Name: _____ Date: _____ Score: _____

# Best VPN for Linux: Arch

Configuring Arch Linux VPN clients using the AUR, systemd-resolved, and command line tools.

## ARCH LINUX VPN SETUPS 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 Arch Linux VPN configurations. You will explore AUR PKGBUILD recipes, systemd-resolved DNS settings, resolvectl interfaces, and iptables killswitches.

### 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-linux-arch/

# Your Arch Linux VPN Learning Roadmap

- Build and configure custom VPN client packages from the Arch User Repository (AUR).
- Manage systemd-resolved service configurations to prevent DNS leaks on rolling release updates.
- Configure system-wide routing rules and iptables firewalls to act as a fail-safe killswitch.

## ARCH LINUX VPN SETUPS 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 AUR packages and systemd-resolved.

## ARCH USER REPOSITORY & SYSTEMD-RESOLVED INTEGRATION (INTRODUCTION)

Configuring VPNs on Arch Linux involves compiling community packages from the Arch User Repository (AUR), configuring systemd-resolved to prevent DNS leaks on a rolling release, and establishing iptables fail-safe killswitches.

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

## Checkpoint 1: Multiple Choice Challenge

**1** How do Arch Linux users typically install proprietary VPN GUI clients?

- ◯ A) Through AUR PKGBUILD recipes
- ◯ B) Using deb package installations
- ◯ C) From flatpak sandbox stores only
- ◯ D) By copy-pasting system binaries

**2** Which command-line tool manages DNS settings and resolve status in systemd-resolved Arch setups?

- ◯ A) resolvectl
- ◯ B) nslookup
- ◯ C) ip route
- ◯ D) systemctl resolve

**3** What metadata file defines the compile instructions for custom packages built via the AUR?

- ◯ A) PKGBUILD
- ◯ B) CMakeLists.txt
- ◯ C) Makefile.am
- ◯ D) package.json

**4** Which service handles system network configuration dynamically on Arch systems?

- ◯ A) NetworkManager
- ◯ B) systemd-sysctl
- ◯ C) dnsmasq-daemon
- ◯ D) udev-device

**5** What is the primary risk of updating Arch Linux kernels on active VPN installations?

- ◯ A) Broken out-of-tree module builds
- ◯ B) Hard drive encryption failures
- ◯ C) User home folder wipes
- ◯ D) BIOS configuration resets

## Checkpoint 2: True or False Challenge

**6 Question 6**

Arch User Repository (AUR) packages are officially pre-compiled and signed by Arch core developers.

◯ True ◯ False

**7 Question 7**

The resolvectl command configures global system boot order on rolling release installations.

◯ True ◯ False

**8 Question 8**

NetworkManager's nmcli tool can import OpenVPN configurations directly from standard .ovpn files.

◯ True ◯ False

**9 Question 9**

Custom firewall killswitches can be built by restricting interfaces using native iptables rules.

◯ True ◯ False

**10 Question 10**

WireGuard support is integrated natively into the Linux kernel starting from version 5.6.

◯ 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. Arch updates packages continuously under a _____ development cycle.
2. Configuring _____ handles localized DNS caching rules.
3. The command-line tool _____ queries link-specific server scopes.
4. You can compile custom source archives automatically using a community _____.
5. Every AUR package contains a metadata file named _____ with build recipes.
6. Dropping outgoing traffic when tunnels disconnect requires a fail-safe firewall _____.

**VOCABULARY WORD BANK**

ROLLINGRELEASE SYSTEMDRESOLVED RESOLVECTL AURHELPER
PKGBUILD KILLSWITCH

**Write your answers here:**

1. 2.
3. 4.
5. 6.

