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24 Free Web Hosting Tools

COMPLETE  
DICTIONARY

300+ Terms

All Web Hosting Technical Terms

# PEDIA

## Complete Dictionary

From A Records to Zero-Downtime Deployments

Hosting infrastructure, DNS, SSL/TLS, performance, security, networking, cloud platforms, server admin, databases & DevOps.

Hosting

DNS

SSL/TLS

Cloud

Performance

Security

Networking

300+

Terms Defined

26

Alphabet Sections

15

Topic Categories

2026

Edition

# About This Dictionary

The web hosting industry has developed an enormous vocabulary spanning DNS, networking, cloud computing, security, performance, and server administration. This dictionary defines over 300 terms in plain English with enough context to understand why each term matters. Terms are organised A–Z with cross-references to related concepts.

## Category Quick Reference

Category	Key Terms
DNS & Domains	A Record, CNAME, MX, TTL, NS, TXT, SOA, CAA, PTR
Web Servers	Nginx, Apache, LiteSpeed, PHP-FPM, Virtual Hosting
Hosting Types	Shared, VPS, Dedicated, Bare Metal, Managed Hosting
Cloud Platforms	AWS EC2, S3, RDS, Lambda, GCP, Azure, IaaS, PaaS
SSL & Security	TLS, SSL, HTTPS, HSTS, WAF, DDoS, XSS, SNI, CAA
Performance	CDN, TTFB, LCP, OPcache, Gzip, Brotli, Redis, Cache
Networking	TCP, UDP, BGP, Anycast, NAT, VPC, CIDR, IP Address
Email	MX Record, SPF, DKIM, DMARC, IMAP, SMTP, PTR
Databases	MySQL, PostgreSQL, MariaDB, Redis, RDS, Replication
DevOps	Docker, Kubernetes, CI/CD, Blue-Green, Zero-Downtime

# A

10 terms

## A Record

A DNS record that maps a domain name to an IPv4 address. The most fundamental DNS record — resolves query it to find a server's IP. Multiple A records on the same domain create round-robin load balancing.

*See also:* [AAAA Record](#), [DNS](#), [TTL](#)

## AAAA Record

A DNS record that maps a domain name to an IPv6 address. Modern websites should publish both A and AAAA records to support dual-stack access.

*See also:* [A Record](#), [IPv6](#)

### **ACM** - AWS Certificate Manager

Amazon's managed SSL/TLS certificate service. Provisions free public SSL certificates that auto-renew and integrate natively with CloudFront, ALB, and API Gateway.

*See also: [SSL](#), [Let's Encrypt](#)*

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### **Active-Active**

A high-availability architecture where multiple server instances simultaneously handle live traffic. Maximises resource utilisation but requires careful session management and data sync.

*See also: [Active-Passive](#), [Load Balancing](#)*

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### **Active-Passive**

High-availability configuration where one server handles all traffic while a second standby server is ready to take over on failure. Simpler than active-active but leaves passive resources idle.

*See also: [Active-Active](#), [Failover](#)*

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### **Anycast**

A networking method where the same IP is advertised from multiple geographic locations. Traffic routes to the nearest node. Used by CDNs and DNS providers to reduce latency globally.

*See also: [CDN](#), [DNS](#), [Latency](#)*

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### **Apache**

The Apache HTTP Server — open-source web server that has been the most widely deployed since the 1990s. Known for flexibility via module system and .htaccess. Compare: Nginx outperforms Apache for high-concurrency static content.

*See also: [Nginx](#), [LiteSpeed](#), [Web Server](#)*

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### **API Gateway**

A server acting as entry point for API requests, handling auth, rate limiting, routing, and caching. AWS API Gateway, Kong, and Azure API Management are common. Frequently used with serverless functions.

*See also: [Lambda](#), [REST API](#), [Serverless](#)*

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### **ASN** - Autonomous System Number

A unique identifier for a collection of IP networks under a single routing policy. ISPs, CDNs, and cloud providers each have their own ASN. Used in BGP routing and IP WHOIS lookups.

*See also: [BGP](#), [IP Address](#), [WHOIS](#)*

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### **Auto Scaling**

A cloud feature that automatically adjusts compute instance count based on load or scheduled rules. AWS Auto Scaling Groups, GCP MIGs, and Azure VMSS are the primary implementations.

*See also: [EC2](#), [Load Balancing](#), [Cloud](#)*

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# B

7 terms

## Bandwidth

Maximum data transferable per unit of time. Hosting providers express it as monthly allowance (e.g., 1TB/month). Exceeding limits can cause throttling, suspension, or overage charges.

*See also: Data Transfer, CDN, Traffic*

## Bare Metal

A physical server provisioned directly to a single tenant — no virtualisation layer. Maximum performance, full hardware access. AWS EC2 Bare Metal and Hetzner Robot offer on-demand bare metal.

*See also: Dedicated Server, VPS, Virtualisation*

## BGP - Border Gateway Protocol

The routing protocol governing data routing across the internet between autonomous systems. BGP route hijacking — where an attacker announces ownership of legitimate IP ranges — is a serious security concern.

