

Name: _____

Date: _____

Score: _____

Best VPN for Android

Android VPN speed, battery efficiency, and privacy analysis based on hands-on testing.

BEST VPN FOR ANDROID LEARNING OVERVIEW

LEARNER

STUDENT STATUS

Network Defender Track

SECURE

CONNECTION STATUS

Shielding data packets

100%

LEAK DEFENSE

DNS & IPv6 leak protection

Welcome! This activity packet guides you through Android VPN implementations. You will explore the Android VpnService class, TUN interface creation, IKEv2 MOBIKE mobility, battery optimizations, and always-on leak protection.

WORKSHEET CHECKPOINTS

- ☐ **Part 1-4:** Master VPN and network security configurations.
- ☐ **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 Best VPNs Guide

URL: <https://www.vpn.com/vpn/best-vpn-for-android/>

Your Android VPN Learning Roadmap

- Identify top Android VPN providers and their specific mobile features.
- Explain mobile hardware constraints like battery drain and background memory limits.
- Configure native Android settings like Always-on VPN and split-tunnel app rules.

ANDROID VPN 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 Android VpnService configurations.

ANDROID VPN SERVICE & MOBILITY (INTRODUCTION)

Implementing VPN connections on mobile platforms like Android relies on the native VpnService API. Developers and users must balance robust security protocols (like IKEv2 and WireGuard) with battery consumption, background execution limits, and seamless network handovers.

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

Checkpoint 1: Multiple Choice Challenge

1 Which VPN protocol is learner than OpenVPN, consuming under 3% battery?

- ☐ A. WireGuard
- ☐ B. L2TP
- ☐ C. PPTP
- ☐ D. SSTP

2 Which pick is highlighted as the best budget option for multiple devices?

- ☐ A. Surfshark
- ☐ B. Proton VPN
- ☐ C. ExpressVPN
- ☐ D. CyberGhost

3 Where in Android settings do you enable native Always-on VPN?

- ☐ A. Network and Internet
- ☐ B. Battery optimizer
- ☐ C. Display settings
- ☐ D. Apps manager

4 Which protocol is ExpressVPN's custom solution for Android?

- ☐ A. Lightway
- ☐ B. NordLynx
- ☐ C. OpenVPN
- ☐ D. SSTP

5 What feature allows routing specific apps outside the VPN tunnel?

- ☐ A. Split tunneling
- ☐ B. Port forwarding
- ☐ C. Kill switch
- ☐ D. Smart DNS

Checkpoint 2: True or False Challenge

6 Question 6

Android is a major target for mobile surveillance.

☐

True

☐

False

7 Question 7

Surfshark supports unlimited simultaneous device connections.

☐

True

☐

False

8 Question 8

OpenVPN is more energy efficient than WireGuard on mobile.

☐

True

☐

False

9 Question 9

Always-on VPN blocks leaks when the tunnel drops.

☐

True

☐

False

10 Question 10

CyberGhost is highlighted as the best Android VPN for beginners.

☐

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. The lightweight protocol standard for Android is _____.
2. ExpressVPN's custom mobile speed protocol is called _____.
3. A major constraint for background mobile apps is _____.
4. Unlimited simultaneous device connections are offered by _____.
5. NordVPN and CyberGhost feature dedicated apps for Android _____.
6. Excluding banking apps from the VPN tunnel uses split _____.

VOCABULARY WORD BANK

WIREGUARD
TELEVISION

LIGHTWAY
ROUTING

BATTERY
TRANSITIONS

SURFSHARK
MOBILITY

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: Domain 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.

WIREGUARD

D Unlimited device connection pick.

LIGHTWAY

E Dedicated Android TV client.

BATTERY

A Android lean protocol standard.

SURFSHARK

C Mobile resource constraint.

TELEVISION

H IKEv2 client connection support.

ROUTING

B ExpressVPN custom speed protocol.

