\ THE NETWORK KNIFE

Offline Network Toolkit

User Manual & Onboarding Guide

Field: Code & Tech · Knife 02 of 50 · \ Offline.Ltd

6	∞	✓	130+
Network Tools	100% Offline	Single HTML File	Reference Entries

This manual covers every tool in The Network Knife — from CIDR subnetting and IP binary analysis to MAC address inspection, HTTP status codes, port references, and the VLSM Network Architect. It also covers The Oracle universal input bar, one-click report generation, keyboard shortcuts, file management, troubleshooting, and a full networking glossary.

Version 2.0 · For use with The_Network_Knife.html

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1. Getting Started

The Network Knife is a single HTML file containing six professional network utilities, a universal paste-and-detect bar (The Oracle), and one-click report generation. It runs entirely in your browser — no server, no internet, no installation.

System Requirements

BROWSER	VERSION	NOTES
Chrome / Edge	90+	Full support, recommended
Firefox	88+	Full support
Safari	14+	Full support
Mobile browsers	Any modern	All tools functional, responsive layout

Opening the File

Double-click the HTML file to open it in your default browser. No web server is required. The file works from your desktop, a USB stick, an email attachment, or any local folder.

> 💡 **PRO TIP**
>
> E-mail the HTML file to your webmail with a memorable subject line. It will always be waiting for you, on any computer in the world, as long as you have access to your email.

The Welcome Screen

On first launch, a welcome modal explains the auto-save system and how to export your work. Click **"Got it — open the knife"** to dismiss it. The modal will not appear again in that browser.

2. Interface Overview

The knife's interface has five main areas: the header, The Oracle bar, the tab bar, the content area, and the disclaimer footer.

The Header

The top bar shows the knife's identity: the red backslash (\) brand mark, the product name, the field category (Code & Tech), and the knife number (02 of 50).

The Oracle Bar

Directly below the header sits The Oracle — a universal input field marked with an amber lightning bolt. Paste any text and it auto-detects network elements (IPs, CIDRs, MACs, ports, HTTP codes, hex values, and natural-language queries). Click any detection to populate the corresponding tool. Focus it anytime with **Ctrl+K**.

The Tab Bar

Six tool tabs on the left, two system tabs on the right. Each tool tab switches to its panel. The system tabs are: ■ **Files** (state management) and **? Help** (documentation and search).

Tooltips

Small circled ■ icons appear next to certain input fields. Hover over them for a brief explanation of the expected format.

3. Saving & File Management

The knife auto-saves your work to the browser's localStorage after every input change. To carry your work to another device, export a JSON state file.

Exporting State

1. Open the ■ **Files** tab.
2. Click **Export All** ↓.
3. A JSON file named `network.knife.state_YYYY-MM-DD.json` downloads to your device.

Importing State

1. Open the ■ **Files** tab.
2. Click **Import All** ↑.
3. Select the JSON state file. All tools are restored instantly.

> ⚠ **CAUTION**
>
> Importing a state file **overwrites** all current tool data in the browser. Export your current state first if you want to preserve it.

Per-Tool Export

Each tool can be exported and imported independently from the Files tab. This is useful when you want to share just one tool's configuration.

Clearing All Data

The **Clear All Data** button in the Files tab permanently deletes all saved state for this knife from the current browser. Exported JSON files are not affected.

> 💡 **PRO TIP**
>
> Name your exported files by project or date — e.g. `network_datacenter_refit.json`. You can maintain multiple state files and swap between them at any time.

4. CIDR / Subnet Calculator

Tab: ⊕ **CIDR Calculator** · Shortcut: **Ctrl + 1**

Enter an IPv4 address with CIDR prefix notation and instantly see the full network breakdown: network address, broadcast address, subnet mask, wildcard mask, usable host range, total and usable host counts, IP class, public/private type, and binary representation.

Inputs

FIELD	DESCRIPTION
IP Address / CIDR	IPv4 address with optional prefix, e.g. `192.168.1.0/24`. If no prefix is given, /24 is assumed.

Outputs

FIELD	DESCRIPTION
Network Address	First address in the subnet (with prefix)
Broadcast Address	Last address — all host bits set to 1
Subnet Mask	Dotted-decimal mask derived from the prefix length
Wildcard Mask	Inverse of subnet mask — used in Cisco ACLs
First / Last Usable Host	The range of assignable host addresses
Total Hosts	Total addresses in the block (2^host-bits)
Usable Hosts	Total minus network and broadcast (or special for /31, /32)
IP Class	Classful designation (A through E)
IP Type	Private, Public, Loopback, or Link-local
Binary Representation	32-bit binary with network/host bit colouring

Use Cases

Planning subnets, verifying firewall rules and ACLs, checking if two IPs share a subnet, converting between CIDR and dotted-decimal masks.

