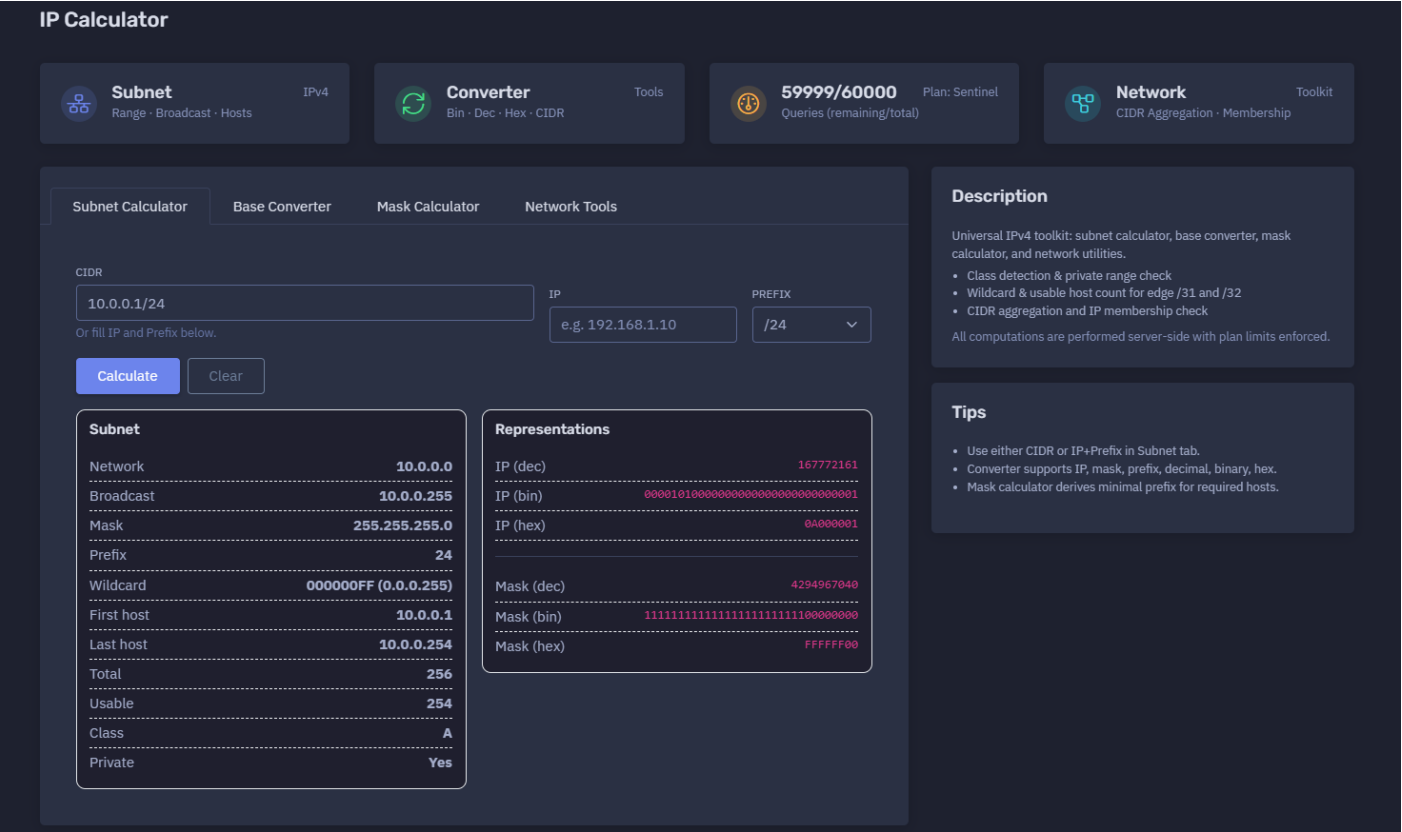


IP Calculator | IPv4 Subnet, Converter & Network Toolkit



The platform available at https://dash.niamonx.io/ipcalc_net — known as **IP Calculator** — is a universal IPv4 network toolkit within the NiamonX platform. It helps users calculate subnets, convert IPv4 values between different representations, derive subnet masks, check address ranges, calculate usable hosts, work with wildcard masks, and perform practical network planning tasks.

