

Back end components

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Back end Servers

Hardware and OS that hosts all apps necessary to run the web app

data access layer

Software

the backend server contains the other 3 backend components

- web server
- DB
- Development framework

other software components may be
hypervisors, containers, WAFs

common back end server stacks:

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- **LAMP** = Linux Apache MySQL PHP
- **WAMP** = Windows "
- **WINS** = Windows IIS .NET SQL server
- **MAMP** = macOS ...
- **XAMPP** = cross-platform Apache MySQL PHP/PERL

Hardware

Many large web apps distribute load over many back end servers

Web servers

apps that run on the back end server that handles HTTP requests from browser, routes it to requested pages, and responds to browser

and responds ~

run on port 80 or 443

connect end users to parts of web app

accept user input within HTTP requests

responsible for routing request, run
processes needed, and return response

pages that servers route traffic to are web
app core files

could create our own web servers w/
python, JS, or PHP but there are

many apps to help w/

Apache

httpd

most common web server

more than 40% of all sites

run -

more than 40% of all sites

all OS

Usually PHP but can be .NET, Python, Perl

NGINX

Second most common
30% of all sites

focus on serving many concurrent requests
with low memory and CPU load
with async architecture

60% of top traffic sites use it

IIS

internet information services

3rd most common

15%

. it developed; mainly runs on

Microsoft developed; mainly runs on MS windows servers

.NET mostly but can be for others

well optimized for AD and includes

Windows Auth to auto sign

users in to web apps

other popular servers can be Apache
Tomcat for Java and Node.js

for JS

Databases

store content and info related to web app

assets, content, user data

web apps can easily and quickly enable

web apps can easily and
store/retrieve data and enable
dynamic content that is diff
for each user

Relational (SQL)

Store data in tables

each table has unique keys which
can link tables together

ex: users table has id col which
can be used as table key

another table can use this col
inside their col to link to
it

Schema - relationship between tables

Non-relational (NoSQL)

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no tables, keys, schemas

stores data in different storage models

good for dealing w/ datasets that are not well defined or structured

4 common storage models

- key-value
- document-based
- wide column
- graph

key-value

usually JSON or XML

key for each pair, storing all data as its value

```

{
  "1": {
    ---
  },
  "2": {
    ---
  },
  ---
}

```

Document-based model

Store data in JSON objects
 each object has meta-data while
 storing rest of data like
 key-value

Use in web apps

. used on back end

Use in web apps

db needs to be installed on back end server, then web apps can start using it by connecting with the programming language of choice