Content Delivery Network (CDN)

A **content delivery network** or **content distribution network** (**CDN**) is a geographically distributed network of proxy serversand their data centers. The goal is to distribute service spatially relative to end-users to provide high availability and high performance. CDNs serve a large portion of the Internet content today, including web objects (text, graphics and scripts), downloadable objects (media files, software, documents), applications (e-commerce, portals), live streaming media, on-demand streaming media, and social media sites.

CDN is an umbrella term spanning different types of content delivery services: video streaming, software downloads, web and mobile content acceleration, licensed/managed CDN, transparent caching, and services to measure CDN performance, load balancing, multi-CDN switching and analytics and cloud intelligence. CDN vendors may cross over into other industries like security, with DDoS protection and web application firewalls (WAF), and WAN optimization.

Several protocol suites are designed to provide access to a wide variety of content services distributed throughout a content network. The Internet Content Adaptation Protocol (ICAP) was developed in the late 1990 to provide an open standard for connecting application servers. A more recently defined and robust solution is provided by the Open Pluggable Edge Services (OPES) protocol. This architecture defines OPES service applications that can reside on the OPES processor itself or be executed remotely on a Callout Server. Edge Side Includes or ESI is a small markup language for edge level dynamic web content assembly. It is fairly common for websites to have generated content. It could be because of changing content like catalogs or forums, or because of the personalization. This creates a problem for caching systems. To overcome this problem, a group of companies created ESI.

If content owners are not satisfied with the options or costs of a commercial CDN service, they can create their own CDN. This is called a private CDN. A private CDN consists of POPs (points of presence) that are only serving content for their owner. These POPs can be caching servers, reverse proxies or application delivery controllers.It can be as simple as two caching servers,or large enough to serve petabytes of content.

Large content distribution networks may even build and set up their own private network to distribute copies of content across cache locations. Such private networks are usually used in conjunction with public networks as a backup option in case the capacity of private network is not enough or there is a failure which leads to capacity reduction. Since the same content has to be distributed across many locations, a variety of multicasting techniques may be used to reduce bandwidth consumption. Over private networks, it has also been proposed to select multicast trees according to network load conditions to more efficiently utilize available network capacity.