Overview of the Service

IP Calculator is designed for network engineers, system administrators, cybersecurity analysts, DevOps teams, students, and technical users who need a fast and reliable way to calculate IPv4 subnet information.

The tool combines several network utilities in one interface:

- Subnet Calculator
- Base Converter

- Mask Calculator
- Network Tools
- CIDR Aggregation
- IP Membership Check

It can calculate network address, broadcast address, subnet mask, wildcard mask, first host, last host, total addresses, usable hosts, IP class, private range status, decimal representation, binary representation, hexadecimal representation, and mask representations.

All computations are performed server-side, and access is controlled through plan-based query limits.

? How the Tool Works

The user can either enter a full CIDR value or provide an IP address and prefix separately.

Example CIDR input:

```
10.0.0.1/24
```

The tool parses the address, applies the prefix, and calculates the full subnet range.

For example, for:

```
10.0.0.1/24
```

the tool returns:

```
Network: 10.0.0.0
Broadcast: 10.0.0.255
Mask: 255.255.255.0
First host: 10.0.0.1
Last host: 10.0.0.254
Total: 256
Usable: 254
```

The interface also shows technical representations of both the IP address and subnet mask in decimal, binary, and hexadecimal formats.

? Main Tool Modules

IP Calculator includes several practical modules.

Subnet Calculator

Calculates subnet boundaries and host ranges from an IPv4 address and CIDR prefix.

Useful for:

- Network planning
- IP range validation
- Firewall rule preparation
- Routing configuration
- Infrastructure documentation
- Lab exercises
- Security segmentation

Base Converter

Converts IPv4 values between different formats.

Supported conversion types may include:

- IP address
- Subnet mask
- Prefix
- Decimal
- Binary
- Hexadecimal

Mask Calculator

Calculates subnet mask and prefix information.

It can also derive the minimal prefix required for a desired number of hosts.

Network Tools

Provides additional utilities for CIDR aggregation, range operations, and membership checks.

CIDR Aggregation

Helps combine compatible networks into a shorter aggregated CIDR block when possible.

IP Membership Check

Checks whether a specific IP address belongs to a selected subnet or range.

?? Interface Structure

The interface is divided into practical tabs and panels.

Main sections:

Section	Purpose
Subnet Calculator	Calculate subnet range and host information
Base Converter	Convert IP values between decimal, binary, hex, and CIDR formats
Mask Calculator	Calculate prefix, mask, wildcard, and host capacity
Network Tools	Work with aggregation, ranges, and membership checks
Request History	Review recent local calculations

The interface also displays daily query limits based on the current plan.

Example:

```
59999 / 60000
Queries remaining / total
Plan: Sentinel
```

? Subnet Calculator

The **Subnet Calculator** is the main module for IPv4 subnet analysis.

Users can provide input in two ways:

CIDR Input

Example:

10.0.0.1/24

IP + Prefix Input

Example:

IP: 192.168.1.10

Prefix: /24

Both input methods produce the same type of subnet output.

? Subnet Output Fields

After calculation, the tool displays the subnet details.

Field	Description
Network	First address of the subnet
Broadcast	Broadcast address of the subnet
Mask	Subnet mask in dotted decimal format
Prefix	CIDR prefix length
Wildcard	Inverse subnet mask
First host	First usable host address
Last host	Last usable host address
Total	Total number of addresses in the subnet
Usable	Number of usable host addresses
Class	IPv4 class
Private	Whether the address belongs to a private range

Example result:

Network: 10.0.0.0

Broadcast: 10.0.0.255

Mask: 255.255.255.0

Prefix: 24

Wildcard: 0.0.0.255

First host: 10.0.0.1

Last host: 10.0.0.254
Total: 256
Usable: 254
Class: A
Private: Yes

? Network Address

The **Network** field shows the first address of the subnet.

Example:

10.0.0.0

The network address identifies the subnet itself and is normally not assigned to a regular host.

