

Name: _____

Date: _____

Score: _____

Web Hosting & Infrastructure Guide

Web hosting types, server resources, database storage, and network redundancy.

WEB HOSTING & INFRASTRUCTURE LEARNING OVERVIEW

HOSTING

STUDENT STATUS

Hosting Infrastructure Track

ACTIVE

SERVER ASSETS

High-Availability Stacks

99.99%

UPTIME TARGET

Redundancy Failover Safety

Welcome! This activity packet guides you through web hosting types and server infrastructure. You will explore shared hosting, VPS resources, relational databases, host firewalls, uptime metrics, and failover redundancy.

WORKSHEET CHECKPOINTS

- ☐ **Part 1-4:** Master web hosting and infrastructure.
- ☐ **Part 5-7:** Solve crossword & word search puzzles.
- ☐ **Part 8-9:** Solve case studies & cipher challenge.
- ☐ **Part 10:** Review basic & advanced FAQ pages.
- ☐ **Part 11:** Explore 10 interesting real-world facts.

Open the VPN.com Web Hosting Guide

URL: <https://www.vpn.com/hosting/>

Your Web Hosting Learning Roadmap

- Understand the differences between shared, VPS, dedicated, and cloud hosting.
- Configure database connections and secure server ports.
- Assess server metrics and implement redundancy architectures.

WEB HOSTING GUIDE INSTRUCTIONS

Answer the multiple choice and true/false questions, complete the fill-in-the-blank sentences using the word bank, match definitions, and solve the crossword and word search puzzles. Apply your knowledge to server infrastructure.

WEB HOSTING & INFRASTRUCTURE (INTRODUCTION)

Web hosting provides the underlying server hardware, database storage, and network bandwidth required to make websites accessible online. Configuring firewalls, scaling resources, and implementing redundancy removes single points of failure.

READ EACH CHECKPOINT CAREFULLY AND SELECT OR WRITE THE CORRECT RESPONSE.

Checkpoint 1: Multiple Choice Challenge

1 What is dedicated hosting?

- ☐ A. Dedicated physical server leased to a single user
- ☐ B. Sharing a single server with thousands of other websites
- ☐ C. Hosting website assets on public cloud object storage only
- ☐ D. DNS record forwarding incoming email packets

2 Which metric tracks a server's operational runtime?

- ☐ A. Uptime
- ☐ B. Latency
- ☐ C. Throughput
- ☐ D. Packet Loss

3 What is the primary role of a relational database in web hosting?

- ☐ A. Storing dynamic content and tables securely
- ☐ B. Encrypting outbound network packet headers in transit
- ☐ C. Forwarding domain name lookups to regional root servers
- ☐ D. Scanning local file directories for signature-based malware

4 What is server redundancy?

- ☐ A. Deploying backup hardware to prevent failure
- ☐ B. Overwriting old log files to save disk storage space
- ☐ C. Moving dynamic pages into static memory cache
- ☐ D. Deleting unused administrative database user roles

5 What does bandwidth refer to in hosting agreements?

- ☐ A. Volume of data transferred to/from the server
- ☐ B. The physical width of the server rack in the data center
- ☐ C. The execution speed of the PHP scripting engine
- ☐ D. The number of database tables allowed in SQL databases

Checkpoint 2: True or False Challenge

6 Question 6

Shared hosting grants dedicated CPU and RAM resources.

☐

True

☐

False

7 Question 7

A 99% uptime allows over 80 hours of yearly downtime.

☐

True

☐

False

8 Question 8

Relational databases like MySQL use SQL to query dynamic tables.

☐

True

☐

False

9 Question 9

Firewalls at the server boundary block target ports.

☐

True

☐

False

10 Question 10

Bandwidth limits are always unlimited for all plans.

☐

True

☐

False

Checkpoint 3: Key Term Insertion

Read each sentence below and fill in the blank with the correct term from the Word Bank.