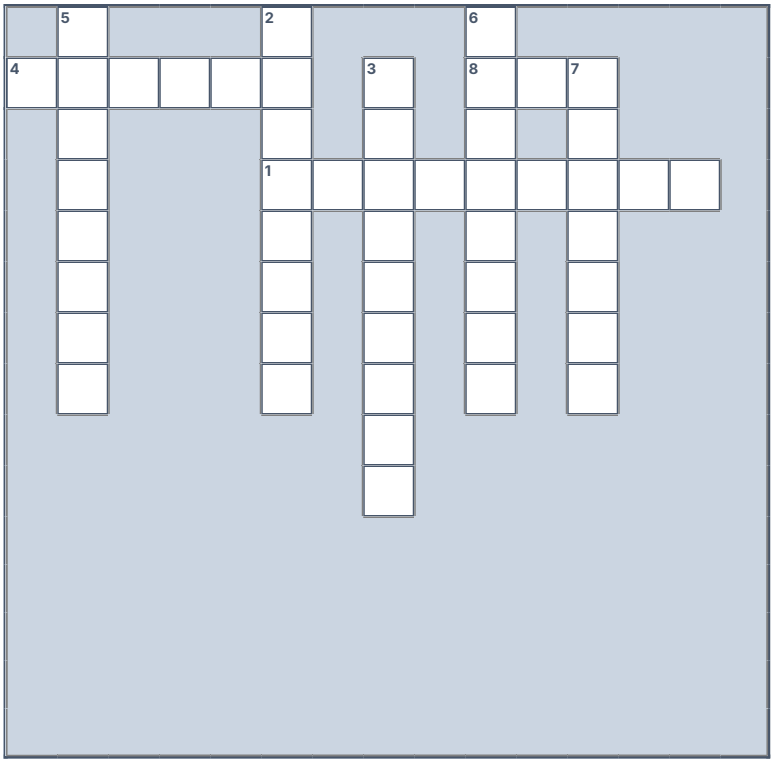
# Checkpoint 4: VPN & Network Concept Match

**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.

| | | | |
|---|---|---|---|
| ROLLINGRELEASE | | F | Fail-safe configuration that drops unencrypted egress traffic on disconnect. |
| SYSTEMDRESOLVED | | H | Modern fast cryptographic tunneling protocol integrated into the kernel. |
| RESOLVECTL | | G | Kernel packet filtering table framework managing system networking rules. |
| AURHELPER | | A | Continuous package upgrade delivery model without major version releases. |
| PKGBUILD | | B | System service providing network name resolution and caching. |
| KILLSWITCH | | C | Command line utility to query and configure systemd DNS resolvers. |
| IPTABLES | | D | Command-line tool that automates compiling community AUR source code packages. |
| WIREGUARD | | E | Shell script defining variables and compile targets for makepkg. |

## 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: Secure encapsulation method that routes console packet traffic. (9) (9 letters):**

**4 Across: Remote gaming host node that you connect to for lobbies. (6) (6 letters):**

**8 Across: Broadband service provider whose throttling policies you bypass. (3) (3 letters):**

## DOWN CLUES

**2 Down: Handshake rules (such as OpenVPN) running on a compatible router. (8) (8 letters):**

**3 Down: Data capacity limits monitored on your home router during play. (9) (9 letters):**

**5 Down: Regional restriction that prevents accessing specific marketplace items. (8) (8 letters):**

**6 Down: Network shield that can block game ports and cause strict NAT. (8) (8 letters):**

**7 Down: Freedom from DDoS threats and online packet tracking while online. (7) (7 letters):**

## Checkpoint 6: Hidden Word Search

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

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

### VOCABULARY WORD LIST

| | | | |
|---|---|---|---|
| ROLLINGRELEASE | SYSTEMDRESOLVED | RESOLVECTL | AURHELPER |
| PKGBUILD | KILLSWITCH | IPTABLES | WIREGUARD |

# 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.** ROLLINGRELEASE
**B.** SYSTEMDRESOLVED
**C.** RESOLVECTL
**D.** AURHELPER
**E.** PKGBUILD
**F.** KILLSWITCH
**G.** IPTABLES
**H.** WIREGUARD

### DEFINITIONS & MATCH FIELDS

_____ 1. Continuous package upgrade delivery model.

_____ 2. System service providing local DNS caching.

_____ 3. Command line utility to query DNS servers.

_____ 4. Dynamic compilation helper for AUR recipes.

_____ 5. Metadata shell script built by makepkg.

_____ 6. Fail-safe rule dropping unencrypted egress.

_____ 7. Kernel packet filtering framework controls.

_____ 8. Fast kernel space cryptographic tunneling.

## 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. RLLINGRELSAE

2. SYSMDRESLVED

3. RSLVECTL

4. ARHLPERU

5. PKGBIDLU

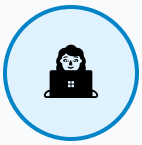
6. KLLSWTCH

7. IPBLTSEA

8. WRGRDUEA

# Checkpoint 8: VPN & Network Case Studies

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



### CASE STUDY 1: DNS LEAKS AFTER UPDATES

**Scenario:** A system administrator notices that after a pacman rolling update, active VPN connections on Arch workstations are leaking local ISP DNS server lookups.