Common Difficulties

PROBLEM	CAUSE & SOLUTION
No output appears	Ensure the format is `X.X.X.X/N` with octets 0–255 and prefix 0–32.

PROBLEM	CAUSE & SOLUTION
/31 shows 2 usable hosts	Correct per RFC 3021 — point-to-point links use both addresses.
/32 shows 1 usable host	Correct — a /32 is a single host route.

💡 **PRO TIP**

Try /31 for point-to-point links and /32 for host routes. The calculator handles these edge cases correctly.

5. IP Binary Viewer

Tab: ■ **IP Binary Viewer** · Shortcut: **Ctrl + 2**

Enter any IPv4 address and see its full 32-bit binary representation with each octet colour-coded (blue, green, amber, red) for easy visual parsing. Also displays hexadecimal and integer representations for protocol-level work.

Inputs

FIELD	DESCRIPTION
IPv4 Address	Any valid IPv4 address, e.g. `192.168.1.1`

Outputs

FIELD	DESCRIPTION
Binary (32-bit)	Full binary with colour-coded octets
Decimal Octets	The four octets displayed with matching colours
Hexadecimal	0x-prefixed hex representation
Integer Value	Unsigned 32-bit integer representation

Use Cases

Understanding subnet masks at the bit level, debugging wildcard masks, teaching networking fundamentals, converting between IP representations.

Common Difficulties

PROBLEM	CAUSE & SOLUTION
Octet out of range	Each octet must be 0–255.
Hex looks wrong	Leading zeros are preserved per octet — 0A is correct for 10.

6. MAC Address Inspector

Tab: ■ **MAC Inspector** · Shortcut: **Ctrl + 3**

Paste a MAC address in any format and the inspector normalises it, shows all common notations (colon, hyphen, Cisco dot, bare), detects unicast/multicast and globally unique/locally administered flags, extracts the OUI vendor prefix, and displays the full binary representation.

Inputs

FIELD	DESCRIPTION
MAC Address	Any of: `AA:BB:CC:DD:EE:FF`, `AA-BB-CC-DD-EE-FF`, `AABB.CCDD.EEFF`, or `AABBCCDDEEFF`

Outputs

FIELD	DESCRIPTION
Normalized	Canonical colon-separated uppercase format
OUI (Vendor Prefix)	First three bytes — identifies the manufacturer
Flags	Unicast/Multicast, Globally Unique/Locally Administered, Broadcast
All Formats	Colon, Hyphen, Cisco Dot, and Bare representations
Binary	Full 48-bit binary with spaces between bytes

Use Cases

Identifying unknown devices on a network, converting between MAC formats for different vendor CLIs, verifying multicast vs unicast addressing.

Common Difficulties

PROBLEM	CAUSE & SOLUTION
Invalid MAC — need 12 hex digits	Remove any non-hex characters. The address must be exactly 12 hex digits.
OUI says 'lookup requires online database'	Correct — vendor name resolution requires an external database. The OUI prefix is still shown.

💡 **PRO TIP**

The first octet's least significant bit determines multicast (1) vs unicast (0). The second bit determines locally administered (1) vs globally unique (0).

7. HTTP Status Codes

Tab: ■ **HTTP Status Codes** · Shortcut: **Ctrl + 4**

A complete searchable reference table of HTTP status codes from 100 to 511, including all standard codes, common extensions, and WebDAV codes. Filter by code number, name, or description.

Inputs

FIELD	DESCRIPTION
Search	Type any code number, name fragment, or keyword (e.g. `404`, `redirect`, `forbidden`)

Outputs

FIELD	DESCRIPTION
Code	The HTTP status code number, colour-coded by class (1xx blue, 2xx green, 3xx amber, 4xx/5xx red)
Name	Official status name
Description	Brief explanation of what the code means

Use Cases

Debugging API responses, configuring error handling on web servers, quick reference during incident response.

Common Difficulties

PROBLEM	CAUSE & SOLUTION
Search returns nothing	Try a broader term. The search matches against code number, name, and description.

💡 **PRO TIP**

Search for `database`, `mail`, or `cache` to find thematically related status codes.

8. Port Number Reference

Tab: ■ **Port Reference** · Shortcut: **Ctrl + 5**

A searchable database of 65 well-known and commonly used TCP/UDP port numbers. Each entry includes the port number, service name, protocol (TCP, UDP, or both), and a brief description.