*See also: ASN, Anycast, Routing*

## Blob Storage

Unstructured object storage for binary large objects — files, images, videos, backups. AWS S3, Azure Blob Storage, GCP Cloud Storage are major implementations. Accessed via REST API; not a filesystem.

*See also: Object Storage, S3, CDN*

## Blue-Green Deployment

A deployment strategy maintaining two identical production environments. Only one serves live traffic at a time. New code deploys to the inactive environment, is tested, then traffic switches over. Enables instant rollback.

*See also: Zero-Downtime, Rolling Update*

## Brotli

A compression algorithm by Google offering 15–25% better ratios than gzip for web content (HTML, CSS, JS). Supported by all modern browsers. Configure in Nginx with the brotli module.

*See also: Gzip, Compression, Performance*

## Burst

A temporary increase in CPU/bandwidth above the base allocation. AWS t-series instances use a credit-based burst system — credits accumulate during low-CPU periods and are spent during bursts.

*See also: CPU, VPS, Burstable Instance*

## C

10 terms

**CAA Record** · Certification Authority Authorization

A DNS record specifying which CAs are permitted to issue SSL certs for a domain. Prevents attackers from obtaining fraudulent certs from unauthorised CAs. Example: "0 issue letsencrypt.org"

*See also: [SSL](#), [DNS](#), [Certificate Authority](#)*

**CDN** · Content Delivery Network

A distributed network of proxy servers that deliver web content from nodes close to the end user. Reduces latency by serving static assets from nearby edge nodes. Major providers: Cloudflare, CloudFront, Fastly, Bunny CDN.

*See also: [Edge Location](#), [Cache](#), [Origin Server](#)*

**Certificate Authority** · CA

A trusted entity that issues digital SSL/TLS certificates. The trust model relies on browsers shipping with a list of trusted root CAs. Major CAs: DigiCert, Sectigo, GlobalSign, IdenTrust (backs Let's Encrypt).

*See also: [SSL](#), [Let's Encrypt](#), [PKI](#)*

**CIDR** · Classless Inter-Domain Routing

A method for allocating IP addresses, expressed as IP/prefix (e.g., 192.168.1.0/24 = 256 addresses). Used in firewall rules, security groups, VPC configuration, and subnet planning.

*See also: [IP Address](#), [Subnet](#), [VPC](#)*

**Cloudflare**

Major internet infrastructure company providing DNS, CDN, DDoS protection, WAF, and Zero Trust security. Powers DNS for ~15% of Fortune 1000. Free tier includes global CDN, automatic HTTPS, and basic DDoS protection.

*See also: [CDN](#), [DDoS](#), [DNS](#), [WAF](#)*

**CNAME Record** · Canonical Name

A DNS record creating an alias from one domain name to another. Cannot be placed on the apex domain — only subdomains. Cloudflare and Route 53 offer CNAME flattening for apex domains.

*See also: [A Record](#), [DNS](#), [ALIAS](#)*

**Container**

A lightweight portable package bundling an application and all its dependencies into an isolated unit. Containers share the host OS kernel, making them more efficient than VMs. Docker is the dominant runtime; Kubernetes orchestrates at scale.

*See also: [Docker](#), [Kubernetes](#), [VM](#)*

## Control Panel

A web-based interface for managing hosting resources without CLI. cPanel and Plesk are the most widely used commercial panels. Manage domains, email, databases, file manager, SSL, and resource usage.

*See also: [cPanel](#), [Plesk](#), [Shared Hosting](#)*

## CPU Throttling

Artificial reduction of a process's CPU time allocation to enforce fair resource usage. VPS instances with CPU steal above 5–10% typically indicate hypervisor throttling.

*See also: [VPS](#), [Shared Hosting](#), [Burstable](#)*

## cPanel

The most widely deployed hosting control panel, running on Linux. Manages websites, email, databases, FTP, SSL certificates, and cron jobs. Usually accessed at port 2083 (HTTPS).

*See also: [Control Panel](#), [WHM](#), [Shared Hosting](#)*

# D

11 terms

## Database Replication

Continuously copying data from a primary database to one or more replicas. Provides redundancy, read scaling, and zero-downtime migration capability. MySQL supports statement-based, row-based, and mixed replication.

*See also: [MySQL](#), [High Availability](#), [Zero-Downtime](#)*

## DDoS · Distributed Denial of Service

A cyberattack overwhelming a service with traffic from many sources. Volumetric attacks flood bandwidth; protocol attacks exploit TCP/IP; application attacks send legitimate-looking requests. Mitigated by CDNs, WAFs, and specialist services.

*See also: [WAF](#), [CDN](#), [Cloudflare](#)*

## Dedicated Server

A physical server provided exclusively to one customer. No resource sharing, no virtualisation overhead. Maximum performance and control. \$80–500+/month depending on hardware and management level.

*See also: [VPS](#), [Bare Metal](#), [Colocation](#)*

## Deployment

Releasing a new application or infrastructure version to production. Strategies: rolling updates (gradual), blue-green (parallel environments), canary (subset of users), and immutable (replace rather than update).