**Discussion Question:** Which configuration service should be verified, and which command-line query tool helps audit the link DNS settings?

### CASE STUDY 2: KERNEL UPGRADES AND DRIVER BREAKS

**Scenario:** Following an upgrade to the latest stable Arch kernel module release, a workstation's third-party proprietary VPN client fails to initialize its virtual network interface.

**Discussion Question:** What utility should be deployed to rebuild out-of-tree VPN driver modules dynamically on kernel updates?

# 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 | 18 | 3 | 8 | 12 | 9 | 14 | 21 | 24 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | 15 | 12 | 12 | 9 | 14 | 7 | 11 | 5 | 18 | 14 | 5 | 12 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 15 | 4 | 21 | 12 | 5 | 19 | 20 | 1 | 2 | 9 | 12 | 9 | 20 | 25 |

**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 the AUR?

The Arch User Repository, a community-driven repository containing package description PKGBUILDs.

### Q2: How do I query DNS status?

Run the resolvectl command line tool to check link resolutions and current name servers.

### Q3: How do I write an iptables rule?

Use iptables -A OUTPUT to define rules allowing or dropping outgoing packet sequences.

### Q4: What is a rolling release?

An operating system update model where software is continuously upgraded, removing version numbers.

### Q5: Why use WireGuard?

It runs directly in kernel space, offering superior performance compared to userspace daemons.

# Checkpoint 10: Basic VPN FAQs (Part B)

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

### Q6: How do I check systemd logs?

Execute journalctl -u openvpn-client to trace network connection output histories.

### Q7: What is NetworkManager?

A network control daemon that simplifies configuring network interfaces and VPN profiles.

### Q8: What is a PKGBUILD?

A shell script that tells Arch's makepkg tool how to fetch, compile, and install a package.

### Q9: Does Arch have a default firewall?

No, Arch does not enable a firewall by default; users must install and configure iptables or nftables manually.

### Q10: What is a DNS leak?

A security vulnerability where query packets bypass your VPN tunnel and go to your home ISP.

# Checkpoint 11: Advanced VPN FAQs (Part A)

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

### Q1: How do I install a VPN client from the AUR?

Use an AUR helper like yay by running 'yay -S package-name', or clone the repo and run 'makepkg -si'.

### Q2: How do I check systemd-resolved DNS status?

Run the command 'resolvectl status' to view active DNS servers and routing domains for each network link.

### Q3: What is a rolling release update cycle?

Arch Linux updates packages continuously as upstream developers release them, without major version upgrades.

### Q4: How do I set up a fail-safe firewall killswitch?

Configure iptables or nftables to drop all egress packets on default interfaces except those destined for the VPN server IP.

### Q5: Why does my VPN connection drop after kernel updates?

Kernel updates overwrite module directories. Reboot the system or use DKMS to rebuild VPN kernel driver modules dynamically.

# Checkpoint 11: Advanced VPN FAQs (Part B)

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

### Q6: What is DKMS on Arch Linux?

Dynamic Kernel Module Support rebuilds out-of-tree kernel modules automatically when you update your Linux kernel.

### Q7: How do I start a VPN connection via nmcli?

Run 'nmcli connection up connection-name' to initiate the profile via the command line.

### Q8: How do I verify if my DNS is leaking?

Run 'resolvectl query dnsleaktest.com' or check leak test sites to ensure only VPN DNS servers are resolving lookups.

### Q9: Does WireGuard run in kernel space on Arch?

Yes, modern Linux kernels include WireGuard natively, providing extremely fast cryptographic operations.

### Q10: How do I configure openvpn via systemd?

Place your .conf file in /etc/openvpn/client/ and run 'systemctl enable --now openvpn-client@profile-name'.

## 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**

Arch Linux uses rolling release package models, requiring continuous dependency audits.