Inputs

FIELD	DESCRIPTION
Search	Port number, service name, or keyword (e.g. `443`, `ssh`, `mysql`)

Outputs

FIELD	DESCRIPTION
Port	The port number
Service	Common service name
Proto	TCP, UDP, or TCP/UDP
Description	What the service does

Use Cases

Writing firewall rules, identifying unknown traffic, quick reference during security audits.

Common Difficulties

PROBLEM	CAUSE & SOLUTION
Port not in list	The reference covers well-known ports. Ephemeral or application-specific ports are not included.

💡 **PRO TIP**

Search for `database` to find all database-related ports, or `mail` for all email protocols.

9. VLSM Network Architect

Tab: ■ **VLSM Architect** · Shortcut: **Ctrl + 6**

Enter your network requirements in plain text — a base network and a list of subnets with host counts or prefix lengths — and the architect calculates the optimal Variable Length Subnet Masking plan. It produces a full allocation table with network, mask, usable range, broadcast, and host counts; an SVG hierarchy tree visualisation; address waste statistics; and overflow detection.

Inputs

FIELD	DESCRIPTION
Base network	First line: `Base: 10.0.0.0/16`
Subnet by hosts	`Name: N hosts` (e.g. `HQ LAN: 220 hosts`)
Subnet by prefix	`Name: /N` (e.g. `Management: /28`)
Multiple links	`Name: N× /M` (e.g. `P2P links: 4× /31`)

Outputs

FIELD	DESCRIPTION
Stats bar	Subnet count, total hosts, allocated vs available, waste percentage
Allocation table	Name, network/prefix, mask, usable range, broadcast, hosts, block size
SVG tree	Visual hierarchy showing base network and all child subnets
Overflow warning	Highlighted if any subnet exceeds the base address space

Use Cases

Planning a new office network, designing data centre VLANs, preparing for a certification exam, documenting subnet allocations for handover.

Common Difficulties

PROBLEM	CAUSE & SOLUTION
Missing base network	The first line must be `Base: IP/prefix`.
Subnets overflow	Your requested subnets exceed the base network's address space. Use a larger base prefix.
Unexpected alignment	Subnets are aligned to their block size boundaries. This may leave small gaps — shown in the waste statistic.

💡 **PRO TIP**

Subnets are allocated largest-first (optimal VLSM). The waste percentage tells you how efficiently your address space is being used.

10. The Oracle

The Oracle is the universal paste bar that sits between the header and the tab bar. It transforms the knife from six separate tools into one living companion that understands whatever you throw at it.

What It Detects

ELEMENT	EXAMPLE	ACTION
CIDR block	10.0.5.23/27	Opens in CIDR Calculator
IPv4 address	192.168.1.50	Opens in IP Binary Viewer + CIDR
MAC address	AA:BB:CC:DD:EE:FF or AABB.CCDD.EEFF	Opens in MAC Inspector
Port number	port 443 or :8080	Finds in Port Reference
HTTP status code	404, 502	Finds in HTTP Status Codes
Hex-encoded IP	0xC0A80101	Converts and opens in IP Binary Viewer
Natural language	"broadcast of 10.0.5.23/27"	Calculates in CIDR

Cross-References

The Oracle tracks your detection history. When it spots relationships between the current paste and previous lookups — such as two MACs sharing the same OUI vendor, or an IP that belongs to a CIDR block you just analysed — it displays a cross-reference note in amber below the detection summary.

> 💡 **PRO TIP**
>
> Paste an entire log line like `src=192.168.1.50 dst=10.0.0.1:443 proto=TCP` and The Oracle will extract every network element in one go.

11. Report & Config Exporter

Every tool result can be exported as a professional report or ready-to-paste configuration snippet. The red ■ **Generate Report** button appears on CIDR, MAC, and VLSM tools.

Available Formats

FORMAT	ICON	OUTPUT
Markdown	■	Pipe tables for tickets, docs, and incident reports
Cisco IOS	■	ACLs, interface config, address-table entries
iptables	■	Linux firewall allow/deny rules
Terraform	■■	aws_subnet resources with tags
pfSense	■■	pass/block rules for em0 interface
Confluence	■	Wiki-markup tables for Atlassian wikis

Each report is branded with the knife header and timestamp. Copy to clipboard or download as a text file directly from the preview modal.

> 💡 **PRO TIP**
>
> Generate a VLSM report in Terraform format to get ready-to-apply subnet resources for AWS, complete with name tags. Paste straight into your infrastructure-as-code repository.

