**Project**

**IP Address: 1.1.23.96/16**

|  |  |  |
| --- | --- | --- |
| **Name** | **Decimal** | **Binary** |
| Given IP Address | 1.1.23.96 | 00000001 00000001 00010111 01100000 |
| Subnet Mask | 255.255.0.0 | 11111111 11111111 00000000 00000000 |
| Network Address | 1.1.0.0 | 00000001 00000001 00000000 00000000 |
| Broadcast Address | 1.1.255.255 | 00000001 00000001 11111111 11111111 |

**Network address: 1.1.0.0/16**

**Data Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Node Number and Names** | **Host** | **IPs** | **Give** | **Host Bit** | **Network Bit** |
| **A**. Elves Factory and Farm | 10000 | 10002 | 16384 | 14 | 18 |
| **B**. Elves Office for School and Library | 2047 | 2049 | 4096 | 12 | 20 |
| **C**. Fairy Village | 700 | 702 | 1024 | 10 | 22 |
| **D**. Royal Course | 200 | 202 | 256 | 8 | 24 |
| **E**. White Castle | 15 | 17 | 32 | 5 | 27 |
| **F**. Jane’s Residence | 5 | 7 | 8 | 3 | 29 |
| **G**. Royal Course – White Castle | 2 | 4 | 4 | 2 | 30 |
| **H**. White Castle – Fairy Village | 2 | 4 | 4 | 2 | 30 |
| **I**. Fairy Village – Elves Factory and Farm | 2 | 4 | 4 | 2 | 30 |
| **J**. Royal Course – Jane’s Residence | 2 | 4 | 4 | 2 | 30 |
| **K**. Fairy Village – Elves Office for School and Library | 2 | 4 | 4 | 2 | 30 |
| **L**. Elves Office for School and Library – Jane’s Residence | 2 | 4 | 4 | 2 | 30 |
| **M**. Elves Factory and Farm – Elves Office for School and Library | 2 | 4 | 4 | 2 | 30 |
| **N**. Elves Factory and Farm – Jane’s Residence | 2 | 4 | 4 | 2 | 30 |

**VLSM TREE**

a 216 = 65536

b 16384 c 16384

d 4096 e 4096

f 1024g 1024

h 256 i 256

j 32

k 32 v 32

l 8 w 4 x 4

m 8

p 8

n 4 o4

q 4 r 4 s 8

t 4 u 4

**VLSM Chart**

a 1.1.0.0/16

b 1.1.0.0/18 c 1.1.64.0/18

(A)

d 1.1.64.0/20 e 1.1.80.0/20

(B)

f 1.1.80.0/22 g 1.1.84.0/22

(C)

h 1.1.84.0/24 i 1.1.85.0/24

(D)

j 1.1.85.0/27 k 1.1.85.32/27

(E)

l 1.1.85.32/29 m 1.1.85.40/29 p 1.1.85.48/29 s 1.1.85.56/29

(F)

n 1.1.85.40/30 o 1.1.85.44/30 t 1.1.85.56/30 u 1.1.85.60/30

(G) (H) (K) (L)

q 1.1.85.48/30 r 1.1.85.52/30

1. (J)

v 1.1.85.64/27

w 1.1.85.64/30 x 1.1.85.68/30

(M) (N)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Hosts Needed | Hosts Available | Unused Hosts | Network Address | Slash | Mask | Usable Range | Broadcast | Wildcard |
| A | 10000 | 16382 | 6382 | 1.1.0.0 | /18 | 255.255.192.0 | 1.1.0.1 - 1.1.63.254 | 1.1.63.255 | 0.0.63.255 |
| B | 2047 | 4094 | 2047 | 1.1.64.0 | /20 | 255.255.240.0 | 1.1.64.1 - 1.1.79.254 | 1.1.79.255 | 0.0.15.255 |
| C | 700 | 1022 | 322 | 1.1.80.0 | /22 | 255.255.252.0 | 1.1.80.1 - 1.1.83.254 | 1.1.83.255 | 0.0.3.255 |
| D | 200 | 254 | 54 | 1.1.84.0 | /24 | 255.255.255.0 | 1.1.84.1 - 1.1.84.254 | 1.1.84.255 | 0.0.0.255 |
| E | 15 | 30 | 15 | 1.1.85.0 | /27 | 255.255.255.224 | 1.1.85.1 - 1.1.85.30 | 1.1.85.31 | 0.0.0.31 |
| F | 5 | 6 | 1 | 1.1.85.32 | /29 | 255.255.255.248 | 1.1.85.33 - 1.1.85.38 | 1.1.85.39 | 0.0.0.7 |
| G | 2 | 2 | 0 | 1.1.85.40 | /30 | 255.255.255.252 | 1.1.85.41 - 1.1.85.42 | 1.1.85.43 | 0.0.0.3 |
| H | 2 | 2 | 0 | 1.1.85.44 | /30 | 255.255.255.252 | 1.1.85.45 - 1.1.85.46 | 1.1.85.47 | 0.0.0.3 |
| I | 2 | 2 | 0 | 1.1.85.48 | /30 | 255.255.255.252 | 1.1.85.49 - 1.1.85.50 | 1.1.85.51 | 0.0.0.3 |
| J | 2 | 2 | 0 | 1.1.85.52 | /30 | 255.255.255.252 | 1.1.85.53 - 1.1.85.54 | 1.1.85.55 | 0.0.0.3 |
| K | 2 | 2 | 0 | 1.1.85.56 | /30 | 255.255.255.252 | 1.1.85.57 - 1.1.85.58 | 1.1.85.59 | 0.0.0.3 |
| L | 2 | 2 | 0 | 1.1.85.60 | /30 | 255.255.255.252 | 1.1.85.61 - 1.1.85.62 | 1.1.85.63 | 0.0.0.3 |
| M | 2 | 2 | 0 | 1.1.85.64 | /30 | 255.255.255.252 | 1.1.85.65 - 1.1.85.66 | 1.1.85.67 | 0.0.0.3 |
| N | 2 | 2 | 0 | 1.1.85.68 | /30 | 255.255.255.252 | 1.1.85.69 - 1.1.85.70 | 1.1.85.71 | 0.0.0.3 |