

ipaddresses

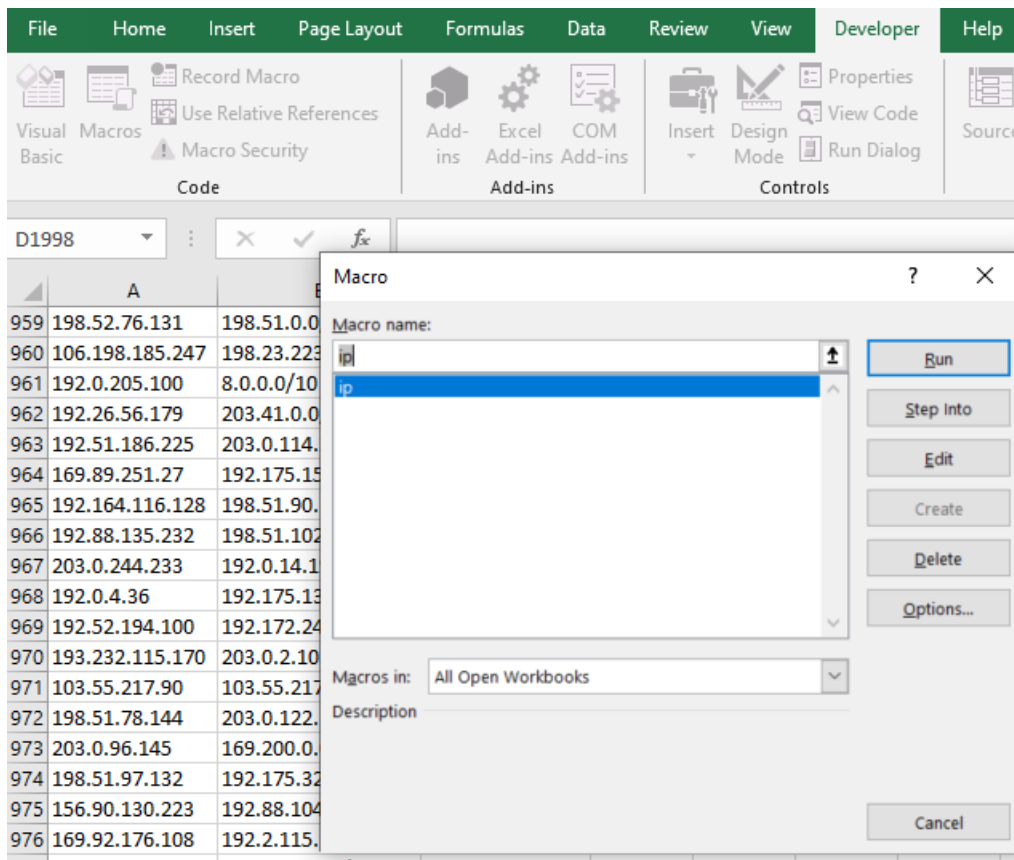
100

One of our interns inventoried some hosts ip addresses. I think they confused what ip addresses belong in what subnet. How many ip addresses are listed in the correct subnet?

Converting the txt file to a csv and opening in excel we can use a macro to solve this.

<https://github.com/andreafortuna-org/VBAIPFunctions/blob/master/IPFunctions.vba>

Create a Macro on the excel document and run the macro.



```

Sub ip()
End Sub

'=====
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'=====
'| IP Functions v2.0.3 (20160810)
'| https://github.com/andreafortuna/VBAIPFunctions
'=====
'| Andrea Fortuna
'| https://andreafortuna.org
'| andrea@andreafortuna.org
'=====

'=====
'| IpIsValid
'=====
'| Returns true if an ip address is formatted exactly
Function IpIsValid(ByVal ip As String) As Boolean
    IpIsValid = (IpBinToStr(IpStrToBin(ip)) = ip)
End Function

'=====
'| IpStrToBin
'=====
'| Text IP address to binary