12. Keyboard Shortcuts

Every keyboard shortcut available in the knife:

`Ctrl + 1`	CIDR Calculator
`Ctrl + 2`	IP Binary Viewer
`Ctrl + 3`	MAC Inspector
`Ctrl + 4`	HTTP Status Codes
`Ctrl + 5`	Port Reference
`Ctrl + 6`	VLSM Architect
`Ctrl + K`	Focus The Oracle bar
`Ctrl + S`	Export full knife state
`Ctrl + H`	Open Help tab
`Escape`	Close any modal

13. Troubleshooting

JavaScript Disabled

The knife requires JavaScript. Enable it in your browser settings. All computation is local — no scripts are loaded from external servers.

localStorage Cleared

If you clear browser data, your saved state is lost. Always export a JSON backup before clearing data or switching browsers.

Calculations Look Wrong

Double-check that your input matches the expected format. For CIDR, ensure the prefix is 0–32. For MAC, ensure exactly 12 hex digits.

Tabs Don't Fit on Mobile

The tab bar scrolls horizontally. Swipe left to see additional tool tabs.

Import Shows 'Wrong Knife'

The state file's `knife` field must be `"network"`. Files from other knives cannot be imported.

VLSM Plan Overflows

Your subnet requirements exceed the base network's address space. Use a larger base prefix (smaller number).

Oracle Doesn't Detect Anything

The Oracle needs at least 2 characters. For ports, prefix with `port` or `:`. For IPs, ensure dotted-decimal format.

14. Accuracy & Limitations

TOOL	ACCURACY	NOTES
CIDR Calculator	Exact	Standard bitwise IPv4 arithmetic. Handles /0 through /32 including RFC 3021 (/31).
IP Binary Viewer	Exact	Direct binary, hex, and integer conversion.
MAC Inspector	Exact	Format conversion and flag detection are deterministic. OUI vendor lookup requires an external database.
HTTP Status Codes	Complete	Covers all IANA-registered codes plus common extensions (WebDAV, 418 Teapot). Updated to 2026 standards.
Port Reference	65 entries	Covers well-known and commonly encountered ports. Not exhaustive — IANA assigns thousands.
VLSM Architect	Exact	Largest-first allocation with proper boundary alignment. Waste calculation is precise.
The Oracle	Heuristic	Regex-based detection. May produce false positives on ambiguous numeric strings.
Report Exporter	Template	Config snippets are starting points. Always review and adapt for your specific environment.

⚠ **CAUTION**

These tools are designed as utilities and reference aids. They are not certified for use in safety-critical systems. Always verify outputs against authoritative sources when the stakes are high. Config snippets from the Report Exporter are templates — review before applying to production systems.

15. Glossary

ACL	Access Control List — a set of rules that filters network traffic on routers and firewalls.
Broadcast Address	The last address in a subnet, used to send packets to all hosts on that network.
CIDR	Classless Inter-Domain Routing — a method of allocating IP addresses using variable-length prefix notation (e.g. /24).
DHCP	Dynamic Host Configuration Protocol — automatically assigns IP addresses to devices on a network.
DNS	Domain Name System — translates human-readable domain names to IP addresses.
Firewall	A network security device or software that monitors and filters traffic based on defined rules.
Gateway	A network node that serves as an entry/exit point between two different networks.
Host	Any device connected to a network that has an IP address.
IP Address	Internet Protocol address — a unique numerical identifier for a device on a network (IPv4: 32-bit).
MAC Address	Media Access Control address — a 48-bit hardware identifier assigned to network interfaces.
Multicast	A MAC flag or IP range indicating traffic is sent to a group of receivers, not a single host.
NAT	Network Address Translation — maps private IP addresses to a public IP for internet access.
Octet	One of the four 8-bit segments of an IPv4 address (0–255).
OUI	Organisationally Unique Identifier — the first three bytes of a MAC address identifying the manufacturer.
Prefix Length	The number of network bits in a CIDR address (the number after the slash).
Subnet	A logical subdivision of an IP network, created by borrowing host bits for the network portion.
Subnet Mask	A 32-bit number that distinguishes the network portion of an IP from the host portion.
TCP	Transmission Control Protocol — connection-oriented transport protocol ensuring reliable delivery.

UDP	User Datagram Protocol — connectionless transport protocol for fast, low-overhead communication.
Unicast	A MAC flag or addressing mode where traffic is sent to a single specific host.
VLAN	Virtual LAN — a logical network segment that groups devices regardless of physical location.
VLSM	Variable Length Subnet Masking — using different prefix lengths for different subnets within the same network.
Wildcard Mask	The inverse of a subnet mask — used in Cisco ACLs and OSPF configurations.

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Stay connected.

Version 2.0 · No cloud. No nonsense. Just tools.