*See also: [Blue-Green](#), [Rolling Update](#), [CI/CD](#)*

**DHCP** · Dynamic Host Configuration Protocol

Automatically assigns IP addresses and network configuration to devices. Production servers use static IPs rather than DHCP for consistent addressing.

*See also: IP Address, Static IP*

**DKIM** · DomainKeys Identified Mail

An email auth mechanism adding cryptographic signatures to outgoing emails. The sending server signs with a private key; receivers verify using the public key published in DNS TXT record.

*See also: SPF, DMARC, Email Auth*

**DMARC** · Domain-based Message Authentication

An email auth protocol building on SPF and DKIM. Policy options: none (monitor), quarantine (spam folder), reject (block entirely). Reports emailed to specified rua/ruf addresses.

*See also: SPF, DKIM, Email Auth*

**DNS** · Domain Name System

The hierarchical, distributed naming system translating domain names to IPs. Often called the "phone book of the internet." A global, decentralised database managed through root servers, TLD servers, and authoritative nameservers.

*See also: A Record, NS Record, TTL*

**DNS Propagation**

The time for DNS record changes to spread from authoritative nameservers to all resolvers worldwide. Depends on TTL — with TTL 86400 (24h), full propagation can take 48h. Lowering TTLs to 300s reduces this to minutes.

*See also: TTL, DNS, NS Record*

**Docker**

Open-source platform for developing, shipping, and running applications in containers. Docker Compose defines multi-container apps. Kubernetes is now the preferred orchestration system over Docker Swarm.

*See also: Container, Kubernetes, Image*

**Domain Name**

A human-readable label identifying an internet resource. Organised hierarchically: TLD (.com), second-level domain, and optional subdomains. Registered through accredited domain registrars.

*See also: DNS, TLD, Registrar*

# E

5 terms

**EC2** · Elastic Compute Cloud

AWS's virtual machine service — the most widely used IaaS compute. Ranges from t3.micro to bare metal. Pricing: on-demand, reserved (1–3 year, up to 72% savings), and spot (unused capacity, up to 90% savings).

*See also: AWS, Instance Type, Auto Scaling*

**Edge Location**

A CDN data centre positioned close to end users to reduce latency. CloudFront has 400+ edge locations; Cloudflare has 300+. Edge locations cache content from origin servers and serve it to nearby users.

*See also: CDN, PoP, Anycast*

**Egress**

Data transferred OUT of a cloud provider's network to the internet. Most cloud providers charge for egress (\$0.09/GB on AWS after 10GB/month free) while making ingress free. Inter-region transfer also typically charged.

*See also: Bandwidth, CDN, AWS*

**Elastic IP**

A static, persistent public IPv4 address in AWS. Unlike regular EC2 public IPs (which change on stop/restart), Elastic IPs persist until explicitly released. Free when attached to a running instance.

*See also: EC2, Static IP, AWS*

**ELB** · Elastic Load Balancer

AWS's managed load balancing service. Three types: Application (Layer 7, HTTP/HTTPS routing), Network (Layer 4, ultra-high performance), and Gateway (for security appliances).

*See also: Load Balancing, AWS, Auto Scaling*

**F**

3 terms

**Failover**

Switching from a failed primary system to a backup with minimal service interruption. DNS-based failover monitors server health and updates records to route traffic to healthy servers.

*See also: High Availability, Active-Passive, RDS*

**FTP** · File Transfer Protocol

Standard protocol for transferring files between client and server. Transmits data in plaintext — insecure. SFTP and FTPS are secure alternatives. Most modern deployments use SFTP or git-based deployment.

*See also: SFTP, SSH, File Transfer*

**FCP** · First Contentful Paint

A performance metric measuring time to when any content (text, image, SVG) first renders on screen. Good: under 1.8s; needs improvement: 1.8–3s; poor: above 3s. Part of Core Web Vitals.

*See also: LCP, TTI, Core Web Vitals*

# G

3 terms

**Gzip**

A widely-used compression algorithm reducing text-based content size by 60–80%. Configured in Nginx with "gzip on;" in Apache via mod\_deflate. Brotli offers superior compression ratios.

*See also: Brotli, Compression, HTTP*

**GKE** · Google Kubernetes Engine

GCP's managed Kubernetes service. GKE Autopilot removes node management entirely — Google manages the node pool and you pay per Pod resource consumption.

*See also: Kubernetes, Docker, GCP*

**GPU Instance**

A cloud VM equipped with GPU hardware for ML training, video encoding, and scientific computation. AWS P-series (p3, p4), GCP A2 (NVIDIA A100), and Azure NC/ND series are common GPU families.

*See also: EC2, Instance Type, ML*

# H

6 terms

**HSTS** · HTTP Strict Transport Security

A security header instructing browsers to only connect via HTTPS. The max-age directive specifies how long browsers remember the policy (typically 31536000 = 1 year). The preload directive enables inclusion in browser preload lists.

*See also: HTTPS, SSL, Security Headers*

**HTTP** · HyperText Transfer Protocol

The application-layer protocol for transmitting web content. HTTP/1.1: persistent connections. HTTP/2: multiplexing and header compression. HTTP/3: QUIC/UDP for further latency reductions.