1. Measuring data transfer capacity allocated to an account is _____.
2. The hardware node hosting website files and operating systems is a _____.
3. Structured database queries store information in a relational _____.
4. Filtering incoming connection ports at the host boundary uses a _____.
5. Maintaining continuous server operation is measured as _____.
6. Preventing single points of failure requires hardware _____.

VOCABULARY WORD BANK

BANDWIDTH
UPTIME

SERVER
REDUNDANCY

DATABASE

FIREWALL

Write your answers here:

- | | | | |
|----|----------------------|----|----------------------|
| 1. | <input type="text"/> | 2. | <input type="text"/> |
| 3. | <input type="text"/> | 4. | <input type="text"/> |
| 5. | <input type="text"/> | 6. | <input type="text"/> |

Checkpoint 4: Web Hosting Concept Match

DEFINITION MATCHING

Match each vocabulary term on the left with its correct definition on the right by writing the corresponding letter (A-H) in the fillable input box.

BANDWIDTH

A Data transfer capacity.

SERVER

B Physical hosting hardware.

DATABASE

C Relational data storage.

FIREWALL

D Port filtering boundary.

UPTIME

E Operational online status.

DOMAINS

F Registered web addresses.

SECURITY

G Host access protection.

REDUNDANCY

H Duplicate failover hardware.

Checkpoint 5: Crossword Puzzle

Solve the crossword puzzle by typing letters into the active white boxes. The numbers correspond to the clues below.



ACROSS

1. Process of wrapping data packets inside other packets (9)
4. Remote server that routes traffic and hides your IP (6)
8. Internet Service Provider, logs traffic unless encrypted (3)

DOWN

2. Rules determining how data is sent and encrypted (8)
3. Rate of data transfer across a path (9)
5. Blocking site access based on location (8)
6. Security system that monitors and blocks traffic (8)
7. State of being free from tracking or surveillance (7)

Checkpoint 5 Alternative: Accessible Crossword Clues

Screen-reader and keyboard users can type the crossword answers directly in the text fields below.

ACROSS CLUES

1 Across: Data transfer capacity allocated to a hosting account. (9 letters):

4 Across: Physical hardware hosting website files and data. (6 letters):

8 Across: Structured storage holding website dynamic content. (8 letters):

DOWN CLUES

2 Down: Boundary filter protecting server port transit. (8 letters):

3 Down: Measure of server operational availability percentage. (6 letters):

5 Down: Custom names registered to route web traffic. (7 letters):

6 Down: Server protection protocols and access rules. (8 letters):

7 Down: Duplicate hardware preventing single point failure. (10 letters):

Checkpoint 6: Hidden Word Search

Find the 8 key vocabulary terms hidden in the grid below. Words can be horizontal, vertical, or diagonal.

H	E	W	I	B	B	X	A	G	Z	J	U	X	Z	P
M	R	I	M	S	K	T	F	W	T	B	R	U	X	M
Y	D	E	T	P	E	U	S	Z	W	J	D	O	X	X
B	G	H	D	Q	A	C	S	E	R	V	E	R	E	Y
D	Q	G	P	U	Y	P	U	Z	R	B	S	R	H	N
C	O	Z	G	P	N	J	H	R	Q	Y	E	A	B	P
M	Q	M	L	F	A	D	L	B	I	P	F	F	R	A
D	N	V	A	L	I	W	A	A	T	T	F	C	T	Q
U	A	Z	V	I	S	R	T	N	U	W	Y	W	M	H
Q	I	T	X	W	N	E	E	D	C	P	W	T	P	H
N	V	C	A	O	S	S	A	W	G	Y	T	J	N	P
K	R	O	H	B	E	L	V	I	A	H	I	I	C	I
G	O	Y	C	X	A	S	Y	D	U	L	T	U	M	X
Y	Z	L	N	O	S	S	L	T	G	W	L	Q	X	E
J	R	E	W	A	I	C	E	H	V	W	X	N	S	L

VOCABULARY WORD LIST

BANDWIDTH

UPTIME

SERVER

DOMAINS

DATABASE

SECURITY

FIREWALL

REDUNDANCY

Checkpoint 6 Alternative: Accessible Vocabulary Matching

Match each of the 8 vocabulary terms from the Word Search to its correct definition by writing the letter (A-H) in the blank space.