```

Use the ipisinsubnet function to get true/false results

C2 : ✕ ✓ fx =ipisinsubnet(A2,B2)				
	A	B	C	D
1	IP	Subnet		
2	1.1.1.1	1.1.1.0/24	TRUE	1
3	192.168.0.75	10.10.10.0/24	FALSE	0
4	192.31.199.233	126.175.187.164/31	FALSE	0

Convert true to 1 and false to 0

D2 : ✕ ✓ fx =IF(C2,1,0)				
	A	B	C	D
1	IP	Subnet		
2	1.1.1.1	1.1.1.0/24	TRUE	1
3	192.168.0.75	10.10.10.0/24	FALSE	0
4	192.31.199.233	126.175.187.164/31	FALSE	0

Auto sum column D

5	100.0.1.149	192.31.200.128/28	FALSE	0
5	170.110.93.51	192.30.128.0/17	FALSE	0
7				48

Flag: 48

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Use the same file from ipaddresses.

How many IPs have exactly 14 bits turned on?

0/5 attempts

For this we need to pull the ip addresses in the list apart by octet and then convert each one to binary then count the number of bits in each octet and add together and count the times that 14 appears from the results.

Lots of steps for this one!

1st we have a list of ipaddresses that we will open in excel and create a table.

A	B
IP	Subnet
1.1.1.1	1.1.1.0/24
192.168.0.75	10.10.10.0/24
192.31.199.233	126.175.187.164/31
192.88.97.247	115.108.0.0/14
198.51.56.59	192.175.61.144/29
192.31.218.80	164.175.96.0/19
203.0.120.150	198.10.96.128/27

Next we need to separate out the octets:

1st octet formula = =LEFT(A2,FIND(".",A2)-1)

2nd octet formula = =MID(A2,FIND(".",A2)+1,FIND(".",A2,FIND(".",A2)+1)-FIND(".",A2)-1)

3rd octet formula ==MID(A2,FIND(".",A2,FIND(".",A2)+1)+1,FIND(".",A2,FIND(".",A2,FIND(".",A2)+1)+1)-
(FIND(".",A2,FIND(".",A2)+1)+1))

4th octet formula = =MID(A2,FIND(".",A2,FIND(".",A2,FIND(".",A2)+1)+1)+1,LEN(A2)-
FIND(".",A2,FIND(".",A2,FIND(".",A2)+1)+1))

A	B	C	D	E	F
IP	Subnet	1st	2nd	3rd	4th
1.1.1.1	1.1.1.0/24	1	1	1	1
192.168.0.75	10.10.10.0/24	192	168	0	75
192.31.199.233	126.175.187.164/31	192	31	199	233
192.88.97.247	115.108.0.0/14	192	88	97	247
198.51.56.59	192.175.61.144/29	198	51	56	59

Next we need to convert each octet to binary

Formula = =DEC2BIN([@1st],8)

A	B	C	D	E	F	G	H	I	J
IP	Subnet	1st	2nd	3rd	4th	Binary	Binary	Binary	Binary
1.1.1.1	1.1.1.0/24	1	1	1	1	00000001	00000001	00000001	00000001
192.168.0.75	10.10.10.0/24	192	168	0	75	11000000	10101000	00000000	01001011
192.31.199.233	126.175.187.164/31	192	31	199	233	11000000	00011111	11000111	11101001
192.88.97.247	115.108.0.0/14	192	88	97	247	11000000	01011000	01100001	11110111
198.51.56.59	192.175.61.144/29	198	51	56	59	11000110	00110011	00111000	00111011

Finally we need to count the occurrences of a flipped bits

Formula = =LEN([@[Binary 1]])-LEN(SUBSTITUTE([@[Binary 1]],"1",""))

G	H	I	J	K	L	M	N	O
Binary	Binary	Binary	Binary	bits 1	bits 2	bits 3	bits 4	bits 5
00000001	00000001	00000001	00000001	1	1	1	1	4
11000000	10101000	00000000	01001011	2	3	0	4	9
11000000	00011111	11000111	11101001	2	5	5	5	17
11000000	01011000	01100001	11110111	2	3	3	7	15
11000110	00110011	00111000	00111011	4	4	3	5	16
11000000	00011111	11011010	01010000	2	5	5	2	14