*See also: HTTPS, HTTP/2, TLS*

## HTTP/2

Second major HTTP version (2015). Key improvements: request multiplexing, header compression (HPACK), optional server push. Reduces page load times for sites with many small assets.

*See also: [HTTP/3](#), [HTTPS](#), [SPDY](#)*

## HTTP/3

Third major HTTP version, using QUIC (UDP-based) instead of TCP. Eliminates head-of-line blocking, reduces connection time (0-RTT resumption), improves performance on mobile networks.

*See also: [HTTP/2](#), [QUIC](#), [UDP](#)*

## HTTPS · HTTP Secure

HTTP with TLS/SSL encryption. Provides confidentiality, integrity, and authentication. Mandatory for all production websites — Chrome marks HTTP sites "Not Secure" since 2018.

*See also: [TLS](#), [SSL](#), [HTTP](#)*

## Hypervisor

Software creating and managing virtual machines by partitioning physical hardware. Type 1 (bare-metal): VMware ESXi, KVM. Type 2 (hosted): VirtualBox. Cloud providers use custom Type 1 — AWS Nitro, GCP's custom hypervisor.

*See also: [VPS](#), [VM](#), [KVM](#)*

5 terms

## IaaS · Infrastructure as a Service

A cloud model providing virtualised compute resources. Provider manages hardware and virtualisation; customer manages OS, middleware, and apps. AWS EC2, GCP Compute Engine, and Azure VMs are IaaS.

*See also: [PaaS](#), [SaaS](#), [Cloud Computing](#)*

## IMAP · Internet Message Access Protocol

An email retrieval protocol synchronising messages across multiple devices. Unlike POP3, IMAP maintains server-side state. Ports: 143 (plain), 993 (with TLS). The preferred email protocol for multi-device use.

*See also: [POP3](#), [SMTP](#), [Email](#)*

## IP Address

A numerical label assigned to each networked device. IPv4: 32-bit (e.g., 192.168.1.100). IPv6: 128-bit (e.g., 2001:db8::1). A single IP can host multiple websites via virtual hosting and SNI.

*See also: [IPv4](#), [IPv6](#), [DNS](#), [Elastic IP](#)*

## IPv4

Internet Protocol version 4 — 32-bit addresses providing ~4.3 billion unique addresses. IPv4 exhaustion addressed through NAT and the gradual transition to IPv6.

*See also: IPv6, IP Address, NAT*

## IPv6

Internet Protocol version 6 — 128-bit addresses providing  $\sim 3.4 \times 10^{38}$  unique addresses. Written in eight groups of four hex digits separated by colons. All major cloud providers, ISPs, and CDNs support dual-stack.

*See also: IPv4, AAAA Record, Dual Stack*

# J

1 term

## JSON · JavaScript Object Notation

A lightweight, human-readable data interchange format. Used for API responses, config files, and data serialisation. REST APIs almost universally return JSON. Alternatives: XML (legacy), Protocol Buffers (binary).

*See also: REST API, XML, API Gateway*

# K

2 terms

## KVM · Kernel-based Virtual Machine

An open-source virtualisation technology built into the Linux kernel. One of the most common hypervisors used by VPS providers (DigitalOcean, Linode). Provides near-native VM performance through kernel modules.

*See also: Hypervisor, VPS, Xen*

## Kubernetes · K8s

Open-source container orchestration system automating deployment, scaling, and management of containers. Provides self-healing, horizontal scaling, service discovery, and rolling updates. Managed offerings: GKE, EKS, AKS.

*See also: Docker, Container, GKE*

# L

7 terms

## Lambda

AWS's serverless compute — runs code in response to events without managing servers. Billed per invocation and millisecond. Supports Node.js, Python, Java, Go, Ruby. Cold start latency affects infrequent functions.

*See also: [Serverless](#), [API Gateway](#), [Cloud Functions](#)*

## Latency

The delay between a request being sent and response received. Determined by physical distance (speed of light) plus processing time. NYC→London: ~70ms RTT; NYC→Sydney: ~175ms RTT. CDNs reduce effective latency by serving from nearby edge nodes.

*See also: [TTFB](#), [RTT](#), [CDN](#)*

## LCP - Largest Contentful Paint

A Core Web Vitals metric: time until the largest visible content element renders (typically hero image or heading). Good: under 2.5s; needs improvement: 2.5–4s; poor: above 4s.

*See also: [FCP](#), [Core Web Vitals](#), [TTFB](#)*

## Let's Encrypt

A non-profit CA operated by ISRG providing free, automated DV SSL certificates. Issues 300M+ certificates. Valid for 90 days, auto-renewed via ACME protocol clients (Certbot). Launched 2016.

*See also: [SSL](#), [Certificate Authority](#), [Certbot](#)*

## Linux

Open-source OS kernel powering the vast majority of web servers. Major server distros: Ubuntu LTS (most popular), Debian (stable), CentOS/RHEL (enterprise), Alpine (minimal, popular for containers).

