Name: _____ Date: _____ Score: _____

Proton VPN Review

Technical analysis of Geneva-headquartered Proton VPN, Secure Core multihop routing, NetShield DNS filters, open-source client audits, and Stealth protocol obfuscation.

PROTON VPN REVIEW 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 the technical review of Proton VPN. You will explore Secure Core multihop routing, NetShield DNS blocking, open-source client audits, and Stealth protocol obfuscation.

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/protonvpn/

Your Proton VPN Learning Roadmap

- Analyze the technical architecture and encryption standards of Proton VPN Review.
- Configure client settings to prevent IP, DNS, and WebRTC traffic leaks.
- Compare proprietary tunneling protocols against standard implementations.

PROTON VPN REVIEW 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 Secure Core nodes and NetShield blocks.

SECURE CORE NODES & OPEN-SOURCE CLIENT IMPLEMENTATIONS (INTRODUCTION)

Proton VPN is renowned for its Secure Core multihop routing and NetShield DNS content blocker. It maintains fully open-source, independently audited client applications operated under Geneva, Switzerland jurisdiction.

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

Checkpoint 1: Multiple Choice Challenge

1 **Which Proton feature routes traffic through secure countries?**

- ◯ A) Secure Core
- ◯ B) NetShield
- ◯ C) Stealth Tunnel
- ◯ D) VPN Accelerator

2 **What is the main function of Proton VPN's NetShield?**

- ◯ A) DNS-based Ad and Malware Blocker
- ◯ B) AES-256 Payload Encryption
- ◯ C) Dynamic IP Address Rotation
- ◯ D) Multi-port Forwarding Handler

3 **Which Proton protocol bypasses DPI via TLS handshakes?**

- ◯ A) Stealth Protocol
- ◯ B) WireGuard
- ◯ C) OpenVPN TCP
- ◯ D) L2TP/IPSec

4 **What is unique about Proton VPN client source code?**

- ◯ A) Fully open-source and publicly audited
- ◯ B) Proprietary closed-source binaries
- ◯ C) Leased from open-source repository templates
- ◯ D) Closed-source with government access portals

5 **How does Proton VPN Accelerator optimize speed?**

- ◯ A) Modifies TCP window size and splits processing
- ◯ B) Automatically switches to unencrypted HTTP
- ◯ C) Routes traffic through public web proxies
- ◯ D) Disables client firewall rules

Checkpoint 2: True or False Challenge

6 Question 6

Proton VPN's Secure Core technology routes user traffic through hardened physical servers situated in neutral, high-security jurisdictions first.

◯ True ◯ False

7 Question 7

NetShield functions by intercepting and blocking connection requests to tracker and malware domains at the DNS query stage.

◯ True ◯ False

8 Question 8

Proton VPN client source codes are kept strictly proprietary to prevent security vulnerability discovery.

◯ True ◯ False

9 Question 9

The Stealth protocol wraps VPN packets inside standard TLS encryption to make them indistinguishable from HTTPS traffic.

◯ True ◯ False

10 Question 10

Proton VPN operates under Panama laws and falls under 14-Eyes intelligence agreements.

◯ 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. To bypass advanced DPI firewalls, users can enable the custom _____ protocol in their client settings.

2. Proton VPN client apps are built as _____ code bases, allowing external auditing by researchers.

3. The dynamic DNS blocker that filters malicious domains is known as _____ protection.

4. To defend against network level correlation attacks, traffic is routed through _____ server nodes.

5. Outbound latency and packet loss are mitigated by the proprietary VPN _____ engine.

6. The legal headquarters of Proton AG is located in Geneva, _____ protecting account metadata.

VOCABULARY WORD BANK

Secure Core	NetShield	Stealth	Accelerator
Open Source	Switzerland	WireGuard	Kill Switch

Write your answers here:

1. **2.**

3. **4.**

5. **6.**

Checkpoint 4: VPN & Network Concept Match

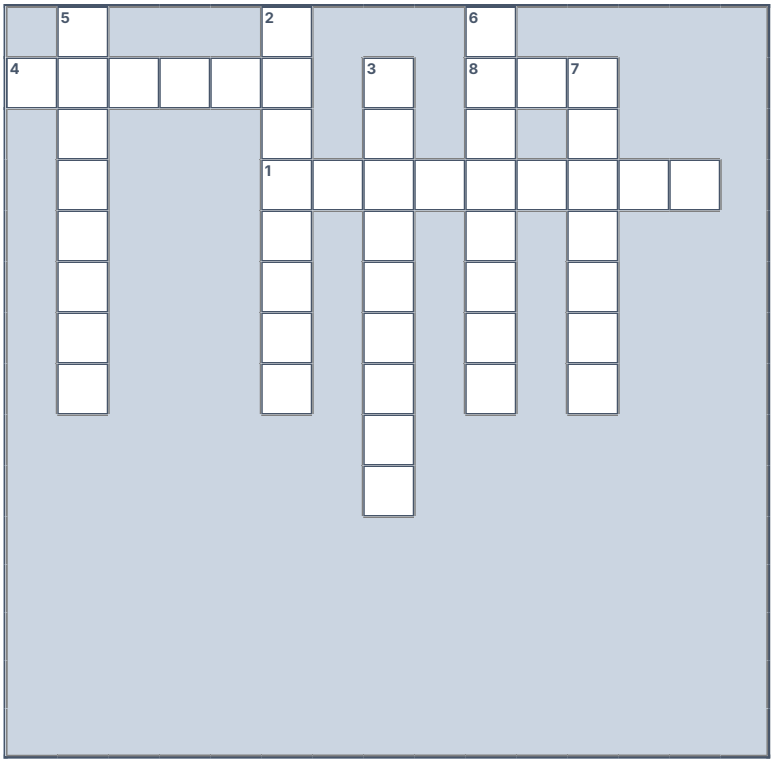
DEFINITION MATCHING

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.

____	**Secure Core**	**E**	Publicly readable application source code repository.
____	**NetShield**	**H**	Failsafe security filter cutting network traffic on drops.
____	**Stealth**	**A**	Multihop routing through high-security server nodes.
____	**Accelerator**	**G**	Modern high-speed open-source connection protocol.
____	**Open Source**	**B**	DNS-based ad, tracker, and malware blocker.
____	**Switzerland**	**C**	Custom obfuscated protocol designed to bypass DPI filters.
____	**WireGuard**	**D**	Performance optimization engine splitting CPU workloads.
____	**Kill Switch**	**F**	Central privacy jurisdiction based in Switzerland.

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: Multihop secure server routing feature. (10) (10 letters):

4 Across: DNS-based ad and malware filter. (9) (9 letters):

5 Across: Obfuscated tunnel protocol bypassing DPI. (7) (7 letters):

7 Across: Latency and speed optimization engine. (11) (11 letters):

DOWN CLUES

2 Down: Publicly readable reviewed source code. (10) (10 letters):

3 Down: Swiss headquarter jurisdiction country. (11) (11 letters):

6 Down: Modern lightweight tunneling protocol. (9) (9 letters):

8 Down: Failsafe network connection cutoff. (10) (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.

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

VOCABULARY WORD LIST

Secure Core	NetShield	Stealth	Accelerator
Open Source	Switzerland	WireGuard	Kill Switch

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. Secure Core
B. NetShield
C. Stealth
D. Accelerator
E. Open Source
F. Switzerland
G. WireGuard
H. Kill Switch

DEFINITIONS & MATCH FIELDS

_____ 1. Multihop routing through high-security server nodes.

_____ 2. DNS-based ad, tracker, and malware blocker.

_____ 3. Custom obfuscated protocol designed to bypass DPI filters.

_____ 4. Performance optimization engine splitting CPU workloads.

_____ 5. Publicly readable application source code repository.

_____ 6. Central privacy jurisdiction based in Switzerland.

_____ 7. Modern high-speed open-source connection protocol.

_____ 8. Failsafe security filter cutting network traffic on drops.

Checkpoint 7: Scrambled Word Challenge

Unscramble the letters below to reveal key Virtual Private Network (VPN) concepts and terms. Write your answers in the input boxes provided.