VOCABULARY TERMS

- A. BANDWIDTH
- B. SERVER
- C. DATABASE
- D. FIREWALL
- E. UPTIME
- F. DOMAINS
- G. SECURITY
- H. REDUNDANCY

DEFINITIONS & MATCH FIELDS

- 1. Data transfer capacity.
- 2. Physical hosting hardware.
- 3. Relational data storage.
- 4. Port filtering boundary.
- 5. Operational online status.
- 6. Registered web addresses.
- 7. Host access protection.
- 8. Duplicate failover hardware.

Checkpoint 7: Scrambled Word Challenge

Unscramble the letters below to reveal key web hosting concepts and terms. Write your answers in the input boxes provided.

1. H T D I W D N A B

5. E M I T P U

2. R E V R E S

6. S N I A M O D

3. E S A B A T A D

7. Y T I R U C E S

4. L L A W E R I F

8. Y C N A D N U D E R

Checkpoint 8: Web Hosting Case Studies

Apply the concepts you have learned to solve the real-world scenarios below.



CASE STUDY 1: MIGRATING FROM SHARED TO VPS HOSTING

Scenario: A growing e-commerce store experiences frequent database crashes and CPU spikes during holiday sales due to shared hosting resource limitations.

Discussion Question: Analyze shared hosting drawbacks, and propose a VPS migration strategy.



CASE STUDY 2: DESIGNING DATA CENTER REDUNDANCY ARCHITECTURE

Scenario: An enterprise web system fails completely when a single power supply unit fails in the data center, causing hours of customer checkout downtime.

Discussion Question: Establish technical and hardware architectures to remove single points of failure.

Final Challenge: Decrypting the Cipher

A web hosting administrator manages server infrastructure and scaling. Use the Letter-to-Number key below to decrypt the web hosting message by writing the matching letters in the blank spaces.

LETTER-TO-NUMBER ENCRYPTION KEY

A=1	B=2	C=3	D=4	E=5	F=6	G=7	H=8	I=9	J=10	K=11	L=12	M=13
N=14	O=15	P=16	Q=17	R=18	S=19	T=20	U=21	V=22	W=23	X=24	Y=25	Z=26

Decoded cybersecurity message:

TIP: EACH NUMBER REPRESENTS THE POSITION OF THAT LETTER IN THE ALPHABET (E.G. 1 = A, 2 = B, 26 = Z).

Checkpoint 10: Basic Web Hosting FAQs (Part A)

Review the most common questions and answers regarding web hosting, servers, and cloud providers.

Q1: What is web hosting?

Web hosting is a service that allocates space on a physical server to store website files and make them accessible online.

Q2: How does shared hosting work?

Multiple websites share the resources (CPU, RAM, disk space) of a single server, making it cost-effective but limited.

Q3: What is a VPS?

A Virtual Private Server uses virtualization technology to split a single physical server into isolated private environments with dedicated resources.

Q4: What is dedicated hosting?

An entire physical server leased to a single client, giving them complete control over configuration and resource allocation.

Q5: What does server uptime mean?

Uptime is the percentage of time a server is active and accessible to users, with 99.9% being standard.

Checkpoint 10: Basic Web Hosting FAQs (Part B)

Review the most common questions and answers regarding web hosting, servers, and cloud providers.

Q6: How does data center redundancy work?

It uses duplicate components (power feeds, cooling, internet links) to keep servers running during hardware failures.

Q7: What is bandwidth?

The amount of data transfer allowed between your website and visitors' devices over a specified period.

Q8: What is MySQL?

MySQL is a popular open-source relational database management system used to store and retrieve dynamic web content.

Q9: How does SSL protect hosting?

Secure Sockets Layer encrypts the data moving between the user's browser and the hosting server, preventing sniffing.