**2. VPN INSIGHT**

Custom VPN clients are compiled using PKGBUILD recipes from the community AUR repository.

**3. VPN INSIGHT**

systemd-resolved handles DNS caching and prevents network name lookup leaks.

**4. VPN INSIGHT**

The resolvectl command displays DNS interfaces and link domain settings.

**5. VPN INSIGHT**

AUR helpers automate PKGBUILD downloading, dependency checking, and compilation.

**6. VPN INSIGHT**

Custom iptables firewalls drop all non-VPN egress traffic to act as killswitches.

**7. VPN INSIGHT**

Kernel-level WireGuard implementation runs faster than userspace implementations.

**8. VPN INSIGHT**

Rolling release updates can break external out-of-tree kernel modules.

**9. VPN INSIGHT**

DKMS rebuilds kernel modules automatically when new system kernels are installed.

**10. VPN INSIGHT**

NetworkManager's nmcli tool controls VPN profiles from shell command prompts.

# Technical References & Sources

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

## SCHOLARLY & INDUSTRY REFERENCES


**[1]** Arch Wiki. (2026). Arch User Repository (AUR) Installation Guide. Retrieved from https://wiki.archlinux.org/title/Arch_User_Repository

**[2]** Arch Wiki. (2026). systemd-resolved DNS Configuration. Retrieved from https://wiki.archlinux.org/title/Systemd-resolved

**[3]** Arch Wiki. (2026). OpenVPN Client Configurations. Retrieved from https://wiki.archlinux.org/title/OpenVPN

**[4]** IETF. (2020). WireGuard VPN Protocol Specification (RFC 8439). Retrieved from https://datatracker.ietf.org/doc/rfc8439/

**[5]** Netfilter. (2026). iptables Utility Reference Manual. Retrieved from https://www.netfilter.org

**[6]** systemd. (2026). resolvectl Command Reference manual. Retrieved from https://www.freedesktop.org/software/systemd/man/resolvectl.html

**[7]** Linux Foundation. (2026). DKMS Infrastructure Guide. Retrieved from https://github.com/dell/dkms

**[8]** Arch Wiki. (2026). NetworkManager profiles setup. Retrieved from https://wiki.archlinux.org/title/NetworkManager

**[9]** IETF. (2018). Transport Layer Security (TLS) 1.3 (RFC 8446). Retrieved from https://datatracker.ietf.org/doc/rfc8446/

**[10]** NIST. (2020). Security Guidelines for IPsec VPNs (SP 800-77 Rev. 1). Retrieved from https://csrc.nist.gov/publications/detail/sp/800-77/rev-1/final

## Answer Key: Checkpoint 1 - Multiple Choice

**1 AUR Helper** — AUR RECIPES — Correct Answer: A

### TEACHING NOTE

Arch users compile and install custom GUI clients using AUR helper PKGBUILDs.
Citation: Arch Wiki [Ref 3].

**2 Resolvectl Check** — SYSTEMD-RESOLVED — Correct Answer: A

### TEACHING NOTE

The resolvectl command displays resolver settings and manages link DNS parameters.
Citation: Arch Wiki [Ref 2].

**3 PKGBUILD Info** — PKGBUILD — Correct Answer: A

### TEACHING NOTE

PKGBUILD files define dependency packages and make instructions for local compiling.
Citation: Arch Wiki [Ref 3].

**4 nmcli Command** — NETWORKMANAGER — Correct Answer: A

### TEACHING NOTE

NetworkManager's nmcli command allows starting and stopping VPN profiles from the terminal.
Citation: Arch Wiki [Ref 3].

**5 Rolling Kernels** — DKMS MODULE — Correct Answer: A

### TEACHING NOTE

Arch rolling release updates can break out-of-tree kernel modules unless DKMS is used.
Citation: Arch Wiki [Ref 1].

# Answer Key: Checkpoint 2 - True or False

**6 AUR PKGBUILD** AUR HELPER — Correct Answer: False

### TEACHING NOTE

Arch users can compile proprietary GUI clients using recipes from the Arch User Repository (AUR).
Citation: Arch Wiki [Ref 3].