1. ECURECORES

2. ETSHIELDN

3. TEALTHS

4. CCELERATORA

5. PENSOURCEO

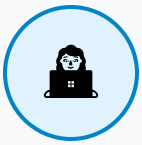
6. WITZERLANDS

7. IREGUARDW

8. ILLSWITCHK

Checkpoint 8: VPN & Network Case Studies

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



CASE STUDY 1: SECURE CORE DEFENSE

Scenario: A human rights activist in a restrictive country needs to upload documentation to a foreign press outlet. Fearing that their local ISP might monitor the exit node of the VPN, they route their traffic through Proton VPN's Secure Core server in Switzerland before going to the destination node.

Discussion Question: How does Secure Core prevent local authorities from tracing the user's IP at the exit node?

CASE STUDY 2: STEALTH PROTOCOL BYPASSING

Scenario: A university researcher traveling abroad finds that their student hostel blocks standard OpenVPN ports (1194) and WireGuard UDP connections. They activate Proton VPN's Stealth protocol on their Android client.

Discussion Question: What is the technical method the Stealth protocol uses to bypass firewall blocks?

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

16	18	15	20	15	14		22	16	14		19	5	18	22	5	18	19									
18	21	14		19	5	3	21	18	5		3	15	18	5												
3	8	1	14	14	5	12	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: What is Proton VPN's Secure Core feature?

Secure Core routes your traffic through multiple physical servers located in high-security, privacy-friendly countries (Switzerland, Iceland, or Sweden) before exiting to your final destination, protecting against network correlation attacks.

Q2: How does Proton VPN's NetShield work?

NetShield is a DNS filter that blocks DNS queries to known ad, tracker, and malware domains, preventing them from loading in your browser and saving bandwidth.

Q3: Are Proton VPN apps open-source?

Yes, all Proton VPN apps are fully open-source and their source code is published on GitHub, accompanied by independent professional audit reports.

Q4: What is the Proton VPN Accelerator?

Proton VPN Accelerator is a set of technologies that optimize network routing, TCP window sizes, and CPU processing to increase connection speeds by up to 400% on long-distance servers.

Q5: Under what jurisdiction does Proton VPN operate?

Proton VPN operates under the jurisdiction of Switzerland, governed by strict Swiss privacy laws, independent of the EU and US.

Checkpoint 10: Basic VPN FAQs (Part B)

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

Q6: What is Proton VPN's NetShield?

NetShield is a DNS-based content filter that blocks malware, tracking scripts, and advertisements, saving mobile bandwidth.

Q7: Does Proton VPN support Tor over VPN?

Yes, Proton VPN offers dedicated servers that automatically route all traffic through the Tor anonymity network, allowing access to onion sites without the Tor Browser.

Q8: How many devices can I connect to Proton VPN?

Proton VPN supports up to 10 concurrent device connections under standard premium plans.

Q9: Can I use Proton VPN for secure file sharing?

Yes, Proton VPN has dedicated P2P-optimized servers with high-speed bandwidth, designed for secure torrenting.

Q10: Does Proton VPN have a free tier?

Yes, Proton VPN offers a free version with unlimited bandwidth, but it restricts access to servers in a few countries and does not include NetShield or Secure Core.

Checkpoint 11: Advanced VPN FAQs (Part A)

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

Q1: How does the Stealth protocol differ from standard OpenVPN?

Unlike standard OpenVPN which operates on recognizable ports and headers, the Stealth protocol wraps traffic in a TLS cryptolayer on port 443. It removes typical VPN signatures to prevent DPI blocks in heavily censored countries.

Q2: Where are Secure Core server facilities physically located?

Secure Core servers are located in a fallout shelter in Geneva, Switzerland, a former military shelter in Iceland, and a secure datacenter in Sweden, all physically owned and operated directly by Proton AG.

Q3: Does Proton VPN support IPv6 leak protection?

Yes, Proton VPN features native IPv6 routing and leak protection, automatically blocking IPv6 traffic at the system level if it is not supported by the secure tunnel to prevent data exposure.

Q4: How does NetShield differentiate between ads and malware domains?

NetShield matches outgoing DNS requests against known domain blacklists. Level 1 blocks malware, while Level 2 blocks malware, tracking pixels, and advertising networks.

