

# TCP/IP Access Control List Wildcard Masks

The rules are known and you have seen examples of how to generate wild card masks:  
The 32 bit wildcard mask consists of 1's and 0' whereby a 1 equates to ignore this bit and a 0, to check this bit.

Most of the time though, we just want to:

1. MATCH A HOST
2. MATCH AN ENTIRE SUBNET
3. MATCH A RANGE
4. MATCH EVERYONE

Here is how to accomplish the above, without too much pain....

## 1. TO MATCH A HOST

**Set all the wildcard mask bits to zero**

For a Standard Access-list

Access-list 1 permit 186.145.65.12 0.0.0.0

or

Access-list 1 permit 186.145.65.12 (standard access lists assume a 0.0.0.0 mask)

For Extended Access-lists

Access-list 101 permit ip 186.145.65.12 0.0.0.0 any

or

Access-list 101 permit ip host 186.145.65.12 any

## 2. MATCH AN ENTIRE SUBNET

**Wildcard mask = 255.255.255.255 – (minus) the subnet mask**

*Example 1*

Given 42.64.86.0 subnet mask 255.255.255.0

255.255.255.255 - subnet mask 255.255.255.0 = Wildcard mask 0.0.0.255

Access-list 1 permit 42.64.86.0 0.0.0.255

*Example 2*

Given 202.22.66.99 subnet mask 255.255.255.240

255.255.255.255 - subnet mask 255.255.255.240 = Wildcard mask 0.0.0.15

Access-list 1 permit 202.22.66.99 0.0.0.15

*Example 3*

Given 55.66.77.0 subnet mask 255.255.224.0

255.255.255.255 - subnet mask 255.255.224.0 = Wildcard mask 0.0.31.255

Access-list 1 permit 55.66.77.0 0.0.31.255

*Example 4*

Given 211.95.32.128 subnet mask 255.255.255.248

255.255.255.255 - subnet mask 255.255.255.248 = Wildcard mask 0.0.0.7

Access-list 1 permit 211.95.32.128 0.0.0.7

**3. MATCH A RANGE (WITHIN A SINGLE (SUB)NETWORK)  
To Find Wildcard Mask, Take the HIGHER (END OF THE RANGE) minus the lower  
(end of the range):**

*Example 1*

Match the range from 132.43.48.0 to 132.43.63.255

132.43.63.255 - 132.43.48.0 = Wildcard mask 0.0.15.255

Access-list 1 permit 132.43.48.0 0.0.15.255

*Example 2*

Match the range from 132.43.16.32 to 132.43.31.63

132.43.31.63 - 132.43.16.32 = Wildcard mask 0.0.15.31

Access-list 1 permit 132.43.16.32 0.0.15.31

**Pay Attention! Now hear this: Each Wildcard mask value must be ONE LESS than a power of 2 using this approach. (i.e. one of these: 0, 1, 3, 7, 15, 31, 63, 127, 255)  
You will have to create a couple of ranges if this condition is not met.**

**4. MATCH EVERYONE**

Access-list 1 permit any

or

Access-list 1 permit 0.0.0.0 255.255.255.255