

# Cheat Sheet for comprehensive CompTIA Server+

## Server Hardware Components

### *Motherboard*

- **Form Factors:** ATX, Micro-ATX, Mini-ITX

- **Key Components:**

- CPU Socket
- RAM Slots
- Expansion Slots (PCIe, PCI)
- Storage Connectors (SATA, M.2)
- Network Ports (NIC)

### *CPU (Central Processing Unit)*

- **Types:** Intel Xeon, AMD EPYC

- **Key Features:**

- Cores and Threads
- Clock Speed (GHz)
- Cache Memory (L1, L2, L3)
- Thermal Design Power (TDP)

### *RAM (Random Access Memory)*

- **Types:** DDR4, DDR5

- **Key Features:**

- Speed (MHz)
- Capacity (GB)
- ECC (Error-Correcting Code)

### *Storage*

- **Types:**

- HDD (Hard Disk Drive)
- SSD (Solid State Drive)
- NVMe (Non-Volatile Memory Express)

- **Key Features:**

- Capacity (GB, TB)

- Interface (SATA, SAS, PCIe)
- Speed (RPM, MB/s)

### *Power Supply Unit (PSU)*

#### - **Key Features:**

- Wattage (W)
- Efficiency (80 PLUS)
- Modular vs. Non-Modular

### *Server Operating Systems*

#### *Windows Server*

#### - **Versions:**

- Windows Server 2019
- Windows Server 2022

#### - **Key Features:**

- Active Directory
- Hyper-V
- Failover Clustering
- Storage Spaces

#### *Linux Distributions*

#### - **Popular Distributions:**

- Ubuntu Server
- CentOS
- Red Hat Enterprise Linux (RHEL)

#### - **Key Features:**

- Open-Source
- Package Management (APT, YUM, DNF)
- Virtualization (KVM, Xen)
- Security (SELinux, AppArmor)

#### *VMware ESXi*

#### - **Key Features:**

- Bare-Metal Hypervisor
- vSphere Client
- vMotion
- High Availability (HA)

- Distributed Resource Scheduler (DRS)

## Networking

### IP Addressing

#### - IPv4:

- Format: `xxx.xxx.xxx.xxx`
- Subnet Mask: `/24`, `/16`, `/8`

#### - IPv6:

- Format: `xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx`
- Subnet Mask: `/64`, `/48`

### Network Protocols

#### - TCP/IP:

- TCP (Transmission Control Protocol)
- UDP (User Datagram Protocol)
- ICMP (Internet Control Message Protocol)

#### - DNS:

- Domain Name System
- Records: A, AAAA, CNAME, MX, TXT

#### - DHCP:

- Dynamic Host Configuration Protocol
- Leases, Scope, Reservation

### Network Configuration

#### - Commands:

- `ipconfig` (Windows)
- `ifconfig` (Linux)
- `netstat`
- `ping`
- `tracert`

## Server Management

### Remote Management

#### - Tools:

- Remote Desktop Protocol (RDP)

- Secure Shell (SSH)
- Virtual Network Computing (VNC)

- **Best Practices:**

- Use strong passwords
- Enable two-factor authentication
- Regularly update software

*Monitoring and Logging*

- **Tools:**

- Performance Monitor (Windows)
- Nagios
- Zabbix
- Splunk

- **Key Metrics:**

- CPU Usage
- Memory Usage
- Disk I/O
- Network Traffic

*Backup and Recovery*

- **Types of Backups:**

- Full Backup
- Incremental Backup
- Differential Backup

- **Tools:**

- Windows Server Backup
- Veeam Backup & Replication
- rsync (Linux)

- **Best Practices:**

- Regular backup schedules
- Test restores periodically
- Store backups offsite

## Virtualization

### Hypervisors

#### - **Type 1 (Bare-Metal):**

- VMware ESXi
- Microsoft Hyper-V
- Citrix XenServer

#### - **Type 2 (Hosted):**

- VMware Workstation
- Oracle VirtualBox
- Parallels Desktop

### Virtual Machine Management

#### - **Creation:**

- Templates
- Clones

#### - **Snapshots:**

- Rollback to previous state
- Test environment changes

#### - **Resource Allocation:**

- CPU Cores
- RAM
- Storage
- Network Adapters

## Security

### Authentication

#### - **Methods:**

- Password-Based
- Multi-Factor Authentication (MFA)
- Biometric

#### - **Protocols:**

- LDAP (Lightweight Directory Access Protocol)
- Kerberos
- RADIUS (Remote Authentication Dial-In User Service)

## *Encryption*

### - **Types:**

- Symmetric Encryption (AES, DES)
- Asymmetric Encryption (RSA, ECC)

### - **Protocols:**

- SSL/TLS
- IPsec
- SSH

## *Firewalls*

### - **Types:**

- Hardware Firewalls
- Software Firewalls

### - **Configuration:**

- Inbound vs. Outbound Rules
- Network Address Translation (NAT)
- Port Forwarding

## *Troubleshooting*

### *Common Issues*

#### - **Hardware:**

- Failed Components (CPU, RAM, PSU)
- Overheating
- Faulty Cables

#### - **Software:**

- Operating System Crashes
- Application Errors
- Network Connectivity Issues

### *Tools and Techniques*

#### - **Diagnostics:**

- Event Viewer (Windows)
- dmesg (Linux)
- System Logs

#### - **Testing:**

- Memtest86+ (Memory)
- SMART Tools (Storage)
- Network Troubleshooting (ping, traceroute)

## Best Practices

### *Maintenance*

#### - **Regular Updates:**

- OS Patches
- Application Updates

#### - **Hardware Checks:**

- Temperature Monitoring
- Fan Speed
- Power Supply Integrity

### *Documentation*

#### - **Inventory:**

- Hardware Specifications
- Software Versions

#### - **Configuration:**

- Network Settings
- Security Policies
- Backup Schedules

### *Disaster Recovery*

#### - **Plan:**

- Define RTO (Recovery Time Objective)
- Define RPO (Recovery Point Objective)

#### - **Implementation:**

- Backup Strategies
- Redundant Systems
- Offsite Storage

## Examples

### *Network Configuration Example*

```
# Linux Example
ip addr add 192.168.1.100/24 dev eth0
```

```
ip link set eth0 up
ip route add default via 192.168.1.1
```

### ***Virtual Machine Creation Example***

```
# VMware ESXi Example
vim-cmd vmsvc/createdummyvm --name "TestVM" --datastore "datastore1" --
numCPUs 2 --memoryGB 4 --diskGB 20 --network "VM Network"
```

### ***Backup Command Example***

```
# Linux rsync Example
rsync -avz /data/user/backup user@backupserver:/backup/
```

## **Shortcuts and Tips**

### ***Command Line Shortcuts***

#### **- Windows:**

- `Ctrl + C` (Copy)
- `Ctrl + V` (Paste)
- `Ctrl + Z` (Undo)

#### **- Linux:**

- `Ctrl + A` (Go to start of line)
- `Ctrl + E` (Go to end of line)
- `Ctrl + U` (Clear line)

### ***Performance Monitoring Tips***

#### **- Use Dashboards:**

- Grafana
- Kibana

#### **- Set Alerts:**

- CPU Usage Threshold
- Disk Space Low
- Network Latency

### ***Security Tips***

#### **- Regular Audits:**



- Check for unauthorized access
- Review firewall rules

- **Patch Management:**

- Automate updates
- Prioritize critical patches

**Conclusion**

This cheat sheet provides a comprehensive overview of essential topics for CompTIA Server+. Use it as a quick reference for managing, configuring, and troubleshooting server environments.

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