Q10: What is a server firewall?

A security system that controls incoming and outgoing network traffic based on predefined rules, blocking unauthorized ports.

Checkpoint 11: Advanced Web Hosting FAQs (Part A)

Explore advanced technical aspects of server infrastructure, cloud scaling, database optimization, and WordPress caching.

Q1: How does virtualization work in VPS hosting?

A hypervisor layer (such as KVM or VMware) runs on bare metal, partitioning physical resources into isolated virtual machines.

Q2: Why is 99.9% uptime considered insufficient for enterprise platforms?

A 99.9% uptime allows up to 8.76 hours of downtime annually, which can cause significant revenue loss during peak traffic cycles.

Q3: What is database query optimization?

The process of indexing tables and structuring SQL commands to reduce the server execution time required to retrieve records.

Q4: How does SSD storage improve server response times?

Solid State Drives have significantly faster read/write speeds than traditional HDDs, reducing database wait times.

Q5: What is the purpose of load balancing?

Distributing network traffic across multiple back-end servers to prevent overload and ensure continuous availability.

Checkpoint 11: Advanced Web Hosting FAQs (Part B)

Explore advanced technical aspects of server infrastructure, cloud scaling, database optimization, and WordPress caching.

Q6: What is a reverse proxy?

A gateway server (like NGINX) placed in front of web servers to handle client requests, manage SSL encryption, and cache content.

Q7: How does BGP failover work?

Border Gateway Protocol routing automatically switches network traffic to alternate data paths if a primary connection goes down.

Q8: What is DDoS mitigation in hosting?

Using edge networks and traffic scrubbers to absorb and filter out malicious request floods before they reach origin servers.

Q9: How does SSH protect server administration?

Secure Shell uses cryptographic public-private key pairs to secure remote command-line administration sessions.

Q10: What is RAID storage configuration?

Redundant Array of Independent Disks configuration combines multiple hard drives to provide data duplication and performance enhancements.

Part 11: 10 Real-World Web Hosting Facts & Insights

Review real-world facts regarding cloud architectures, server response times, uptime metrics, and hosting compliance.

1. HOSTING INSIGHT

Shared hosting accounts for over 60% of active website hosting setups globally due to lower costs.

2. HOSTING INSIGHT

An uptime of 99.999% allows exactly 5.26 minutes of total unplanned downtime per year.

3. HOSTING INSIGHT

Managed hosting providers handle security patching, backups, and operating system updates automatically.

4. HOSTING INSIGHT

Solid State Drives (SSDs) read data up to 20 times faster than mechanical Hard Disk Drives (HDDs).

5. HOSTING INSIGHT

DDoS attacks targeting hosting providers represent over 30% of global internet traffic security incidents.

6. HOSTING INSIGHT

Server cooling systems consume up to 40% of the total electricity required to run modern data centers.

7. HOSTING INSIGHT

SSH key authentication is cryptographically immune to standard brute-force password attacks.

8. HOSTING INSIGHT

Relational databases structure dynamic content into structured tables linked by primary and foreign keys.

9. HOSTING INSIGHT

Over 90% of modern web servers run on Linux-based operating systems due to stability and custom tools.

10. HOSTING INSIGHT

RAID 10 configurations combine disk mirroring and striping to deliver both data safety and speed.

Technical References & Sources

The study guide and interactive puzzles are compiled from global W3C HTTP, IETF RFC, PHP, Apache, NGINX, MySQL, and WordPress core standards.

SCHOLARLY & INDUSTRY REFERENCES

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- [9] NGINX. (2025). NGINX Web Server Administration Guide. Retrieved from <https://nginx.org/en/docs/>
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Answer Key: Checkpoint 1 - Multiple Choice

1 Dedicated Hosting

HOSTING TYPES

Correct Answer: A

TEACHING NOTE

Dedicated hosting provides exclusive physical server resources to a single client, ensuring maximum performance.

Citation: W3C Protocols [Ref 1].

