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Variable Length Subnet Table For IPv4

Status of this Memo

This memo provides information for the Internet community. This memo does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Abstract

This document itemizes the potential values for IPv4 subnets. Additional information is provided for Hex and Decmial values, classfull equivalents, and number of addresses available within the indicated block. We appreciate inputs from Bruce Pinsky (cisco) and Daniel Karrenberg (RIPE).

Table

The following table lists the variable length subnets from 1 to 32, the CIDR representation form and the Decmial equivalents.

Mask value:

Hex	CIDR	Decimal	#of add	Classfull
80.00.00.00	/1	128.0.0.0	2048 M	128 A
C0.00.00.00	/2	192.0.0.0	1024 M	64 A
E0.00.00.00	/3	224.0.0.0	512 M	32 A
F0.00.00.00	/4	240.0.0.0	256 M	16 A
F8.00.00.00	/5	248.0.0.0	128 M	8 A
FC.00.00.00	/6	252.0.0.0	64 M	4 A
FE.00.00.00	/7	254.0.0.0	32 M	2 A
FF.00.00.00	/8	255.0.0.0	16 M	1 A
FF.80.00.00	/9	255.128.0.0	8 M	128 B
FF.C0.00.00	/10	255.192.0.0	4 M	64 B
FF.E0.00.00	/11	255.224.0.0	2 M	32 B
FF.F0.00.00	/12	255.240.0.0	1024 K	16 B
FF.F8.00.00	/13	255.248.0.0	512 K	8 B
FF.FC.00.00	/14	255.252.0.0	256 K	4 B
FF.FE.00.00	/15	255.254.0.0	128 K	2 B
FF.FF.00.00	/16	255.255.0.0	64 K	1 B
FF.FF.80.00	/17	255.255.128.0	32 K	128 C
FF.FF.C0.00	/18	255.255.192.0	16 K	64 C

FF.FF.E0.00	/19	255.255.224.0	8 K	32 C
FF.FF.F0.00	/20	255.255.240.0	4 K	16 C
FF.FF.F8.00	/21	255.255.248.0	2 K	8 C
FF.FF.FC.00	/22	255.255.252.0	1 K	4 C
FF.FF.FE.00	/23	255.255.254.0	512	2 C
FF.FF.FF.00	/24	255.255.255.0	256	1 C
FF.FF.FF.80	/25	255.255.255.128	128	
FF.FF.FF.C0	/26	255.255.255.192	64	
FF.FF.FF.E0	/27	255.255.255.224	32	
FF.FF.FF.F0	/28	255.255.255.240	16	
FF.FF.FF.F8	/29	255.255.255.248	8	
FF.FF.FF.FC	/30	255.255.255.252	4	
FF.FF.FF.FE	/31	255.255.255.254	This space is not usable	
FF.FF.FF.FF	/32	255.255.255.255	This is a single host route	

Examples

The following tables illistrate some options for subnet/host partions within selected block sizes.

From a /16 block

# bits	Mask	Effective Subnets	Effective Hosts
2	255.255.192.0	2	16382
3	255.255.224.0	6	8190
4	255.255.240.0	14	4094
5	255.255.248.0	30	2046
6	255.255.252.0	62	1022
7	255.255.254.0	126	510
8	255.255.255.0	254	254
9	255.255.255.128	510	126
10	255.255.255.192	1022	62
11	255.255.255.224	2046	30
12	255.255.255.240	4094	14
13	255.255.255.248	8190	6
14	255.255.255.252	16382	2

From a /24 block

# bits	Mask	Effective Subnets	Effective Hosts
2	255.255.255.192	2	62
3	255.255.255.224	6	30
4	255.255.255.240	14	14
5	255.255.255.248	30	6
6	255.255.255.252	62	2

*Subnet all zeroes and all ones excluded.
*Host all zeroes and all ones excluded.

References

[1] Fuller, V., Li, T., Yu, J., and K. Varadhan, "Classless Inter-Domain Routing (CIDR): an Address Assignment and Aggregation Strategy", RFC 1519, BARRNet, cicso, Merit, OARnet, September 1993.

Security Considerations

Security issues are not discussed in this memo.

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