*See also: [Ubuntu](#), [Server](#), [Container](#)*

## LiteSpeed

High-performance commercial web server software significantly outperforming Apache on WordPress/PHP workloads. OpenLiteSpeed is the free open-source variant. Natively integrates with LSCache for exceptional WordPress caching.

*See also: [Apache](#), [Nginx](#), [PHP](#)*

## Load Balancing

Distributing network traffic across multiple servers to prevent bottlenecks and improve availability. Operates at Layer 4 (TCP/UDP) or Layer 7 (HTTP/HTTPS). Algorithms: round-robin, least connections, IP hash, weighted.

*See also: [ELB](#), [High Availability](#), [Auto Scaling](#)*

# M

6 terms

## Managed Hosting

Hosting where the provider handles OS updates, security patching, backups, monitoring, and performance tuning. Examples: Kinsta, WP Engine (managed WordPress), AWS RDS, Azure App Service (managed platforms).

*See also: VPS, Shared Hosting, PaaS*

## MariaDB

Community-developed open-source RDBMS, a drop-in MySQL replacement created by the original MySQL developers after Oracle's acquisition of Sun Microsystems. Default MySQL replacement on Debian and Ubuntu.

*See also: MySQL, PostgreSQL, Database*

## Memory Leak

A programming error where an application fails to release allocated memory, causing usage to grow until the process crashes. Common in long-running PHP, Node.js, and Java processes. Monitored via server memory metrics.

*See also: RAM, PHP, Server Monitoring*

## Migration

Moving a website, application, or database from one hosting environment to another. Successful migrations require comprehensive planning, backup verification, DNS TTL management, and rollback preparation.

*See also: DNS Propagation, Backup, TTL*

## MX Record · Mail Exchanger

A DNS record specifying which mail servers handle incoming email. Each has a priority value — lower numbers tried first. Multiple MX records provide redundancy.

*See also: DNS, Email, SPF*

## MySQL

The most widely deployed open-source relational database. Table-based with SQL. Versions 5.7 and 8.0 most common. Default database for WordPress, Drupal, and most PHP CMSs. Supports transactions via InnoDB engine.

*See also: MariaDB, PostgreSQL, InnoDB*

# N

5 terms

## NAT · Network Address Translation

Maps private IP addresses to a public IP for external communication. Allows many private devices to share one public IPv4 address. AWS NAT Gateway enables outbound internet from private VPC subnets.

*See also: VPC, Private Subnet, IPv4*

## Nameserver - NS

A DNS server storing records for a specific domain and responding to queries. Each domain has at least two nameservers for redundancy. Changing nameservers at your registrar routes all DNS queries to the new provider.

*See also: NS Record, DNS, Registrar*

## Nginx

High-performance open-source web server and reverse proxy known for efficiently handling concurrent connections with minimal memory. Used as web server, load balancer, HTTP cache, and email proxy.

*See also: Apache, LiteSpeed, Reverse Proxy*

## NS Record - Nameserver Record

A DNS record delegating a domain to authoritative DNS servers. Changing NS records at your registrar is how you transfer DNS management between providers (e.g., registrar DNS to Cloudflare).

*See also: DNS, Nameserver, DNS Propagation*

## NVMe - Non-Volatile Memory Express

A high-performance storage protocol for SSDs via PCIe. Speeds: 3,000–7,000 MB/s vs SATA SSD's 500–600 MB/s. Increasingly standard in premium VPS and cloud instance storage. AWS gp3/io2 EBS volumes use NVMe.

*See also: SSD, Block Storage, Disk I/O*



3 terms

## Object Storage

Storage managing data as objects rather than blocks or files. Accessed via REST API. Infinitely scalable, 11-nines durability, very cheap. Best for static assets, backups, media. Not suitable for databases requiring POSIX access.

*See also: S3, Blob Storage, Block Storage*

## OPcache

PHP's built-in opcode cache. Compiles PHP to bytecode on first execution and caches in shared memory. Subsequent requests skip compilation. Enables 30–70% PHP execution time reduction. Configured in php.ini.

*See also: PHP, Cache, Performance*

## Origin Server

The web server hosting the original, authoritative version of a website's content. When a CDN is used, the CDN fetches from the origin and caches at edge locations. Typically hidden behind CDN IPs to protect from direct attacks.

*See also: CDN, Edge Location, Cache*

# P

6 terms

## **PaaS** · Platform as a Service

Cloud model providing a complete development environment. Provider manages infrastructure and runtime; customer manages apps. Examples: Heroku, Render, Fly.io, AWS Elastic Beanstalk, Azure App Service.

*See also: [IaaS](#), [SaaS](#), [Serverless](#)*

## **PHP** · PHP: Hypertext Preprocessor

Server-side scripting language powering ~77% of websites with a known server-side language, including WordPress, Drupal, Joomla, and Laravel. PHP 8.0 introduced JIT compilation for improved performance.

*See also: [PHP-FPM](#), [MySQL](#), [WordPress](#)*

## **PHP-FPM** · PHP FastCGI Process Manager

Alternative PHP implementation managing a pool of PHP worker processes. More efficient and scalable than mod\_php. Allows per-site PHP version isolation. Pool size must be tuned to available RAM.

