

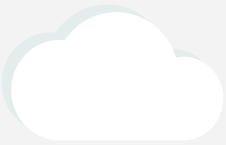
dotCMS Cloud:

Why Cloud, and Why Now?







As brands approach the IoT era and battle to keep their data safe, Cloud Computing is becoming the name of the game.

dotcms

white paper
2018



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Customers want to have a more personalized and tailored experience.

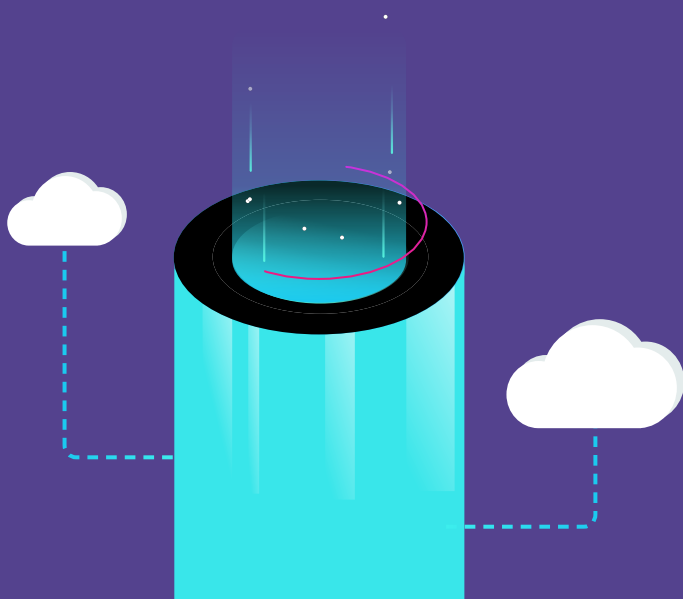
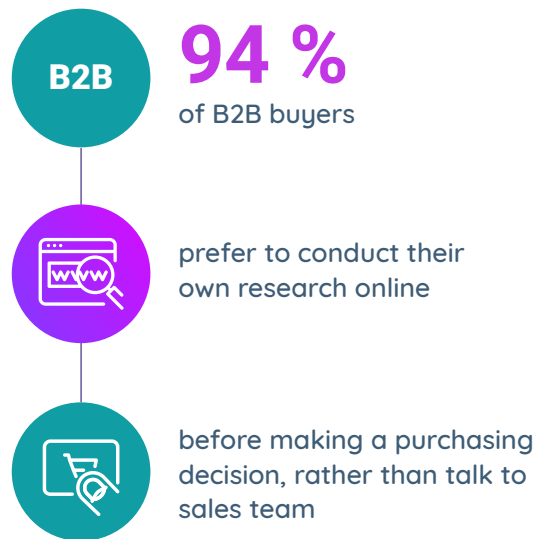
Thanks to latest innovations in IoTs, like Amazon Echo and Google Home, customers are now able to get a more personalized service through any device.

Even though we do see brands effectively deliver personalized marketing strategies to B2Cs, many brands have fallen into this trap of still delivering conventional marketing messages to B2B buyers.

Millennials have now entered the B2B buyer category¹. And studies have shown millennials prefer a more personal approach when it comes to consuming B2B marketing. And this can only be achieved by brands utilizing the diverse range of channels that are currently used by B2B buyers.

In addition, consumer behavior patterns, for both B2C and B2B, have changed in recent years. Rather than speaking to a sales team, consumers would rather

conduct their own research online before making a purchase. This is especially the case with B2B buyers who regularly make high cost purchase. A study by MarketingProf shows that 94 percent of B2B buyers actually conduct their own research before making a purchasing decision².

