

What Is a Firewall?

A firewall is any device used to prevent outsiders from gaining access to your network. This device is usually a combination of software and hardware. Firewalls commonly implement exclusionary schemes or rules that sort out wanted and unwanted addresses. To understand how work firewalls; consider some of the subjects discussed earlier in this book. First, most simple authentication procedures use the IP address as an index. The IP address is the most universal identification index on the Internet. This address can be either a static or dynamic address:

A static IP address is permanent; it is the address of a machine that is always connected to the Internet. There are many classes of static IP addresses. One class can be discovered by issuing a whois query; this class consists primarily of top-level machines in a network, such as domain name servers, Web servers, and root-level machines. These actually have registered hostnames within the whois database at InterNIC.

Other classes of static IP addresses are addresses assigned to second- and third-level machines within networks dominated by domain name servers, root servers, Web servers, and so on. These also have permanent physical addresses. However, these machines might or might not possess a registered hostname. In any event, their addresses are registered as well.

A dynamic IP address is one that is arbitrarily assigned to a different node each time it connects to a network. Dynamic IP is often used by ISPs for dial-up access--each time a node dials up, it is assigned a different IP address.

Whether your address is static or dynamic, it is used in all network traffic that you conduct. A Web server records your IP address when you request a Web page. This is not to intrude on your privacy; it is done so that the server knows how to send you the requested data. In a similar fashion, all network services capture your IP (either temporarily or permanently) so they can return data to your address. In essence, it works much like the postal service: Imagine if every letter mailed had a return address. On the Internet, things are just so. The IP is the return address.