Q5: How does the VPN Accelerator optimize TCP window scaling?

It modifies the standard Linux TCP kernel parameters on Proton servers, allowing dynamic window scaling and parallelized connection processing to reduce latency and speed drops on high-distance nodes.

Checkpoint 11: Advanced VPN FAQs (Part B)

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

Q6: How does the Secure Core network resist physical server tampering?

Secure Core servers are housed in proprietary high-security racks in neutral countries. The server operating system is loaded into volatile RAM, and the hardware is monitored to prevent offline modifications.

Q7: What is the cryptographic foundation of Proton's NetShield lists?

NetShield resolves DNS requests against blocklists compiled from vetted threat intelligence databases, intercepting queries at the local DNS daemon.

Q8: How does the VPN Accelerator optimize CPU core utilization?

The Accelerator splits connection handling across multiple CPU cores instead of a single thread, reducing processing bottlenecks on high-speed servers.

Q9: What is the obfuscation mechanism used by the Stealth protocol?

Stealth wraps standard wire-format packets in a TLS tunnel and uses custom packet size padding, removing entropy signatures that deep packet inspection firewalls use to detect VPNs.

Q10: How does Proton VPN ensure zero-leak DNS routing on Linux systems?

The client uses systemd-resolved and iptables rules to capture all outbound port 53 queries, routing them through the local VPN tunnel interface.

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

Proton VPN is developed by Proton AG, the Swiss company founded by scientists who met at CERN in Geneva.

2. VPN INSIGHT

The provider owns and hosts Secure Core servers in high-security underground datacenters in Switzerland, Iceland, and Sweden.

3. VPN INSIGHT

Proton VPN client source codes are fully open-source and publicly hosted on GitHub for third-party auditing.

4. VPN INSIGHT

NetShield technology blocks advertisements, malicious scripts, and trackers at the DNS level before they reach the user device.

5. VPN INSIGHT

The Stealth protocol uses custom cryptographic handshakes on port 443 to bypass deep packet inspection blocks.

6. VPN INSIGHT

Proton VPN Accelerator uses multi-core processing optimization to boost speeds on long-distance servers.

7. VPN INSIGHT

Switzerland's strict data protection laws ensure that user metadata cannot be shared without a Swiss court order.

8. VPN INSIGHT

The network operates on 10Gbps transit lines to minimize latency and packet drops across global nodes.

9. VPN INSIGHT

A system-level Kill Switch blocks all internet traffic if the active VPN connection is interrupted.

10. VPN INSIGHT

Split tunneling is supported on Windows and Android, letting users route specific app traffic outside the VPN.

Technical References & Sources

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

SCHOLARLY & INDUSTRY REFERENCES

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Answer Key: Checkpoint 1 - Multiple Choice

1 Network Check 1 VPN PROTECTION — Correct Answer: A

TEACHING NOTE

Which Proton feature routes traffic through secure countries?

Citation: IETF VPN RFC [Ref 3].

2 Network Check 2 VPN PROTECTION — Correct Answer: A

TEACHING NOTE

What is the main function of Proton VPN's NetShield?

Citation: IETF VPN RFC [Ref 3].

3 Network Check 3 VPN PROTECTION — Correct Answer: A

TEACHING NOTE

Which Proton protocol bypasses DPI via TLS handshakes?

Citation: IETF VPN RFC [Ref 3].

4 Network Check 4 VPN PROTECTION — Correct Answer: A

TEACHING NOTE

What is unique about Proton VPN client source code?

Citation: IETF VPN RFC [Ref 3].

5 Network Check 5 VPN PROTECTION — Correct Answer: A

TEACHING NOTE

How does Proton VPN Accelerator optimize speed?

Citation: IETF VPN RFC [Ref 3].

Answer Key: Checkpoint 2 - True or False

6 **Network Rule 1** VPN PROTECTION — Correct Answer: True

TEACHING NOTE

Proton VPN's Secure Core technology routes user traffic through hardened physical servers situated in neutral, high-security jurisdictions first.

Citation: IETF VPN RFC [Ref 3].

7 **Network Rule 2** VPN PROTECTION — Correct Answer: True

TEACHING NOTE

NetShield functions by intercepting and blocking connection requests to tracker and malware domains at the DNS query stage.

