 14: Networking

- TCP/IP Basics
- TCP/IP Protocols
- IP Stack
- Network Addresses
- IPV4
- IPV6
- Ports
- Default Gateway
- Wiring
- Standards
- Network Security Options

#### 15: RAIDs

- Understanding Disk Arrays
- RAID Levels
- Hybrid RAID Levels
- Software vs. Hardware RAID
- Performance Benefits and Tradeoffs

#### 16: Internal Storage

- Physical Installation
- Drives and Identification

- Hot Swappable vs Non-Hot Swappable
- Hard Drive Preparation
- Optical Drives
- Flash, Floppy (yes, they're still around), and Tape Drives
- Firmware

#### 17: External Storage

- Network Attached Storage
- Storage Area Network
- Tape Libraries
- WORM Drives
- Optical Jukeboxes
- Transport Media

#### 18: Documentation

- Documenting the Network
- The Pre-Install Plan
- Labeling and Diagraming the Server Racks
- Hardware and Software Specific
- Importance of a Baseline
- Original Configuration Information
- Vendor Documentation

#### 19: Industry Best Practices

- Server Best Practices
- Before the Change
- Change Control
- After the Change
- Communications
- Regulation and Laws
- Service Level Agreements

- Decommissioning Equipment

## 20: The Server Physical Environment

- Power
- Amps and Voltage
- UPS Systems
- Cooling

## 21: Access

- Server Access Overview
- Direct Connect
- Keyboard and Mouse
- Remote Management & Control

## 22: Physical Security

- Physical Server Security
- Locked Doors
- Rack Doors and so on
- CCTV
- Mantraps
- Guards
- Controlling Access
- Biometrics, pluses and minues
- Procedures
- Documentation

## 23: Backups

- Media Types
- Tape Drives (not dead yet).
- Optical Media
- Cloud Backups

- Others
- Understanding Backup Methods
- Backup Types
- Rotation
- Backups and Security
- Restores

#### 24: Replication

- Replication Methods
- Disaster Site Recovery Types
- Backup Site Considerations
- Data retention
- Archiving vs. Backups

#### 25: Disaster Recovery

- An Overview
- Testing
- Following Emergency Procedures
- Fire Suppressants
- Evacuation Procedures
- Classifications

#### 26: Troubleshooting 101

- Troubleshooting
- The Server+ Troubleshooting Method
- Other Troubleshooting Methods
- Problem and Resolution Tracking

#### 27: Hardware Troubleshooting

- Common Issues
- The Boot Process
- BIOS Failures



- Memory Failures
- Troubleshooting Memory
- Onboard Component Failures
- Drive Failures
- Expansion Card Failures
- Power Supply Failures
- Motherboard and Processor Failures
- Environmental Failures
- Troubleshooting Tools

## 28: Software Troubleshooting

- Common Issues and Causes
- Startup Problems
- OS Failures
- Driver Issues
- Access Control Issues
- Printing
- Patch Update Issues
- Maintain your Hard Drive
- Software Tools
- System Logs

## 29: Network Troubleshooting

- Common Issues and Causes
- DHCP Configuration Issues
- ISP Issues
- Host Name Issues
- Troubleshooting your Default Gateway
- Ping

- Tracert and TraceRoute
- Ipconfig and Ifconfig
- nslookup
- Net Command
- Nbtstat and netstat

### 30: Troubleshooting Storage

- Common Storage Issues and Causes
- File and Resource Issues
- Backup Failures
- OS Errors
- Restore Failures
- Storage Tools
- Array and RAID Management Tools
- System Logs
- Net use and mount commands
- Monitoring Tools

### 31: The CompTIA Server+ exam

- Exam overview
- Where to Take the Exam
- Retake Policy
- Exam Preparation Tips
- After the Exam