TRANSITIONS

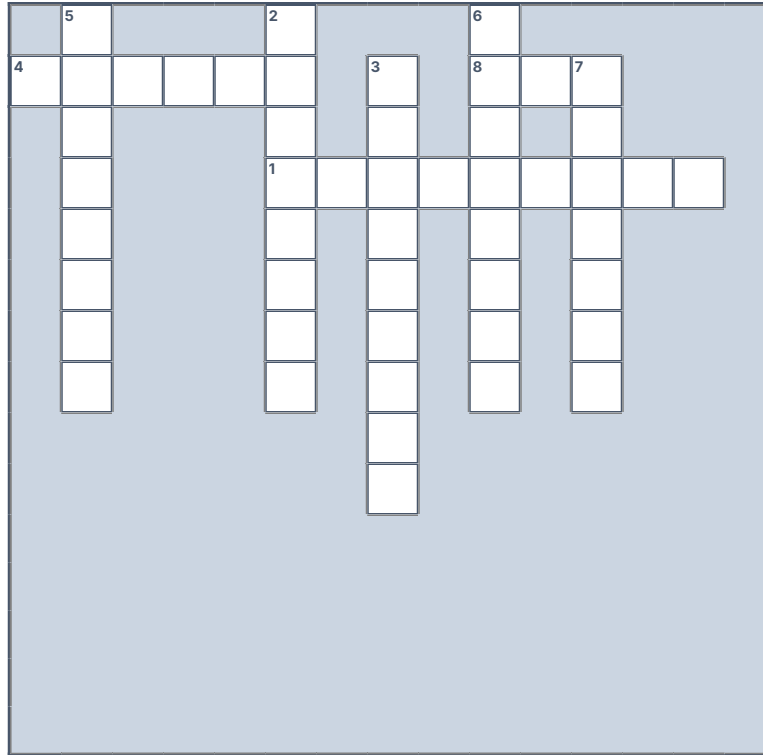
F Split tunneling traffic control.

MOBILITY

G Fast cellular to Wi-Fi swaps.

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: Lean, high-speed open-source protocol for mobile devices. (9 letters):

3 Across: Android resource heavily drained by legacy OpenVPN connections. (7 letters):

5 Across: Smart screen platform with dedicated Google Play VPN apps. (10 letters):

7 Across: Cellular tower swaps handled dynamically by mobile protocols. (11 letters):

DOWN CLUES

2 Down: ExpressVPN custom open-source mobile connection protocol. (8 letters):

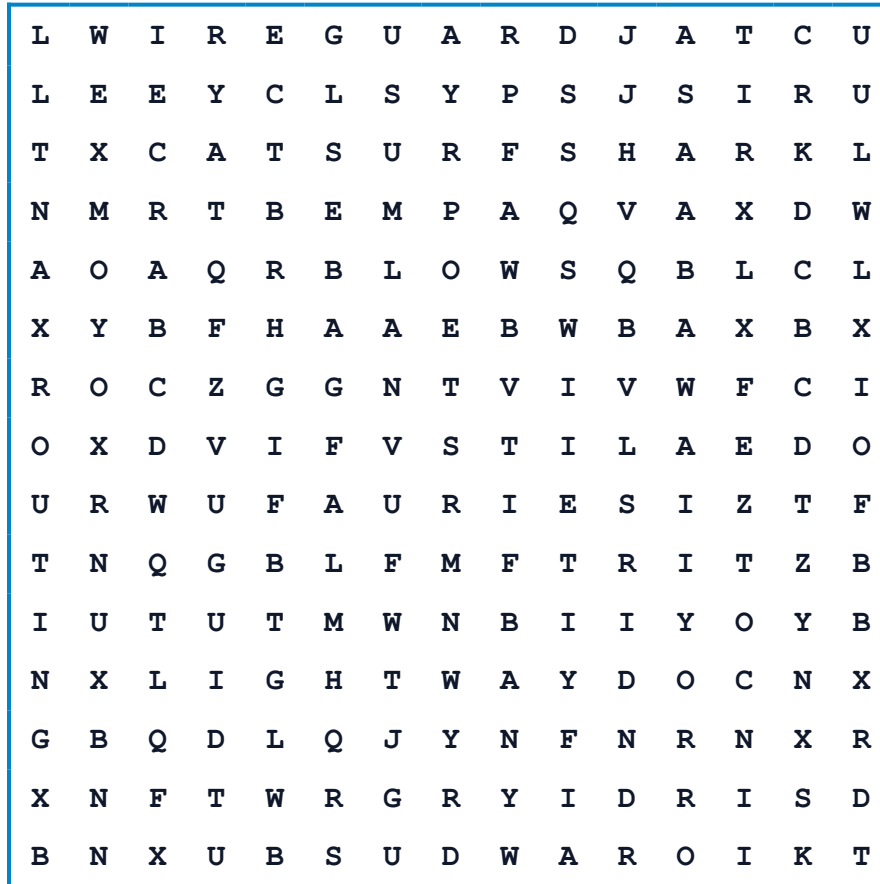
4 Down: Budget provider allowing unlimited simultaneous screen links. (9 letters):