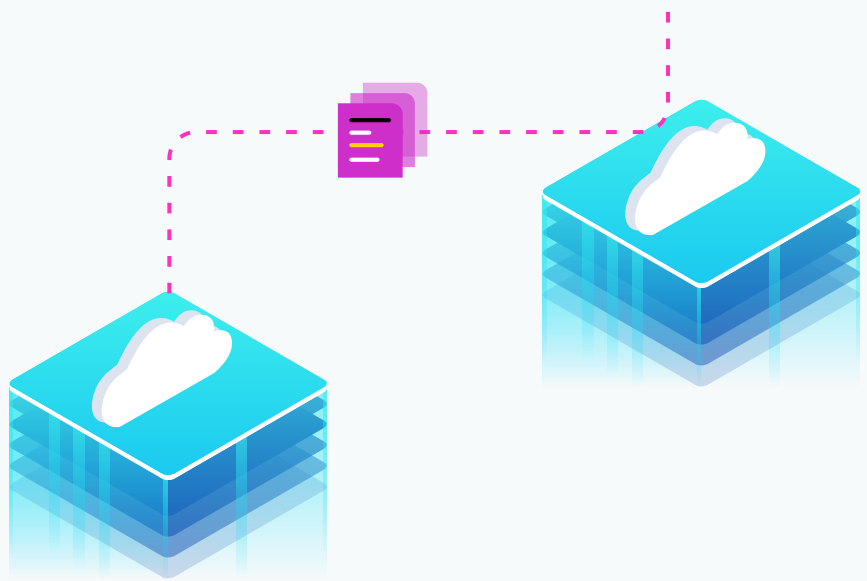


SO WHAT DO PERSONALIZED MARKETING AND CONSUMER HAVE TO WITH THE CLOUD?

Well, for one, cloud architectures enables brands to become more adaptable and flexible so that they can keep up with the latest innovations and be able to accommodate changes in consumer trends, as we have just seen with the changes in B2B buying trends.



Why The Cloud?

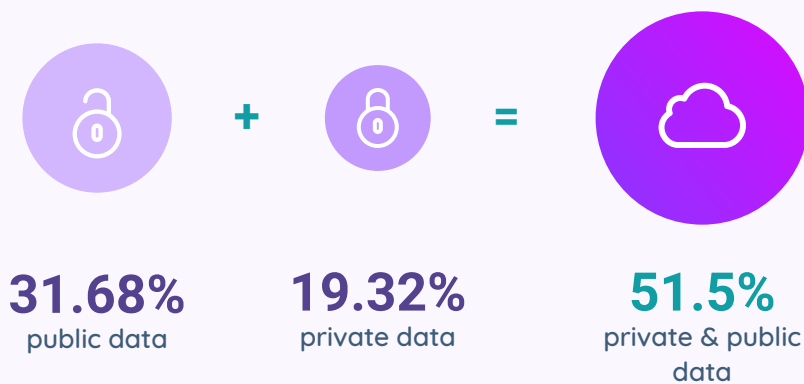


Adopting cloud architecture still sounds like a futuristic move. But in fact, most brands have already unknowingly made the switch from on-premise to cloud. Meanwhile, there's a whole bunch of companies who are still keeping all their data and servers on a physical server somewhere in the basement. In fact, in the UK, 54 percent of enterprises keep everything on-premise³, without a cloud-based solution in sight.

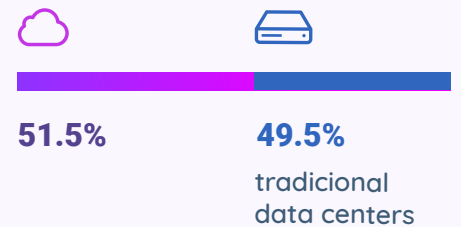
Embracing the cloud is extremely crucial for brands, especially in the IoT-era. And like it or not, cloud computing is here to stay.

Research firm IDC predicts IT expenditure for private and public cloud will eclipse spending on traditional data centers by 2020⁴. The firm predicts that public cloud will account for 31.68 percent and private cloud will account for 19.82 percent, which totals to more than a half (51.5 percent).

The IDC also expects that once this expenditure on cloud computing solutions has eclipsed expenditure on traditional IT infrastructures, we are likely to see a point of no return with IT expenditure set to continue to tilt further towards the cloud.



RESUME



“

“Growing demand for access to agile IT resources and proliferation of next-generation workloads will continue driving adoption of cloud-based services. In turn, this move leads to a shift in IT infrastructure spending from traditional enterprise on-premises deployments to data centers delivering cloud services and corporate private clouds⁵,”

— SAID NATALYA YEZKHOVA,
IDC research director for storage systems.

