

Os x support
essentials 10.7
chapter 6



**ASSIGN
BUSTER**

What do the terms interface, protocol, and service mean in relation to computer networks? An interface is any channel through which network data can flow. Hardware network interfaces are defined by physical network connections, while virtual network interfaces are logical network connections that ride on top of hardware network connections. A protocol is a set of rules used to describe a specific type of network communication. Protocols are necessary for separate network devices to communicate properly. Finally, a network service (as it pertains to the Network preferences) is the collection of settings that define a network connection.

What is the purpose of Internet Protocol (IP) addresses and subnet masks? What is their format? The Internet Protocol (IP) address identifies the location of a specific network device. IP addresses are the primary identification the Internet protocol suite TCP/IP uses for LANs and WANs. Subnet masks are used by network devices to identify their local network range and to determine whether outgoing data is destined for a network device on the LAN. Most common IP addresses and subnet masks share the same IPv4 formatting. An IPv4 address is a 32-bit number represented in four groups of three-digit numbers, known as octets, separated by periods. Each octet has a value between 0 and 255.

How does the IP use the MAC address to send messages between computers on a local area network (LAN)? If a network device needs to send data to another network device on the same LAN, it addresses the outgoing packets based on the destination device's MAC address.

How does the IP transfer messages between computers over a wide area network (WAN)? A network client uses the subnet mask to determine whether the destination IP address is on the LAN. If the destination IP address is not on the LAN, then it's assumed the destination address is on another network, and the client sends the data to the IP address of the local network router. The network router then sends the data, over a WAN connection, on to another router that it thinks is closer to the destination. This continues across WAN connections from router to router until the data reaches its destination.

How does the Domain Name Service (DNS) facilitate network naming? The DNS service translates host names to IP addresses with forward lookups and translate IP addresses to host names by using reverse lookups. DNS is architected as a hierarchy of worldwide domain servers. Local DNS servers provide name resolution and possibly host names for local clients. These local DNS servers connect to DNS servers higher in the DNS hierarchy to resolve both unknown host names and host local domain names.

How do network devices acquire and use link-local TCP/IP addresses? If DHCP is specified as the configuration for a TCP/IP connection and no DHCP service is available, the device automatically selects a random IP address in the 169.254. xxx. xxx range. It checks the local network to ensure that no other network device is using the randomly generated IP address before it applies the IP address. In most cases, though, this addressing is not normal, and often indicates a problem with DHCP services.

What interfaces and protocols does Lion support by default? • Wired Ethernet

IEEE 802.3 family of hardware network interface standards

• Wireless (Wi-Fi) IEEE 802.11 family of hardware network interface standards

• FireWire IEEE 1394 hardware network interface

• Analog modem hardware network interface

• Bluetooth wireless hardware network interface

• USB connectivity via cellular network adapters

• Virtual private network (VPN) virtual network interface via the Point-to-Point Tunneling Protocol (PPTP)

• VPN virtual network interface via the Layer 2 Tunneling Protocol (L2TP) over Internet Protocol security (IPsec)

• Point-to-Point Protocol over Ethernet (PPPoE) virtual network interface 6 to 4 virtual network interface

• Virtual local area network (VLAN) virtual network interface via the IEEE 802.1Q standard

• Link Aggregation virtual network interface via the IEEE 802.3ad standard

• Transmission Control Protocol/Internet Protocol (TCP/IP), also known as the Internet protocol suite

• Dynamic Host Configuration Protocol (DHCP) Domain Name Service (DNS) protocol

• Network Basic Input/Output System (NetBIOS) and Windows Internet

• Naming Service (WINS) protocols

• Authenticated Ethernet via the 802.1X protocol

• Point-to-Point Protocol (PPP)

How does network service order affect network connectivity? The network service order list determines the primary network service interface if there is more than one active service. All network traffic that isn't better handled via local connection to an active network service interface is sent to the primary network service interface. Thus, all Internet traffic is sent through the primary network service interface. Further, all DNS resolution is handled via the primary network service interface.

In the Network preferences, how can you tell which interface is currently in use for network activities? In Network preferences, all network service interfaces with a green status indicator are being used for network activities. However, all network traffic that isn't better handled by a local connection is sent to the primary network service interface. The primary network service interface is the topmost active interface in the listing.

What functionality does Lion support with the AppleTalk protocol? Lion does not support AppleTalk.

What are four common issues that can interrupt network services on a Mac? •

A disconnected network cable will cause the hardware network interface to become inactive.

- A nonfunctioning network interface port will cause the hardware network interface to become inactive.
- A DHCP service issue will prevent proper TCP/IP configuration.
- A DNS service issue will prevent host name resolution.

How can you identify the MAC addresses for all of a Mac's network interfaces? You can identify all the MAC addresses for the computer's network interfaces from the Info pane of Network Utility.

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