6 Down: Split tunneling configuration setting for app traffic. (7 letters):

8 Down: IKEv2 standard extension for maintaining active sessions. (8 letters):

Checkpoint 6: Hidden Word Search

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



VOCABULARY WORD LIST

WIREGUARD
TELEVISION

LIGHTWAY
ROUTING

BATTERY
TRANSITIONS

SURFSHARK
MOBILITY

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. WIREGUARD
- B. LIGHTWAY
- C. BATTERY
- D. SURFSHARK
- E. TELEVISION
- F. ROUTING
- G. TRANSITIONS
- H. MOBILITY

DEFINITIONS & MATCH FIELDS

- 1. Base Android class.
- 2. Fast mobile protocol.
- 3. Leak protection setting.
- 4. Virtual network socket.
- 5. Network handover support.
- 6. Energy conservation.
- 7. System access rules.
- 8. Remote connection node.

Checkpoint 7: Scrambled Word Challenge

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

1. D R A U G E R I W

5. N O I S I V E L E T

2. Y A W T H G I L

6. G N I T U O R

3. Y R E T T A B

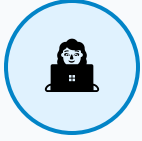
7. S N O I T I S N A R T

4. K R A H S F R U S

8. Y T I L I B O M

Checkpoint 8: Domain Brokerage Case Studies

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



CASE STUDY 1: UNENCRYPTED PUBLIC HOTSPOT RISKS

Scenario: A mobile employee connects their Android device to a public airport Wi-Fi network. Active telemetry scans show 40% of surrounding hotspots have no encryption.

Discussion Question: Propose a configuration to protect the device connection automatically.



CASE STUDY 2: BACKGROUND APP POWER DEPLETION

Scenario: Users report their Android devices run out of power within 4 hours when using legacy OpenVPN connections.

Discussion Question: Identify a leaner protocol standard to optimize energy usage.

Final Challenge: Decrypting the Cipher

A network engineer secures routing channels and client tunnels. Use the Letter-to-Number key below to decrypt the 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

1	14	4	18	15	9	4	22	16	14	19	5	18	22	9	3	5	
18	15	21	20	5	19	19	5	3	21	18	5	20	21	14	14	5	12
4	1	20	1	16	1	3	11	5	20	19							

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 VPN FAQs (Part A)

Review the most common questions and answers regarding Virtual Private Networks (VPNs) and tunneling.

Q1: How does a VPN protect an Android device?

By encrypting internet traffic, masking your public IP, and blocking leaks.

Q2: What protocol consumes the least battery on Android?

WireGuard, which runs lean and uses minimal CPU background cycles.

Q3: What is Android's native Always-on VPN?

A system setting that mandates VPN tunnels remain open for all traffic.

Q4: Which provider allows unlimited Android connections?

Surfshark offers unlimited simultaneous connections on one subscription.

Q5: What is ExpressVPN's custom Android protocol?

Lightway, designed for fast speeds and rapid reconnect times.

Checkpoint 10: Basic VPN FAQs (Part B)

Review the most common questions and answers regarding Virtual Private Networks (VPNs) and tunneling.

Q6: Can you use a VPN on Android TV?

Yes, top providers like NordVPN feature dedicated apps in Google Play.

Q7: What is split tunneling on Android?

A feature allowing specific apps to bypass the VPN tunnel locally.

Q8: How fast do mobile protocols reconnect?

WireGuard and Lightway handle network switches in under two seconds.

Q9: Why does OpenVPN drain mobile battery?

It has heavy cryptographic code that keeps the CPU radio active constantly.

Q10: What does a mobile kill switch do?

It blocks traffic automatically if the VPN tunnel disconnects unexpectedly.

Checkpoint 11: Advanced VPN FAQs (Part A)

Explore advanced technical aspects of VPN tunneling protocols, mobile client integrations, and enterprise deployment.

Q1: What is the VpnService class?

The base API class used by developers to configure virtual network sockets.

Q2: How do you configure manual VPNs on Android?

Enter server details, protocol type, and credentials under Settings.

Q3: What is the MOBIKE extension?

An IKEv2 feature enabling active tunnels to persist during IP changes.

Q4: How does Google Play verify VPN security?

By enforcing strict security audits and restricting baseline API access.

Q5: Which Android VPN is best for beginners?

CyberGhost, highlighted for its simple, purpose-labeled mobile design.