Will Ezell, CTO of dotCMS, also states the following three main drivers will propel customers to move their IT towards the cloud:

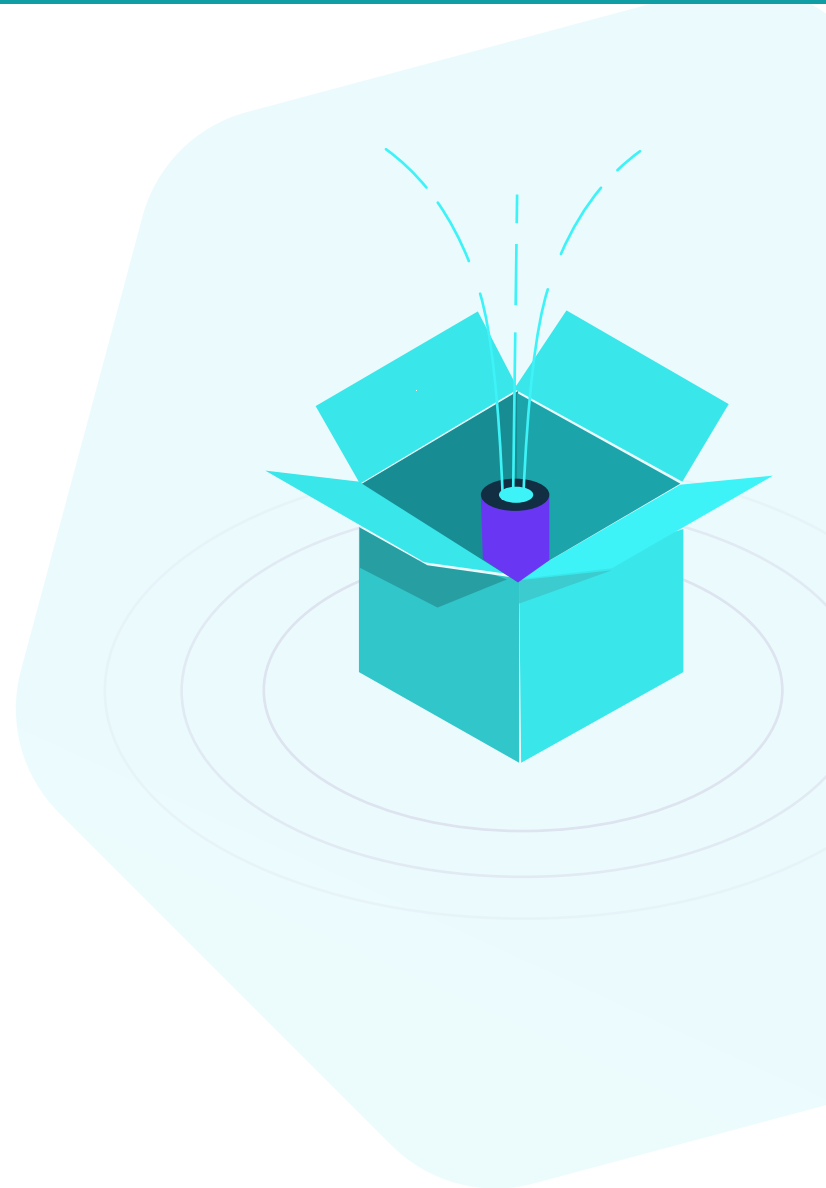
01. DEPLOYMENT FLEXIBILITY

in others words, say goodbye to long hardware provisioning cycles.

02. ZERO SYSTEM ADMINISTRATION

means personnel cost savings as fewer full-time employees are required.