Finally sum the bit counts and look for any that equal the count of 14

K	L	M	N	O	P
bits 1	bits 2	bits 3	bits 4	Total	is 14?
1	1	1	1	4	0
2	3	0	4	9	0
2	5	5	5	17	0
2	3	3	7	15	0
4	4	3	5	16	0
2	5	5	2	14	1
5	0	4	4	13	0
2	5	4	4	15	0
2	3	3	3	11	0
2	4	6	5	17	0
2	3	5	3	13	0
6	3	4	6	19	0
4	4	7	1	16	0
4	7	4	5	20	0
3	3	5	5	16	0
2	3	2	4	11	0
4	1	6	4	15	0

Final image.

IP	Subnet	1st	2nd	3rd	4th	Binary	Binary	Binary	Binary	bits 1	bits 2	bits 3	bits 4	Total	is 14?
1.1.1.1	1.1.1.0/24	1	1	1	1	00000001	00000001	00000001	00000001	1	1	1	1	4	0
192.168.0.75	10.10.10.0/24	192	168	0	75	11000000	10101000	00000000	01001011	2	3	0	4	9	0
192.31.199.233	126.175.187.164/31	192	31	199	233	11000000	00011111	11000111	11101001	2	5	5	5	17	0
192.88.97.247	115.108.0.0/14	192	88	97	247	11000000	01011000	01100001	11110111	2	3	3	7	15	0
198.51.56.59	192.175.61.144/29	198	51	56	59	11000110	00110011	00111000	00111011	4	4	3	5	16	0
192.31.218.80	164.175.96.0/19	192	31	218	80	11000000	00011111	11011010	01010000	2	5	5	2	14	1
203.0.120.150	198.10.96.128/27	203	0	120	150	11001011	00000000	01111000	10010110	5	0	4	4	13	0
192.31.198.150	53.180.120.138/31	192	31	198	150	11000000	00011111	11000110	10010110	2	5	4	4	15	0
192.88.98.176	192.91.167.0/24	192	88	98	176	11000000	01011000	01100010	10110000	2	3	3	3	11	0
192.30.187.117	203.11.128.0/20	192	30	187	117	11000000	00011110	10111011	01110101	2	4	6	5	17	0
192.52.229.76	203.0.82.96/28	192	52	229	76	11000000	00110100	11100101	01001100	2	3	5	3	13	0
125.137.116.238	198.49.119.128/25	125	137	116	238	01111101	10001001	01110100	11101110	6	3	4	6	19	0
169.225.191.2	203.54.104.16/28	169	225	191	2	10101001	11100001	10111111	00000010	4	4	7	1	16	0
169.251.105.158	198.51.103.128/27	169	251	105	158	10101001	11111011	01101001	10011110	4	7	4	5	20	0
14.152.205.87	198.51.48.8/29	14	152	205	87	00001110	10011000	11001101	01010111	3	3	5	5	16	0
192.52.192.78	194.6.57.120/31	192	52	192	78	11000000	00110100	11000000	01001110	2	3	2	4	11	0
198.16.123.177	198.23.27.160/27	198	16	123	177	11000110	00010000	01111011	10110001	4	1	6	4	15	0
192.44.39.15	175.181.128.0/17	192	44	39	15	11000000	00101100	00100111	00001111	2	3	4	4	13	0
192.52.192.57	169.115.0.0/16	192	52	192	57	11000000	00110100	11000000	00111001	2	3	2	4	11	0
203.103.12.8	192.0.7.194/31	203	103	12	8	11001011	01100111	00001100	00001000	5	5	2	1	13	0
192.31.197.130	198.51.37.128/25	192	31	197	130	11000000	00011111	11000101	10000010	2	5	4	2	13	0

4	2	11	0
5	3	10	0
1	4	8	0
5	4	18	0
256			Σ

Flag: 256