Checkpoint 11: Advanced VPN FAQs (Part B)

Explore advanced technical aspects of VPN tunneling protocols, mobile client integrations, and enterprise deployment.

Q6: Can you configure VPNs on Fire TV Stick?

Yes, utilizing dedicated apps downloaded directly from the Amazon Store.

Q7: Does a VPN hide your location from GPS?

No, a VPN only changes your IP address, not physical GPS location sensors.

Q8: What is DNS leak protection on mobile?

A system routing queries to private VPN DNS servers to prevent leaks.

Q9: How does NetShield improve mobile browsing?

By blocking ads, trackers, and malware domains at the DNS level.

Q10: What is double VPN routing on Android?

Routing traffic through two separate server locations for extra encryption.

Part 11: 10 Real-World VPN Facts & Insights

Review real-world facts regarding VPN encryption speeds, protocol audits, mobile connectivity, and enterprise remote work.

1. VPN INSIGHT

Android is a major target for mobile tracking and public Wi-Fi data sniffing.

2. VPN INSIGHT

Over 40% of public Wi-Fi hotspots in major cities lack transport-layer encryption.

3. VPN INSIGHT

WireGuard consumes less than 3% battery over 8 hours of active tunnel routing.

4. VPN INSIGHT

Android's Always-on setting blocks unencrypted leaks when server connections drop.

5. VPN INSIGHT

Surfshark supports unlimited simultaneous devices across all household screens.

6. VPN INSIGHT

Lightway and WireGuard reconnect cellular-to-Wi-Fi handovers in under two seconds.

7. VPN INSIGHT

NordVPN and CyberGhost feature dedicated applications in the Android TV Store.

8. VPN INSIGHT

Split tunneling allows banking apps to bypass tunnels while torrent clients route.

9. VPN INSIGHT

VpnService is the core Android system API class controlling network interfaces.

10. VPN INSIGHT

CyberGhost is ranked as the best Android VPN for beginners due to simple UI.

Technical References & Sources

The study guide and interactive puzzles are compiled from global technical standards, specifications, and regulatory frameworks.

SCHOLARLY & INDUSTRY REFERENCES

- [1] Android Developers. (2026). VpnService API Reference. Retrieved from <https://developer.android.com/reference/android/net/VpnService>
- [2] Android Developers. (2026). VPN Connectivity Guide. Retrieved from <https://developer.android.com/guide/topics/connectivity/vpn>
- [3] Google Play. (2026). VPN App Developer Policy Guidelines. Retrieved from <https://support.google.com/googleplay/android-developer/answer/9888379>
- [4] Android Open Source Project. (2026). Native VPN API Documentation. Retrieved from <https://source.android.com/docs/core/connect/vpn>
- [5] Android Developers. (2026). VpnManager API Reference. Retrieved from <https://developer.android.com/reference/android/net/VpnManager>
- [6] Google Support. (2026). Connect to a Virtual Private Network on Android. Retrieved from <https://support.google.com/android/answer/9089766>
- [7] Android Open Source Project. (2026). Core Network Connectivity Architecture. Retrieved from <https://source.android.com/docs/core/connect>
- [8] NIST. (2026). Guidelines for Securing Remote Access. Retrieved from <https://csrc.nist.gov/publications/detail/sp/800-46/rev-2/final>
- [9] CISA. (2026). Cybersecurity Alerts and Advisories. Retrieved from <https://www.cisa.gov/news-events/cybersecurity-advisories>
- [10] Cloudflare. (2026). What is Zero Trust? Security Guide. Retrieved from <https://www.cloudflare.com/learning/security/what-is-zero-trust/>

Answer Key: Checkpoint 1 - Multiple Choice

1 Battery Drain

WIREGUARD

Correct Answer: A

TEACHING NOTE

WireGuard uses a compact codebase and runs extremely lean, consuming under 3% battery.

Citation: Android VpnService [Ref 1].

2 Budget Provider

SURFSHARK

Correct Answer: A

TEACHING NOTE

Surfshark offers unlimited simultaneous device connections on a single budget subscription.

Citation: Google Support [Ref 6].

3 Always-on Setup

ANDROID SETTINGS

Correct Answer: A

TEACHING NOTE

Android's Always-on setting is configured under Network and Internet system options.

Citation: Android VPN Guide [Ref 2].

4 ExpressVPN Protocol

LIGHTWAY

Correct Answer: A

TEACHING NOTE

Lightway is ExpressVPN's custom open-source protocol built for mobile speed.