Citation: IETF VPN RFC [Ref 3].

8 **Network Rule 3** VPN PROTECTION — Correct Answer: False

TEACHING NOTE

Proton VPN client source codes are kept strictly proprietary to prevent security vulnerability discovery.

Citation: IETF VPN RFC [Ref 3].

9 **Network Rule 4** VPN PROTECTION — Correct Answer: True

TEACHING NOTE

The Stealth protocol wraps VPN packets inside standard TLS encryption to make them indistinguishable from HTTPS traffic.

Citation: IETF VPN RFC [Ref 3].

10 **Network Rule 5** VPN PROTECTION — Correct Answer: False

TEACHING NOTE

Proton VPN operates under Panama laws and falls under 14-Eyes intelligence agreements.

Citation: IETF VPN RFC [Ref 3].

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 Secure Core	B NetShield	C Stealth	D Accelerator
E Open Source	F Switzerland	G WireGuard	H Kill Switch

CHECKPOINT 3: KEY TERM KEY

1 Stealth	2 Open Source	3 NetShield
4 Secure Core	5 Accelerator	6 Switzerland

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.

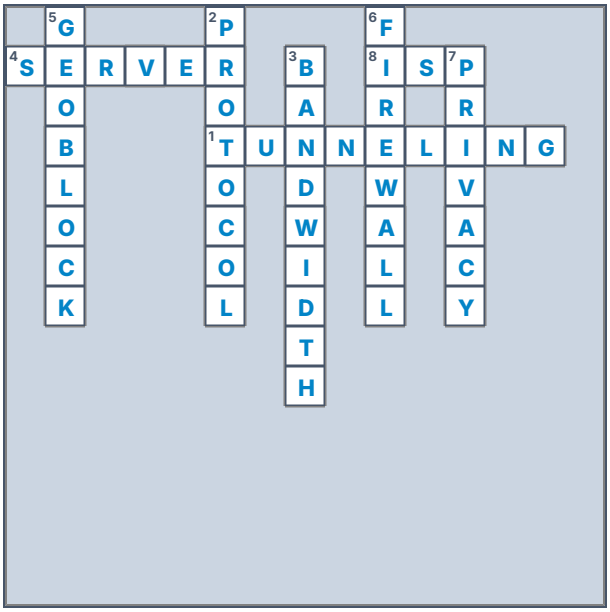
Stealth Representation:
Highlight the role of NDAs and third-party representation in preventing speculative price gouging during corporate procurement.

Puzzles Keys & Instructor Notes

WORD SEARCH SOLUTION

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

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. ECURECORES
   SECURECORE

2. ETSHIELDN
   NETSHIELD

3. TEALTHS
   STEALTH

4. CCELERATORA
   ACCELERATOR

5. PENSOURCEO
   OPENSOURCE

6. WITZERLANDS
   SWITZERLAND

7. IREGUARDW
   WIREGUARD

8. ILLSWITCHK
   KILLSWITCH

SECRET CIPHER CHALLENGE KEY

"PROTON VPN SERVERS RUN SECURE CORE CHANNELS"

VPN & Network Case Studies Solution Key

A Case Study 1: Secure Core Defens

Instructor Solution

GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** A human rights activist in a restrictive country needs to upload documentation to a foreign press outlet. Fearing that their local ISP might monitor the exit node of the VPN, they route their traffic through Proton VPN's Secure Core server in Switzerland before going to the destination node.
- **Recommended Strategy & Solution:** Because the exit node only sees traffic arriving from the Secure Core server in Switzerland, a network correlation attack at the exit server cannot reveal the activist's actual domestic IP.

B Case Study 2: Stealth Protocol Bypassir

Instructor Solution

GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** A university researcher traveling abroad finds that their student hostel blocks standard OpenVPN ports (1194) and WireGuard UDP connections. They activate Proton VPN's Stealth protocol on their Android client.
- **Recommended Strategy & Solution:** Stealth wraps VPN traffic in a TLS tunnel and routes it over standard HTTPS port 443, making it appear as normal secure web browsing to deep packet inspection firewalls.