**7 Systemd resolved** DNS RESOLVER — Correct Answer: False

### TEACHING NOTE

systemd-resolved handles dynamic DNS interface configurations and caching local lookups.
Citation: Arch Wiki [Ref 2].

**8 nmcli Command** CLI CLIENT — Correct Answer: True

### TEACHING NOTE

NetworkManager's nmcli command allows starting and stopping VPN profiles from the terminal.
Citation: Arch Wiki [Ref 3].

**9 Iptables Leak** IPTABLES SWITCH — Correct Answer: True

### TEACHING NOTE

Custom kill switches are built by adding iptables rules to drop unencrypted interface egress.
Citation: Arch Wiki [Ref 3].

**10 Rolling Kernel** KERNEL MODULE — Correct Answer: True

### TEACHING NOTE

Rolling release kernel updates can break compatibility with out-of-tree VPN kernel modules.
Citation: Arch Wiki [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 ROLLINGRELEASE | B SYSTEMDRESOLVED | C RESOLVECTL | D AURHELPER |
| E PKGBUILD | F KILLSWITCH | G IPTABLES | H WIREGUARD |

## CHECKPOINT 3: KEY TERM KEY

| | | |
|---|---|---|
| 1 ROLLINGRELEASE | 2 SYSTEMDRESOLVED | 3 RESOLVECTL |
| 4 AURHELPER | 5 PKGBUILD | 6 KILLSWITCH |

## 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.

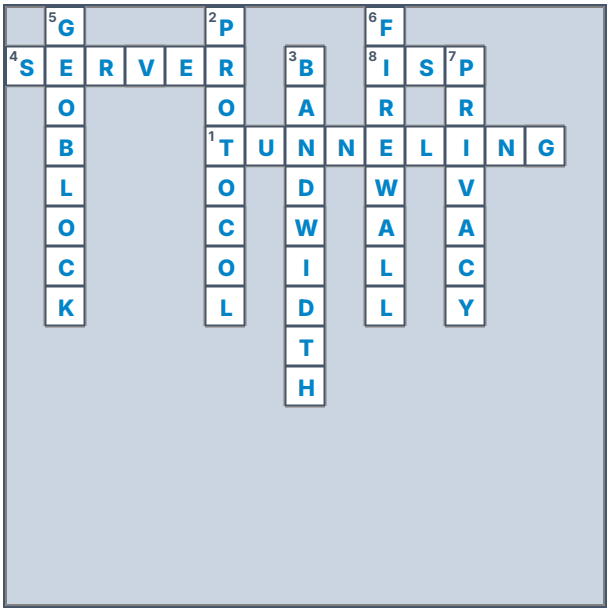
**Stealth Representation:**
Highlight the role of NDAs and third-party representation in preventing speculative price gouging during corporate procurement.

# Puzzles Keys & Instructor Notes

## WORD SEARCH SOLUTION

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

2. SYSMDRESLVED
   **SYSTEMDRESOLVED**

3. RSLVECTL
   **RESOLVECTL**

4. ARHLPERU
   **AURHELPER**

5. PKGBIDLU
   **PKGBUILD**

6. KLLSWTCH
   **KILLSWITCH**

7. IPBLTSEA
   **IPTABLES**

8. WRGRDUEA
   **WIREGUARD**

**SECRET CIPHER CHALLENGE KEY**

**"ARCH LINUX ROLLING KERNEL MODULE STABILITY"**

# VPN & Network Case Studies Solution Key

## A Case Study 1: DNS Leaks after Updates

Instructor Solution

### GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** A system administrator notices that after a pacman rolling update, active VPN connections on Arch workstations are leaking local ISP DNS server lookups.
- **Recommended Strategy & Solution:** Verify systemd-resolved is active, and execute 'resolvectl status' to verify the VPN link-specific DNS server is prioritised over public interfaces.

## B Case Study 2: Kernel Upgrades and Driver Breaks

Instructor Solution

### GRADING GUIDELINE

Student answers should cover the following points:

- **Scenario Analysis:** Following an upgrade to the latest stable Arch kernel module release, a workstation's third-party proprietary VPN client fails to initialize its virtual network interface.
- **Recommended Strategy & Solution:** Configure and register the kernel module with DKMS (Dynamic Kernel Module Support) to automate rebuilding driver modules on upgrades.