? Broadcast Address

The **Broadcast** field shows the last address of the subnet.

Example:

10.0.0.255

In traditional IPv4 networking, the broadcast address is used to send packets to all hosts in the subnet.

For most standard subnets, the broadcast address is not assigned to a normal host.

? Subnet Mask

The **Mask** field shows the subnet mask in dotted decimal notation.

Example:

255.255.255.0

A subnet mask defines which part of the IP address belongs to the network and which part belongs to host addressing.

? Prefix

The **Prefix** field shows the CIDR prefix length.

Example:

/24

The prefix indicates how many bits are used for the network portion.

Common prefixes:

Prefix	Mask	Typical Use
/8	255.0.0.0	Large private or enterprise blocks
/16	255.255.0.0	Medium-sized internal networks
/24	255.255.255.0	Common LAN subnet
/30	255.255.255.252	Point-to-point links
/31	255.255.255.254	Point-to-point links with special handling
/32	255.255.255.255	Single host route

? Wildcard Mask

The **Wildcard** field shows the inverse of the subnet mask.

Example:

000000FF (0.0.0.255)

Wildcard masks are commonly used in:

- ACL rules
- Routing policies
- Network matching
- Firewall logic

- Cisco-style configurations

For a `/24` subnet, the mask is:

```
255.255.255.0
```

and the wildcard is:

```
0.0.0.255
```

?? First and Last Host

The tool calculates the usable host range.

Example for `/24`:

```
First host: 10.0.0.1
```

```
Last host: 10.0.0.254
```

These are the first and last usable IP addresses in the subnet.

For special prefixes such as `/31` and `/32`, usable host logic is handled as an edge case.

? Total and Usable Addresses

The **Total** field shows the total number of addresses in the subnet.

The **Usable** field shows how many addresses can typically be assigned to hosts.

Example:

```
Total: 256
```

```
Usable: 254
```

For most IPv4 subnets, usable addresses exclude the network and broadcast addresses.

Special cases:

- `/31` is commonly used for point-to-point links.
- `/32` represents a single host route.

The tool accounts for usable host count in these edge cases.

?? Class Detection

The tool detects the traditional IPv4 class of the entered address.

IPv4 class ranges:

Class	Range	Notes
A	1.0.0.0 - 126.255.255.255	Large networks
B	128.0.0.0 - 191.255.255.255	Medium networks
C	192.0.0.0 - 223.255.255.255	Smaller networks
D	224.0.0.0 - 239.255.255.255	Multicast
E	240.0.0.0 - 255.255.255.255	Reserved / experimental

Class detection is useful for educational and compatibility contexts, although modern networking primarily uses CIDR.

? Private Range Check

The **Private** field indicates whether the IP belongs to a private IPv4 range.

Private IPv4 ranges:

Range	CIDR
10.0.0.0 - 10.255.255.255	10.0.0.0/8
172.16.0.0 - 172.31.255.255	172.16.0.0/12
192.168.0.0 - 192.168.255.255	192.168.0.0/16

Example:

Private: Yes

Private addresses are normally used inside internal networks and are not directly routed on the public Internet.

? Representations

The **Representations** section shows the IP address and mask in multiple numeric bases.

For the IP:

10.0.0.1

the tool may show:

IP (dec): 167772161
IP (bin): 00001010000000000000000000000001
IP (hex): 0A000001

For the mask:

255.255.255.0

the tool may show:

Mask (dec): 4294967040
Mask (bin): 11111111111111111111111110000000
Mask (hex): FFFFFFF0

These representations are useful for:

- Low-level networking
 - Binary subnetting exercises
 - Debugging address calculations
 - Protocol analysis
 - Security tooling
 - Developer workflows
-

? Base Converter

The **Base Converter** supports conversion between IP-related formats.

Supported values may include:

- IPv4 dotted decimal
- Decimal integer

- Binary
- Hexadecimal
- Prefix
- Mask
- Wildcard

Example decimal value:

4294967295

Example binary value:

11111111111111111111111111111111

Example hexadecimal value:

FFFFFFFF

The converter helps users move between human-readable IP formats and machine-level representations.