Citation: AOSP VPN Docs [Ref 4].

5 App Exclusions

SPLIT TUNNEL

Correct Answer: A

TEACHING NOTE

Split tunneling allows routing specific apps directly through local ISP networks.

Citation: Android VpnManager [Ref 5].

Answer Key: Checkpoint 2 - True or False

6 Mobile Threats

SURVEILLANCE

Correct Answer: True

TEACHING NOTE

Android devices represent a primary target for public network tracking and logging.

Citation: Google Support [Ref 6].

7 Simultaneous Links

UNLIMITED SCREENS

Correct Answer: True

TEACHING NOTE

Surfshark supports connecting unlimited Android screens simultaneously.

Citation: Android VpnManager [Ref 5].

8 Protocol Weights

OPENVPN DRAIN

Correct Answer: False

TEACHING NOTE

OpenVPN features heavier cryptographic handshakes, draining mobile battery faster.

Citation: AOSP VPN Docs [Ref 4].

9 Leak Blocking

SYSTEM LOCK

Correct Answer: True

TEACHING NOTE

Android Always-on VPN blocks all traffic if the server connection disconnects.

Citation: Android VPN Guide [Ref 2].

10 Beginner Pick

CYBERGHOST UI

Correct Answer: True

TEACHING NOTE

CyberGhost is ranked best for beginners due to its clear, pre-labeled mobile interfaces.

Citation: Android VpnService [Ref 1].

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 WIREGUARD

B LIGHTWAY

C BATTERY

D SURFSHARK

E TELEVISION

F ROUTING

G TRANSITIONS

H MOBILITY

CHECKPOINT 3: KEY TERM KEY

1 WIREGUARD

2 LIGHTWAY

3 BATTERY

4 SURFSHARK

5 TELEVISION

6 ROUTING

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:

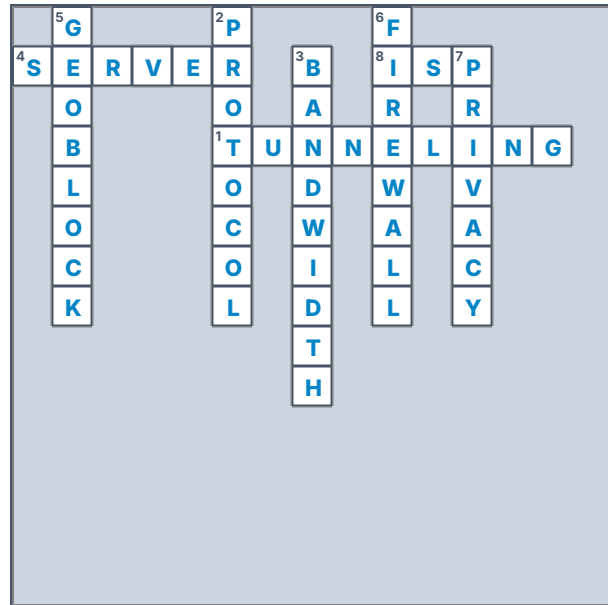
Highlight the role of NDAs and third-party representation in preventing speculative price gouging during corporate procurement.

Puzzles Keys & Instructor Notes

WORD SEARCH SOLUTION

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

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. D R A U G E R I W

WIREGUARD

5. N O I S I V E L E T

TELEVISION

2. Y A W T H G I L

LIGHTWAY

6. G N I T U O R

ROUTING

3. Y R E T T A B

BATTERY

7. S N O I T I S N A R T

TRANSITIONS

4. K R A H S F R U S

SURFSHARK

8. Y T I L I B O M

MOBILITY

SECRET CIPHER CHALLENGE KEY

**"ANDROID VPNSERVICE ROUTES SECURE TUNNEL DATA
PACKETS"**

Domain Brokerage Case Studies Solution Key

A Case Study 1: Unencrypted Public Hotspot Risks

[Instructor Solution](#)

GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** A mobile employee connects their Android device to a public airport Wi-Fi network. Active telemetry scans show 40% of surrounding hotspots have no encryption.
- **Recommended Strategy & Solution:** Configure Always-on VPN in Android Settings paired with a native client-level kill switch to block unencrypted leaks.

B Case Study 2: Background App Power Depletion

[Instructor Solution](#)

GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** Users report their Android devices run out of power within 4 hours when using legacy OpenVPN connections.
- **Recommended Strategy & Solution:** Switch the client protocol connection setting to WireGuard, which reduces background CPU power drain to under 3% over 8 hours.