**Esercizi IP:**

Scrivere per i seguenti IP: IP Network, IP Gateway ‘convenzionale’, IP Broadcast, quali e quanti ottetti per gli host, quanti e quali per la network.

**1.1.1.1/8**



11111111.00000000.00000000.00000000

SM: 255.0.0.0



256-255=1



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 1.0.0.0/8 | 1.255.255.255/8 | 1.0.0.1/8 | 1.0.0.2/8 – 1.255.255.254/8 |
| 2 | 2.0.0.0/8 | 2.255.255.255/8 | 2.0.0.1/8 | 2.0.0.2/8 – 2.255.255.254/8 |
| 3 | 3.0.0.0/8 | 3.255.255.255/8 | 3.1.1.2/8 | 3.1.1.3/8 – 3.255.255.254/8 |

* Network: primo ottetto = 8 bits
* Host: tre successivi = 24 bits (16,777,214)

**128.1.6.5/12**



11111111.11110000.00000000.00000000

SM: 255.240.0.0



256-240=16



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 128.0.0.0/12 | 128.15.255.255/12 | 128.0.0.1/12 | 128.0.0.2/12 – 128.15.255.254/12 |
| 2 | 128.16.0.0/12 | 128.31.255.255/12 | 128.16.0.1/12 | 128.16.0.2/12 – 128.31.255.254/12 |
| 3 | 128.32.0.0/12 | 128.47.255.255/12 | 128.32.0.1/12 | 128.32.0.2/12 – 128.47.255.254/12 |

* Network: due primi ottetti meno 4 bits = 12 bits
* Host: due ottetti successivi più 4 bits = 20 bits (1,048,574)

**200.1.2.3/24**



11111111.11111111.11111111.00000000

SM: 255.255.255.0



256-255=1



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 200.1.2.0/24 | 200.1.2.255/24 | 200.1.2.1/24 | 200.1.2.2/24 – 200.1.2.254/24 |
| 2 | 200.1.3.0/24 | 200.1.3.255/24 | 200.1.3.1/24 | 200.1.3.2/24 – 200.1.3.254/24 |
| 3 | 200.1.4.0/24 | 200.1.4.255/24 | 200.1.4.1/24 | 200.1.4.2/24 – 200.1.4.254/24 |

* Network: tre primi ottetti = 12 bits
* Host: ultimo ottetto = 8 bits (254)

**192.192.1.1/22**



11111111.11111111.11111100.00000000

SM: 255.255.252.0



256-252=4



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 192.192.0.0/22 | 192.192.3.255/22 | 192.192.0.1/22 | 192.192.0.2/22 – 192.192.3.254/22 |
| 2 | 192.192.4.0/22 | 192.192.7.255/22 | 192.192.4.1/22 | 192.192.4.2/22 – 192.192.7.254/22 |
| 3 | 192.192.8.0/22 | 192.192.11.255/22 | 192.192.8.1/22 | 192.192.8.1/22 – 192.192.11.254/22 |

* Network: tre primi ottetti meno 2 bits = 22 bits
* Host: ultimo ottetto più due bits = 10 bits (1022)



11111111.10000000.00000000.00000000

SM: 255.128.0.0



256-128=128



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 126.0.0.0/9 | 126.127.255.255/9 | 126.0.0.1/9 | 126.0.0.2/9 – 126.127.255.254/9 |
| 2 | 126.128.0.0/9 | 126.255.255.255/9 | 126.128.0.1/9 | 126.128.0.2/9 – 126.255.255.254/9 |

* Network: primo ottetto e bit del secondo = 9 bits
* Host: tre ottetti successivi meno 1 bit = 23 bits (8,388,606)

**200.1.9.8/24**



11111111. 11111111. 11111111.00000000

SM: 255.255.255.0



256-255=1



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 200.1.9.0/24 | 200.1.9.255/24 | 200.1.9.1/24 | 200.1.9.2/24 – 200.1.9.254/24 |
| 2 | 200.1.10.0/24 | 200.1.10.255/24 | 200.1.10.1/24 | 200.1.10.2/24 – 200.1.10.254/24 |
| 3 | 200.1.11.0/24 | 200.1.11.255/24 | 200.1.11.1/24 | 200.1.11.2/24 – 200.1.11.254/24 |

* Network: tre primi ottetti = 24 bits
* Host: ultimo ottetto = 8 bits (254)

**172.16.0.4/16**



11111111. 11111111. 00000000.00000000

SM: 255.255.0.0



256-255=1



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S | IP NETWORK | IP BROADCAST | IP GATEWAY | IP HOST |
| 1 | 172.16.0.0/16 | 172.16.255.255/16 | 172.16.0.1/16 | 172.16.0.2/16 – 172.16.255.254/16 |
| 2 | 172.17.0.0/16 | 172.17.255.255/16 | 172.17.0.1/16 | 172.17.0.2/16 - 172.17.255.254/16 |
| 3 | 172.18.0.0/16 | 172.18.255.255/16 | 172.18.0.1/16 | 172.18.0.2/16 - 172.18.255.254/16 |

* Network: due primi ottetti = 16 bits
* Host: due ottetti successivi = 16 bits (65,534)