? Mask Calculator

The **Mask Calculator** can derive subnet information from a prefix or from required host capacity.

Example prefix input:

prefix = 24

Expected output:

/24
255.255.255.0

The mask calculator can also derive the minimal prefix for a required number of hosts.

Example use case:

Required hosts: 200

The tool calculates the smallest subnet that can contain the requested number of usable addresses.

This is useful for:

- VLAN planning
 - Office network planning
 - Cloud subnet sizing
 - Lab design
 - Address allocation
 - Avoiding wasted IP space
-

? CIDR Aggregation

CIDR aggregation helps combine adjacent networks into a shorter summary route when possible.

Example use cases:

- Route summarization
- Firewall rule simplification
- ACL optimization
- Cloud network planning
- Reducing routing table entries
- Grouping related subnets

Aggregation should be used carefully because an overly broad summary may include addresses that should not be covered by a rule.

? IP Membership Check

The membership check helps determine whether an IP belongs to a given subnet.

Example question:

Does 192.168.1.50 belong to 192.168.1.0/24?

Expected result:

Yes

This is useful for:

- Firewall troubleshooting
- VPN routing checks

- Access control validation
 - Network segmentation review
 - Incident response
 - Log analysis
-

? Request History

The tool stores recent calculations locally in the user's browser.

Example behavior:

We store the last 200 queries locally in your browser.

History entries may include:

- Tool mode
- Input value
- Calculated range
- Timestamp
- Conversion type
- Result summary

Example history item:

```
subnet
10.0.0.1/24
10.0.0.0..10.0.0.255
17.06.2026, 21:53:23
```

Request history is useful for repeating calculations, reviewing previous subnet work, and documenting network planning sessions.

Because history is stored locally in the browser, it may be cleared by deleting browser data or using another device.

? Query Limits and Plan Access

IP Calculator uses plan-based query limits.

Example:

59999 / 60000

Queries remaining / total

Plan: Sentinel

Important points:

- Computations are performed server-side.
- Plan limits are enforced.
- Remaining query count is displayed in the interface.
- Local history does not replace server-side usage limits.

? Key Features

Universal IPv4 Toolkit

Combines subnet calculation, conversion, mask calculation, and network utilities.

CIDR Support

Accepts CIDR notation such as:

192.168.1.10/24

IP + Prefix Input

Users can enter IP and prefix separately.

Subnet Range Calculation

Returns network, broadcast, first host, last host, total addresses, and usable addresses.

Wildcard Mask

Calculates wildcard mask in hexadecimal and dotted decimal formats.

Base Conversion

Converts IP and mask values to decimal, binary, and hexadecimal.

Class Detection

Detects traditional IPv4 class.

Private Range Detection

Checks whether an IP belongs to RFC1918-style private address ranges.

Edge Case Handling

Handles usable host calculations for `/31` and `/32`.

Mask Calculator

Derives prefix and mask values, including host-based sizing.

CIDR Aggregation

Supports network summarization workflows.

Membership Check

Checks whether an IP belongs to a specific subnet.

Local Request History

Stores up to 200 recent calculations in the browser.

? Practical Examples

Example 1: Standard LAN Subnet

Input:

192.168.1.10/24

Result:

```
Network: 192.168.1.0
Broadcast: 192.168.1.255
Mask: 255.255.255.0
Usable hosts: 254
Private: Yes
```

Use case:

- Office LAN
 - Home network
 - Small VLAN
-

Example 2: Larger Private Subnet

Input:

```
192.168.1.10/20
```

Result:

```
Network: 192.168.0.0
Broadcast: 192.168.15.255
```

Use case:

- Larger internal segment
 - Lab environment
 - Department-level subnet
-

Example 3: Decimal Conversion

Input:

```
4294967295
```

Possible output:

IP: 255.255.255.255

Binary: 11111111111111111111111111111111

Hex: FFFFFFFF

Use case:

- Low-level networking
- Binary conversion
- Developer debugging

Example 4: Prefix to Mask

Input:

prefix: 24

Output:

/24

255.255.255.0

Wildcard: 0.0.0.255

Use case:

- Firewall rules
- Router configuration
- Documentation

? Recommended Workflow

A practical workflow depends on the user's goal.