*See also: [PHP](#), [Nginx](#), [FastCGI](#)*

## **PoP** · Point of Presence

A physical CDN or telecoms data centre location where content is served to nearby users. Cloudflare: 300+ PoPs; AWS CloudFront: 400+.

*See also: [CDN](#), [Edge Location](#), [Anycast](#)*

## **PostgreSQL**

Advanced open-source RDBMS with strict ACID compliance, complex query support, and extensibility. Preferred over MySQL for complex workloads, geospatial applications (PostGIS), and analytics.

*See also: [MySQL](#), [MariaDB](#), [RDS](#)*

## **PTR Record** · Pointer Record

A DNS record for reverse DNS — mapping an IP to a hostname. Mail servers use PTR records to verify sending server identity. A missing PTR can cause email to be flagged as spam.

*See also: [DNS](#), [Reverse DNS](#), [Email Auth](#)*

# R

8 terms

**RAID** · Redundant Array of Independent Disks

Combines multiple disks for redundancy/performance. RAID 1: mirrors data (100% redundancy, 50% capacity). RAID 10: stripe + mirror (best performance + redundancy). RAID 5: stripe with parity (1-disk failure tolerance).

*See also: [Dedicated Server](#), [Block Storage](#), [Backup](#)*

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**RAM** · Random Access Memory

Volatile high-speed memory used to store data actively being processed. Insufficient RAM causes disk swap usage, dramatically degrading performance. MySQL InnoDB buffer pool should ideally hold the full working dataset.

*See also: [CPU](#), [Swap](#), [Server](#)*

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**RDS** · Relational Database Service

AWS's managed database service for MySQL, PostgreSQL, MariaDB, Oracle, and SQL Server. AWS handles provisioning, patching, backups, monitoring, and Multi-AZ replication.

*See also: [MySQL](#), [PostgreSQL](#), [AWS](#)*

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**Redis**

Open-source in-memory data store used as database, cache, and message broker. Sub-millisecond operations. Common uses: session storage, page caching, rate limiting, queuing. AWS ElastiCache offers managed Redis.

*See also: [Cache](#), [Memcached](#), [Session](#)*

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**Registrar**

An ICANN-accredited organisation for registering and managing domain names. Popular registrars: Namecheap, GoDaddy, Cloudflare Registrar. The registrar manages nameserver delegation for registered domains.

*See also: [Domain Name](#), [DNS](#), [WHOIS](#)*

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**Resolver**

A DNS server that receives client queries and recursively resolves them by querying root, TLD, and authoritative nameservers. Public resolvers: Cloudflare (1.1.1.1), Google (8.8.8.8), Quad9 (9.9.9.9).

*See also: [DNS](#), [Nameserver](#), [TTL](#)*

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**Reverse Proxy**

A server sitting in front of backend servers and forwarding client requests to them. Benefits: load balancing, SSL termination, caching, compression, security. Nginx and HAProxy are most common.

*See also: [Nginx](#), [Load Balancing](#), [CDN](#)*

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**rsync**

A fast file copying utility for Unix transferring only file differences. Essential for server-to-server migrations. Key flags: -a (archive), -v (verbose), -z (compress), --delete (mirror deletions), --progress.

*See also: [SFTP](#), [SCP](#), [File Transfer](#)*

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# S

11 terms

## **S3** · Simple Storage Service

AWS's object storage — the most widely used cloud storage. 11-nines durability. Storage classes: Standard, Infrequent Access, Glacier (archive). Used for static hosting, backups, media, and analytics.

*See also: Object Storage, CloudFront, Blob*

## **SCP** · Secure Copy Protocol

CLI tool for securely transferring files over SSH. Simpler than SFTP but lacks resumption. Syntax: scp file user@host:/path. Being superseded by rsync and SFTP.

*See also: SSH, SFTP, rsync*

## **SFTP** · SSH File Transfer Protocol

Secure file transfer protocol encrypted via SSH. The recommended method for file transfers in production. Default port: 22 (same as SSH). Not to be confused with FTPS (FTP over SSL).

*See also: SSH, FTP, rsync*

## **Shared Hosting**

Multiple websites sharing one physical server's resources. Provider manages all server administration. Cheapest option (\$2–15/month) but variable performance due to tenant contention. Best for low-traffic sites.

*See also: VPS, cPanel, Reseller Hosting*

## **SNI** · Server Name Indication

A TLS extension allowing a server to host multiple SSL certificates on a single IP. The client sends the desired hostname during the TLS handshake. Solved the requirement of a dedicated IP per SSL certificate.

*See also: TLS, SSL, Virtual Hosting*

## **SOA Record** · Start of Authority

A DNS record containing zone admin information: primary nameserver, admin email, serial number, and timing parameters. Every DNS zone has exactly one SOA record.

*See also: DNS, NS Record, Zone File*

## **SPF** · Sender Policy Framework

An email auth DNS TXT record specifying which mail servers can send for a domain. Receiving servers check the sender's IP against the SPF record. Example: "v=spf1 include:\_spf.google.com ~all"

*See also: DKIM, DMARC, MX Record*

**SSH** · Secure Shell

A cryptographic protocol for secure remote command-line login, file transfer (SFTP/SCP), and port forwarding. Default port 22. Key-based authentication is significantly more secure than password auth.