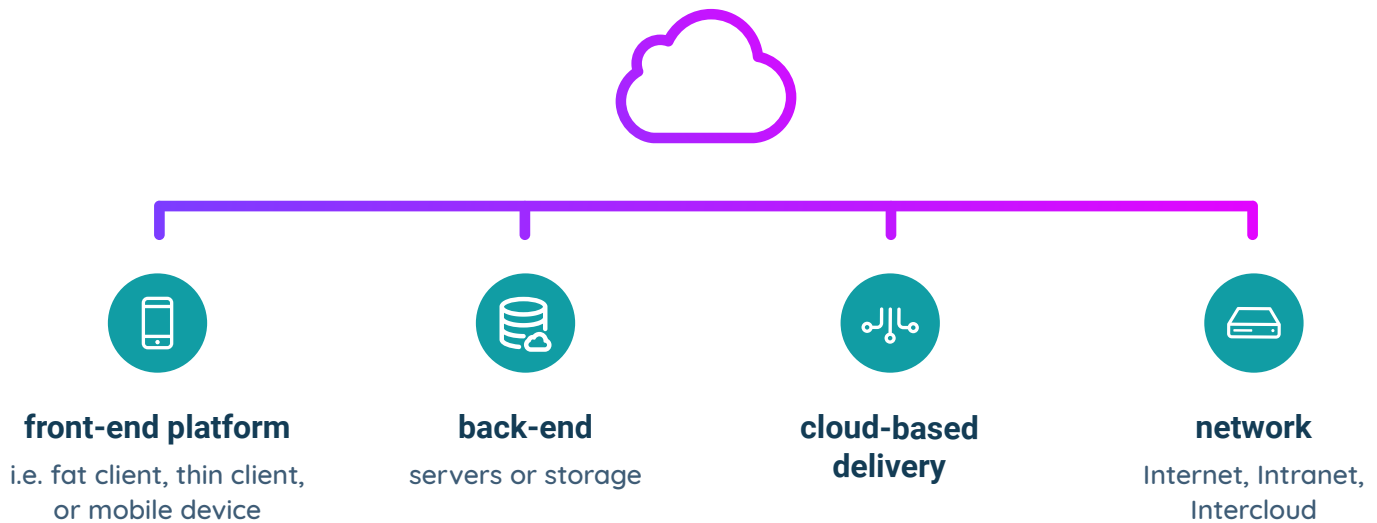
03. BEST SOFTWARE EXPERIENCE



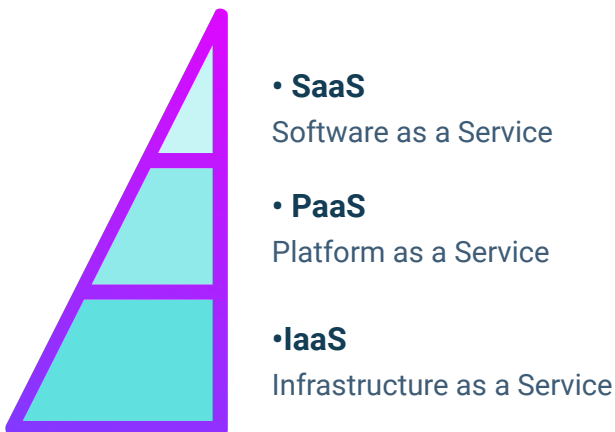
What is Cloud Architecture?

Cloud architecture, or cloud computing, comprises of a number of components and subcomponents. Combining these components together makes up for cloud architecture.

TYPICAL CLOUD ARCHITECTURES:



As for **cloud-based delivery systems**, it covers broad range of concepts of which many marketers and developers will be accustomed to:



The cloud architecture provides a number advantages over conventional architecture which involve on-site servers. To appreciate the benefits of cloud computing, brands must understand that the cloud is primarily an extension of organization's IT team and business team.

Brands that rely on its own, on-premise servers, is missing out on several benefits, which have been summarized next.

The Benefits of Cloud Architecture

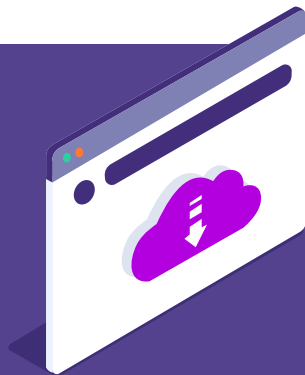


01. IMPROVED SPEED

Most contemporary cloud architecture alleviates latency issues and increases speed across the board, simply because on-premise servers typically age, or progressively get overwhelmed with the increasing amount of data being processed.

TELUS, a dotCMS customer, reported that prior to moving to dotCMS Cloud, it would normally take between 3 to 10 minutes to open content for editing and further 3 to 10 minutes to publish the content. Today, it takes them less than 30 seconds to log in and open up content. And publishing is now measured in seconds.

LESS THAN
30 s
to log in and
open up content

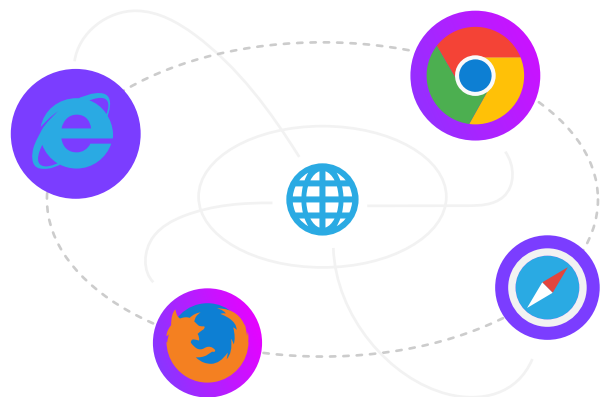


AND
PUBLISHING
is now measured in
seconds



02. COMPATIBILITY ON MAJOR BROWSERS

Cloud architecture provides for better compatibility with all major browsers, including Internet Explorer, Firefox, Chrome and Safari. In most cases, traditional server-based systems relied on an outdated Java Browser plugins which limited the usage on most browsers. It is the reason why some users experienced a better performance of a particular system on a specific browser, rather than getting consistency across all major browsers.





