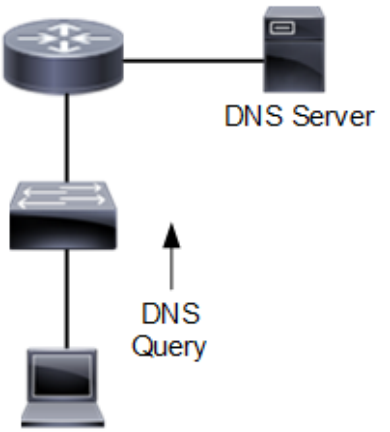
Domain Name Services (DNS)

There are various network addressing services that enable network communication. DNS is a network protocol that resolve a hostname to an unknown IP address. For example, web-based applications are based on domain names and hostnames that must be resolved (mapped) to an IP address. There are network services such as NTP, DHCP, and TFTP as well that rely on DNS for proper operation. IP addresses enable routing of packets between subnets so it is fundamental to data communications.

Client Configuration

All endpoints require the configuration of a DNS server address. That is used by the local operating system to forward DNS queries. The preferred method for configuring DNS server address on endpoints is via DHCP.

Figure 1 Endpoint DNS Request



There is a static option as well to manually assign DNS server address. You can configure multiple DNS server addresses for failover purposes. Routers forward DNS queries based on the IP address assigned to the nearest DNS server.

IOS Configuration

Cisco network devices are called intermediate nodes and provide various network services to endpoints. They can originate DNS queries as well for management protocols such as Telnet, SSH and HTTP server. That permits network administrators to use hostnames instead of having to know an IP address for Telnet/SSH sessions.

Table 1 DNS Commands

IOS Command	Description	Example
ip name-server	IP address of DNS server	172.16.1.254
ip domain-name	create FQDN hostname	cisco.server.com
no ip domain-lookup	disable DNS services	default is enabled
ip host	configure static mapping	ip host sw1 10.10.1.1

IP Name-Server

IOS global command that configures the IP address of a DNS name server on a Cisco network device. All DNS queries originating from that network node are forwarded to the DNS name server assigned that IP address. DNS servers are commonly referred to as name servers.

router(config)# **ip name-server 172.16.1.254**

IP Domain-Name

IOS global command that configures a local company domain name. It appends the domain name to a hostname and creates a Fully Qualified Domain Name (FQDN). That is used to communicate with a DNS server. It is required as well to configure SSH on a Cisco network device.

router(config)# **ip domain-name cisconet.server.com**

IP Domain-Lookup

IOS global command that enables DNS operation on a Cisco network device. This enables DNS queries to originate from the device and forward lookups. This is a default setting required to enable DNS.

router(config)# **ip domain-lookup**

IP Host

IOS global command that configures a static mapping between a hostname and an IP address. They are cached in a DNS table on the local network device. The following IOS commands will configure a static DNS record and display the local DNS cache.

router(config)# **ip host server-1 200.200.2.1**
router# **show hosts**