*See also: SFTP, SCP, Security*

**SSL** · Secure Sockets Layer

Deprecated predecessor to TLS, now replaced due to vulnerabilities (POODLE, BEAST). The term "SSL" is still colloquially used to refer to TLS certificates and HTTPS. Modern deployments use TLS 1.2 or 1.3.

*See also: TLS, HTTPS, Certificate Authority*

**SSD** · Solid-State Drive

Storage using flash memory. Much faster than HDDs: SATA SSD 500 MB/s; NVMe SSD 3,000–7,000 MB/s. All modern hosting uses SSDs; NVMe increasingly standard for premium VPS and cloud.

*See also: NVMe, HDD, Block Storage*

**Swap**

Disk space used as virtual extension of RAM when physical RAM is exhausted. Significantly slower than RAM (100–1000x). Consistent swap usage indicates the server needs more RAM.

*See also: RAM, Virtual Memory, Linux*

# T

6 terms

**TCP** · Transmission Control Protocol

Connection-oriented transport providing reliable, ordered, error-checked delivery. HTTP/1.1 and HTTP/2 run over TCP. Three-way handshake (SYN, SYN-ACK, ACK) adds latency. HTTP/3 uses UDP via QUIC to avoid this.

*See also: UDP, HTTP, TLS*

**TLD** · Top-Level Domain

The highest DNS level — the rightmost part of a domain name (.com, .org, .io, .dev). gTLDs include traditional and newer domains. ccTLDs (.uk, .de) are administered by national organisations.

*See also: DNS, Domain Name, Registrar*

**TLS** · Transport Layer Security

The cryptographic protocol providing privacy and integrity between applications. Successor to SSL. TLS 1.2 and 1.3 are current secure versions; 1.0 and 1.1 deprecated. TLS 1.3 reduces handshake from 2 RTTs to 1.

*See also: SSL, HTTPS, Certificate*

**TTL** · Time to Live

In DNS: seconds a record may be cached by resolvers before fetching fresh data. Lower TTLs (300s) allow faster changes but increase nameserver load. Higher TTLs (86400) improve performance. Also a counter in IP packets preventing routing loops.

*See also: DNS, DNS Propagation, Caching*

**TTFB** · Time to First Byte

Time from HTTP request sent to first response byte received. Covers DNS lookup, TCP connection, TLS handshake, and server processing. Good: under 800ms; needs improvement: 800ms–1.8s; poor: above 1.8s.

*See also: LCP, Performance, Latency*

**TXT Record**

A DNS record storing arbitrary text for a domain. Used for domain verification, SPF, DKIM, DMARC, and service configuration. Multiple TXT records can exist for the same domain.

*See also: DNS, SPF, DKIM, DMARC*

# U

3 terms

**UDP** · User Datagram Protocol

A connectionless transport prioritising speed over reliability. No delivery guarantees or ordering. Used for DNS queries, VoIP, video streaming, and HTTP/3. DNS uses UDP port 53.

*See also: TCP, HTTP/3, QUIC*

**Uptime**

Percentage of time a service remains operational. "Nines" notation: 99.9% (8.7h downtime/year), 99.99% (52 min/year), 99.999% (5 min/year). Major cloud providers guarantee 99.9–99.99% via SLAs.

*See also: SLA, High Availability, Monitoring*

**URL** · Uniform Resource Locator

A reference to a web resource: `scheme://host:port/path?query#fragment`. Scheme identifies protocol (`https://`); host identifies the server; path identifies the resource; query string passes parameters.

*See also: DNS, HTTP, HTTPS*

# V

5 terms

## Virtual Hosting

Hosting multiple websites on one server, each with its own domain. Name-based virtual hosting distinguishes sites by the HTTP Host header. IP-based uses separate IPs per site. SNI enables TLS for name-based virtual hosts.

*See also: Nginx, Apache, SNI*

## VM · Virtual Machine

An emulation of a complete computer system, running on a host machine under a hypervisor. VMs have dedicated virtual CPU, RAM, and network. More isolated than containers but with higher overhead.

*See also: Hypervisor, Container, KVM*

## VPC · Virtual Private Cloud

An isolated virtual network in a cloud environment with control over IP ranges, subnets, routing, and gateways. Resources in private subnets have no direct internet access — only through NAT Gateway or VPN.

*See also: AWS, Subnet, NAT, Security Group*

## VPS · Virtual Private Server

A virtualised server providing dedicated, guaranteed CPU and RAM on shared physical hardware. Full root SSH access. The most common infrastructure choice for growing web applications before needing cloud platforms.

*See also: Shared Hosting, Dedicated Server, KVM*

## VPN · Virtual Private Network

An encrypted tunnel creating a secure private connection over the internet. Used by admins to securely access servers and by organisations to connect remote employees. WireGuard is the modern standard protocol.