2 Server Uptime

UPTIME

Correct Answer: A

TEACHING NOTE

Uptime measures the availability percentage of the server, indicating reliable operation and accessibility.

Citation: W3C Protocols [Ref 1].

3 Relational Database

DATABASE

Correct Answer: A

TEACHING NOTE

Relational databases store dynamic tables, schemas, and credentials to serve dynamic content queries.

Citation: MySQL Reference [Ref 10].

4 Server Redundancy

REDUNDANCY

Correct Answer: A

TEACHING NOTE

Deploying duplicate hardware components prevents single points of failure and minimizes downtime.

Citation: Apache Docs [Ref 8].

5 Network Bandwidth

BANDWIDTH

Correct Answer: A

TEACHING NOTE

Bandwidth limits define the volume of data that can be transferred between visitors and the host server monthly.

Citation: IETF RFC 2616 [Ref 2].

Answer Key: Checkpoint 2 - True or False

6 Confidential NDAs

NDAS

Correct Answer: False

TEACHING NOTE

Professional domain brokers operate under non-disclosure agreements to protect buyer corporate strategy.

Citation: CIS Controls [Ref 8].

7 Escrow Delivery

ESCROW

Correct Answer: True

TEACHING NOTE

Escrow holding accounts disburse funds only after full domain ownership transfer is verified by the buyer.

Citation: Escrow.com Protocol [Ref 7].

8 Digital Real Estate

ASSETS

Correct Answer: True

TEACHING NOTE

Short 2-letter and 3-letter .com domains function as high-value, liquid digital property assets.

Citation: NIST Guidelines [Ref 9].

9 Stealth Negotiation

STRATEGY

Correct Answer: True

TEACHING NOTE

Direct corporate buyer outreach often causes sellers to inflate asking prices significantly.

Citation: WIPO UDRP Guide [Ref 3].

10 EPP Authorization

EPP CODE

Correct Answer: False

TEACHING NOTE

EPP codes are unique security passcodes generated by registrars to authorize domain transfers.

Citation: IETF RFC 5730 [Ref 4].

Vocabulary Keys & Grading Rubric

Instructor Grading Rubric: Award 1 point for each correct matching (8 points total) and context term (6 points total).

CHECKPOINT 4: CONCEPT MATCH KEY

A BANDWIDTH

B SERVER

C DATABASE

D FIREWALL

E UPTIME

F DOMAINS

G SECURITY

H REDUNDANCY

CHECKPOINT 3: KEY TERM KEY

1 BANDWIDTH

2 SERVER

3 DATABASE

4 FIREWALL

5 UPTIME

6 REDUNDANCY

DISCUSSION NOTES FOR INSTRUCTORS

Valuation Accuracy:

Verify that students understand how domain length, extension (.com, .ai), and commercial search volume drive appraisal pricing.

Escrow Security:

Emphasize that funds are held in licensed third-party holding accounts prior to domain WHOIS transfer verification.

Stealth Representation:

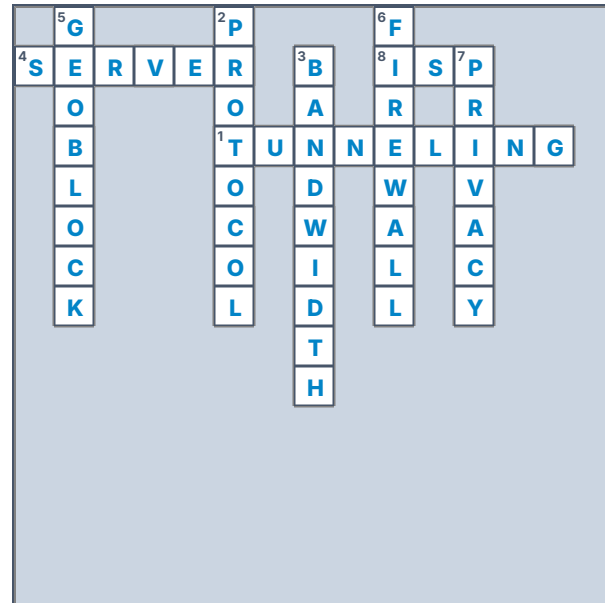
Highlight the role of NDAs and third-party representation in preventing speculative price gouging during corporate procurement.

