

CIDR Utility App

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CIDR* Utility App is an application that will be used by IT professionals and network engineers to find out the details of a given network/subnet. The app user will enter an IP address (IPv4) and pick a mask value (which is between 1 and 31) then the app will validate, calculate and display the number of subnets, number of valid IPs and the range of valid IPs. Also, it will provide the Network IP address and the Broadcast IP address for the given the subnet.

Brief Description:

If we have an IP address for a host and the network mask prefix (for example 192.168.1.55/23) we can figure out its network IP address and the Broadcast IP Address. Also, we can get the maximum number of hosts and the maximum number of subnets that can fit the network in question.

The prefix is the number of 1's in the subnet mask IP address from the left. So, /23 is basically equivalent to 255.255.254.0

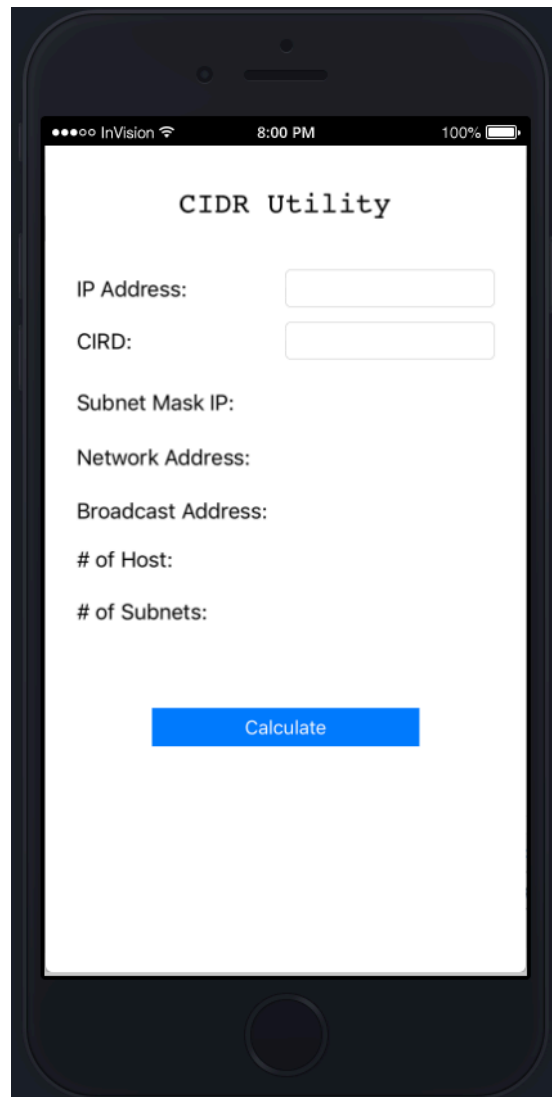
CIDR Calculation Logic:

There are 4 main formulas and they are:

- Network IP address = (IP Address) AND (Mask IP Address)
- Broadcast IP address = (IP Address) OR (NOT (Mask IP Address))
- To get Number of Hosts = $(2^{32-\text{prefix}}) - 2$
- To get Number of Subnets = 2^{prefix}

* **Classless Inter-Domain Routing (CIDR)** is a method for allocating IP addresses and IP routing. IP addresses are described as consisting of two groups of bits in the address: the most significant bits are the network prefix, which identifies a whole network or subnet, and the least significant set forms the host identifier, which specifies a particular interface of a host on that network. This division is used as the basis of traffic routing between IP networks and for address allocation policies. Classful network design for IPv4 sized the network prefix as one or more 8-bit groups, resulting in the blocks of Class A, B, or C addresses. Classless Inter-Domain Routing allocates address space to Internet service providers and end users on any address bit boundary, instead of on 8-bit segments (Wikipedia).

Mockups:



A mobile application mockup for a CIDR utility. The app is displayed on a dark grey smartphone frame. The status bar at the top shows 'InVision' as the carrier, a Wi-Fi signal icon, the time '8:00 PM', and a 100% battery level. The app's title, 'CIDR Utility', is centered at the top in a monospaced font. Below the title, there are seven labels for input fields: 'IP Address:', 'CIRD:', 'Subnet Mask IP:', 'Network Address:', 'Broadcast Address:', '# of Host:', and '# of Subnets:'. The first two labels have corresponding white input boxes to their right. At the bottom of the form area is a solid blue button with the text 'Calculate' in white. The entire app interface is set against a white background within the phone's screen.

CIDR Utility

IP Address:

CIRD:

Subnet Mask IP:

Network Address:

Broadcast Address:

of Host:

of Subnets:

Calculate

Figure 1: Initial View

InVision8:00 PM100%

CIDR Utility

IP Address:192.168.88.7

CIRD:

Subnet Mask IP:

Network Address:

Broadcast Address:

of Host:

of Subnets:

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
123	.	0
		✕

Figure 2: User enters IP address

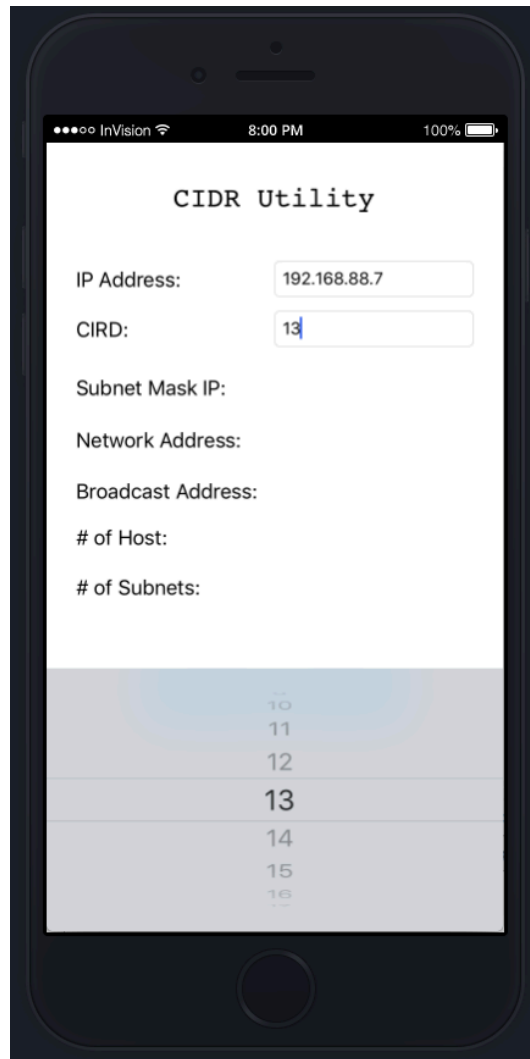


Figure 3: User picks CIDR value

The image shows a mobile application interface for a CIDR utility. The app is titled "CIDR Utility" and is displayed on a smartphone screen. The status bar at the top shows "InVision" as the carrier, the time as "8:00 PM", and the battery level at "100%".

The interface includes the following elements:

- IP Address:** A text input field containing "192.168.88.7".
- CIRD:** A text input field containing "13".
- Subnet Mask IP:** A label followed by the value "255.248.0.0".
- Network Address:** A label followed by the value "192.168.0.0".
- Broadcast Address:** A label followed by the value "192.175.255.255".
- # of Host:** A label followed by the value "524286".
- # of Subnets:** A label followed by the value "524288".
- Calculate:** A blue button with the text "Calculate" centered on it.

Figure 4: Click calculate to get the results



Figure 5: Launch Screen



Figure 6: Initial App icon