For Subnet Planning

1. Enter CIDR notation or IP + prefix.
2. Review network and broadcast address.
3. Check usable host count.
4. Confirm private/public status.
5. Copy mask and wildcard values for configuration.

For Firewall Rules

1. Calculate subnet and wildcard mask.
2. Validate range boundaries.
3. Check membership for test IPs.
4. Avoid overly broad CIDR blocks.

For Cloud Networking

1. Calculate required host capacity.
2. Use Mask Calculator to derive minimal prefix.
3. Reserve space for growth.
4. Validate non-overlap with existing networks.

For Troubleshooting

1. Convert IPs to binary or decimal.
 2. Compare masks.
 3. Check IP membership.
 4. Confirm network boundaries.
-

?? Security and Responsible Use

IP Calculator is a technical utility intended for legitimate network planning, education, administration, and cybersecurity workflows.

Acceptable use cases include:

- Subnet planning
- VLAN design
- Firewall configuration
- Routing documentation
- Cloud network sizing
- VPN troubleshooting
- Incident response
- Log analysis
- Security lab exercises
- Network education

Users should apply results carefully:

- Validate configurations before deploying them.

- Avoid overly broad firewall rules.
 - Confirm CIDR ranges before adding routes.
 - Check overlap between networks.
 - Use membership checks before changing access controls.
 - Document subnet decisions clearly.
 - Treat local history as potentially sensitive on shared devices.
-

?? Technical Highlights

- Universal IPv4 network toolkit
 - Available at `dash.niamonx.io/ipcalc_net`
 - Subnet Calculator
 - Base Converter
 - Mask Calculator
 - Network Tools
 - CIDR input support
 - IP + Prefix input support
 - Network address calculation
 - Broadcast address calculation
 - Subnet mask calculation
 - Wildcard mask calculation
 - First and last host calculation
 - Total and usable address count
 - IPv4 class detection
 - Private range check
 - Decimal representation
 - Binary representation
 - Hexadecimal representation
 - Mask conversion
 - Prefix conversion
 - Wildcard conversion
 - CIDR aggregation
 - IP membership check
 - Edge handling for `/31` and `/32`
 - Server-side computation
 - Plan-based query limits
 - Local browser history
 - Stores last 200 queries locally
 - Suitable for network engineering, DevOps, SOC, education, and infrastructure planning
-

? Usage Hints

- Use either CIDR or IP + Prefix in the Subnet tab.
 - Converter supports IP, mask, prefix, decimal, binary, and hex.
 - Mask Calculator can derive the minimal prefix for required hosts.
 - Use wildcard masks for ACL and firewall logic.
 - Check private/public status before routing decisions.
 - Use membership checks before changing firewall rules.
 - Be careful with aggregation because it may include extra addresses.
 - Recheck `/31` and `/32` behavior when working with point-to-point or host routes.
 - Store exported or copied calculations carefully if they describe internal infrastructure.
 - Clear local history on shared devices.
-

? Contact Information

For technical, legal, abuse, privacy, or support-related inquiries, users can contact the NiamonX team directly:

support@niamonx.io — Technical Support

other@niamonx.io — General Inquiries

takedown@niamonx.io — Privacy or Data Removal Requests

legal@niamonx.io — Legal and Compliance Matters

Alternative contact channel:

📧 Helpdesk: <https://support.niamonx.io/>

Summary

NiamonX IP Calculator is a universal IPv4 subnet and conversion toolkit for calculating network ranges, broadcast addresses, subnet masks, wildcard masks, usable hosts, decimal / binary / hexadecimal representations, CIDR aggregation, and IP membership.

It is designed for network planning, routing, firewall configuration, cloud infrastructure, SOC workflows, DevOps, education, and troubleshooting. The tool performs calculations server-side, enforces plan-based limits, and stores the last 200 queries locally in the browser for convenience.

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