*See also: SSH Tunnel, WireGuard, Security*

# W

5 terms

## WAF · Web Application Firewall

Monitors, filters, and blocks HTTP/HTTPS traffic based on configurable rules. Protects against SQL injection, XSS, CSRF, and OWASP Top 10. AWS WAF, Cloudflare WAF, and ModSecurity are common.

*See also: DDoS, Security, Cloudflare*

## Web Server

Software accepting HTTP requests and serving web content. Responsibilities: parsing requests, routing, connection management, SSL termination, compression, and access logging. The three dominant servers: Nginx, Apache, LiteSpeed.

*See also: Nginx, Apache, LiteSpeed*

## WebSocket

A protocol providing full-duplex communication over a single TCP connection. Unlike HTTP, servers can push data to clients at any time. Used for real-time apps: chat, live scores, collaborative editing.

*See also: [HTTP](#), [TCP](#), [Real-time](#)*

## WHOIS

A query-response protocol for looking up registered information about domains, IP blocks, and ASNs. Returns registrant info, registration/expiry dates, registrar, and nameservers. Domain privacy services hide personal details.

*See also: [DNS](#), [Registrar](#), [IP Address](#)*

## WordPress

The most widely used CMS, powering ~43% of all websites. Built on PHP and MySQL. Self-hosted (WordPress.org) or managed (WordPress.com). Performance plugins: WP Rocket, LiteSpeed Cache, CDN integration.

*See also: [PHP](#), [MySQL](#), [cPanel](#)*

# X

[2 terms](#)

## XML · Extensible Markup Language

A markup language for structured data exchange, both human and machine readable. Used for config files (sitemap.xml), legacy API responses, and data serialisation. sitemap.xml uses XML to list URLs for search indexing.

*See also: [JSON](#), [RSS](#), [Sitemap](#)*

## XSS · Cross-Site Scripting

A web security vulnerability where attackers inject malicious scripts into content from trusted sites. Types: reflected, stored, and DOM-based. Mitigated by CSP headers, output encoding, and WAF rules.

*See also: [WAF](#), [CSP](#), [OWASP](#)*

# Y

[1 term](#)

## YAML

Human-readable data serialisation used for configuration files in DevOps workflows. Docker Compose, Kubernetes, and GitHub Actions use YAML. Whitespace-significant: indentation errors cause syntax failures.

*See also: [Docker](#), [Kubernetes](#), [Configuration](#)*

# Z

3 terms

## Zero-Downtime Deployment

A deployment strategy ensuring a website remains fully available throughout the process. Techniques: blue-green (parallel environments), rolling updates (gradual replacement), canary releases (subset of traffic first).

*See also: [Blue-Green](#), [Rolling Update](#), [CI/CD](#)*

## Zone File

A plain-text file containing DNS resource records for a specific domain. Follows RFC 1035 format. Includes SOA, NS, A, AAAA, MX, TXT, CNAME, and other record types.

*See also: [DNS](#), [SOA Record](#), [NS Record](#)*

## Zero Trust

A security model based on "never trust, always verify." All traffic — including internal — is treated as potentially hostile and must be authenticated. Implemented through identity-aware proxies and continuous verification.

*See also: [VPN](#), [Security](#), [WAF](#)*

# Appendix: Key Comparisons

## Nginx vs Apache vs LiteSpeed

Feature	Nginx	Apache	LiteSpeed
Architecture	Event-driven, async	Process/thread per request	Event-driven, async
PHP performance	Good (with FPM)	Good (mod_php/FPM)	Excellent (native LSAPI)
WordPress speed	Good	Good	Best (LSCache)
Config syntax	nginx.conf blocks	.htaccess + httpd.conf	Apache-compatible
Memory usage	Very low	Moderate to high	Low
License	Open source (BSD)	Open source (Apache)	Commercial + OpenLiteSpeed free

## TLS Protocol Versions

Version	Status	Notes
SSL 3.0	Deprecated — DISABLE	Vulnerable to POODLE
TLS 1.0	Deprecated (RFC 8996)	BEAST, POODLE variant — disable
TLS 1.1	Deprecated (RFC 8996)	Retired — disable
TLS 1.2	Current — required minimum	Secure with correct cipher suites
TLS 1.3	Current — preferred	Best performance and security

## DNS Record Types Summary

Type	Purpose	Example	Notes
A	Domain → IPv4	93.184.216.34	Most fundamental record
AAAA	Domain → IPv6	2606:2800:220:1::34	IPv6 equivalent
CNAME	Alias to another name	example.ghost.io.	Cannot be on apex domain
MX	Incoming mail server	10 mail.example.com.	Lower priority = tried first
TXT	Arbitrary text	v=spf1 include:... ~all	SPF, DKIM, verification
NS	Authoritative nameservers	ns1.cloudflare.com.	Delegates zone
CAA	Permitted SSL CAs	0 issue "letsencrypt.org"	Prevents unauth cert issuance

Type	Purpose	Example	Notes
PTR	Reverse DNS	mail.example.com.	Required for email deliverability
SRV	Service location	10 5 443 sip.example.com.	SIP, XMPP, Minecraft

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