Puzzles Keys & Instructor Notes

WORD SEARCH SOLUTION

H	E	W	I	B	B	X	A	G	Z	J	U	X	Z	P
M	R	I	M	S	K	T	F	W	T	B	R	U	X	M
Y	D	E	T	P	E	U	S	Z	W	J	D	O	X	X
B	G	H	D	Q	A	C	S	E	R	V	E	R	E	Y
D	Q	G	P	U	Y	P	U	Z	R	B	S	R	H	N
C	O	Z	G	P	N	J	H	R	Q	Y	E	A	B	P
M	Q	M	L	F	A	D	L	B	I	P	F	F	R	A
D	N	V	A	L	I	W	A	A	T	T	F	C	T	Q
U	A	Z	V	I	S	R	T	N	U	W	Y	W	M	H
Q	I	T	X	W	N	E	E	D	C	P	W	T	P	H
N	V	C	A	O	S	S	A	W	G	Y	T	J	N	P
K	R	O	H	B	E	L	V	I	A	H	I	I	C	I
G	O	Y	C	X	A	S	Y	D	U	L	T	U	M	X
Y	Z	L	N	O	S	S	L	T	G	W	L	Q	X	E
J	R	E	W	A	I	C	E	H	V	W	X	N	S	L

CROSSWORD SOLUTION



INSTRUCTOR GUIDE FOR CROSSWORD SOLUTIONS

ACROSS CLUES

- 1 Across:** **TUNNELING** Process of wrapping data packets. (3, 5)
- 4 Across:** **SERVER** Remote computer routing traffic. (1, 0)
- 8 Across:** **ISP** Internet Service Provider. (1, 9)

DOWN CLUES

- 2 Down:** **PROTOCOL** Rules determining data transmission. (0, 5)
- 3 Down:** **BANDWIDTH** Rate of data transfer. (1, 7)
- 5 Down:** **GEOBLOCK** Location website restriction. (0, 1)
- 6 Down:** **FIREWALL** Security monitor barrier. (0, 9)
- 7 Down:** **PRIVACY** State of freedom from tracking. (1, 11)

Scrambled Words & Cipher Solution Key

Grading key for the vocabulary word unscramble activity and Secret Cipher Challenge.

WORD UNSCRAMBLE KEY

1. H T D I W D N A B

BANDWIDTH

5. E M I T P U

UPTIME

2. R E V R E S

SERVER

6. S N I A M O D

DOMAINS

3. E S A B A T A D

DATABASE

7. Y T I R U C E S

SECURITY

4. L L A W E R I F

FIREWALL

8. Y C N A D N U D E R

REDUNDANCY

SECRET CIPHER CHALLENGE KEY

"SECURE WEB HOSTING REQUIRES HIGH UPTIME METRICS"

Domain Brokerage Case Studies Solution Key

A Case Study 1: Migrating from Shared to VPS Hosting

[Instructor Solution](#)

GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** A growing e-commerce store experiences frequent database crashes and CPU spikes during holiday sales due to shared hosting resource limitations.
- **Recommended Strategy & Solution:** Shared hosting lacks dedicated resource limits and suffers from noisy neighbor issues. Migrating to a Virtual Private Server (VPS) reserves dedicated CPU and RAM, providing isolated container security and custom server configs.

B Case Study 2: Designing Data Center Redundancy Architecture

[Instructor Solution](#)

GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** An enterprise web system fails completely when a single power supply unit fails in the data center, causing hours of customer checkout downtime.
- **Recommended Strategy & Solution:** Deploy dual, hot-swappable power supply units connected to independent power grids. Implement redundant database replication nodes and network route failovers using BGP protocols.