03. DOING MORE WITH LESS

Implementing a cloud-based architecture relieves significant workload from an organization's IT teams. Traditionally, on-premise systems relied on servers, data centers and hardcore software coding to manage, maintain and store their system – all of which managed by an IT team. Cloud architecture can reduce IT operating costs without heavily impacting the organization's IT capabilities.



04. SCALABILITY & FLEXIBILITY

Cloud-based computing is ideal for brands that have a growing or fluctuating bandwidth demands. It allows brands to easily scale up their cloud capacity by simply changing their usage plan. Likewise, if a brand wants to scale down, then the brand's cloud-based provider can accommodate this as well.

The level of flexibility provided by a cloud-based system can give businesses a competitive advantage. So it comes as no surprise to see IT directors and CIOs ranking 'operational agility' as a top driver for cloud adoption⁶, as according to Gartner study.



05. BRANDS CAN BE ACCESSIBLE VIA DIFFERENT IOTS

Cloud-based architecture enables brands to become more responsive. Meaning, brands can be accessible by numerous IoTs. This is absolutely crucial as practically everyone has to access to smartphone

devices. By embracing the cloud, brands can interact with their consumers or internal staff on any platform, as and when required. And be able to deliver a more personalized experience.



06. BETTER DISASTER RECOVERY SECURITY

It's a no-brainer for businesses of all sizes to invest in a robust, comprehensive disaster recovery program. But for small businesses and start-ups, that lack of initial capital funding and expertise, investing in a recovery system is more of a distant dream. Thankfully, cloud architecture is helping these smaller organizations to buck that trend.

A report by Aberdeen Group shows that small businesses are twice as likely to implement a cloud-based backup and recovery solution⁷. The same study also noted that these cloud-based systems can save time and helps brands avoid large upfront investments in servers to hold backup data.



07. AUTOMATIC SOFTWARE UPDATES

Conventional architecture required a significant amount of time and internal resources to manage, maintain and keep the system up-to-date. Deploying updates requires systems to go under downtime and become unavailable.

Whereas, with cloud computing, the servers are off-premise and out of your hair. Cloud providers can take the strain of rolling out mandatory software and security updates. Meaning, brands don't have to waste their time in maintaining the system. Leaving them free to focus on things that matter, like growing their business.



08. REDUCE UPFRONT CAPITAL COSTS

Cloud-based architecture effectively removes the cost of expensive hardware and installation from the equation. Most cloud-based providers offer an affordable subscription-based model that is fairly straightforward to set up and manage.



09. MULTI-SITE MANAGEMENT

An important feature of cloud-based computing is that it is able to host multiple sites in one location. This feature serves companies with multiple brands well. Having multiple sites on one system allows organizations to manage their content on each site ease and convenience since everything is in one place.



10. PROMOTES REMOTE WORKING

Cloud computing allows staff to work from anywhere in the world. According to one study conducted by

Stanford, people who work from home are 13 percent more productive than those who work in an office environment⁸.

In addition, businesses can offer a more flexible working pattern to their employees so they can enjoy a better work-life balance. Another study reported 42 percent of workers would be happy to take an average pay cut of 6 percent of their salary to be able to telecommute.



11. INCREASED COLLABORATION

With teams being able to work remotely through cloud computing solutions, teams are able to access, edit and share documents anytime. Most cloud-based solutions offer collaboration features (i.e. Google Docs), this enables staff to work together and deliver a better end-product through making real-time updates which are fully visible to all collaborators working on the document.



PEOPLE WHO
WORK FORM HOME:

13% more productive

than those who work in a office



12. SECURITY

Lost or stolen laptops is a very costly business problem. But what is more concerning than the loss of the expensive piece of equipment is the sensitive data inside it. A cloud-based architecture provides greater security when something like this happens. With the data being stored in the cloud, brands can access their data no matter what happens to their machine.





Cloud Jargon Explained



Cloud computing, or cloud architecture, has a lot of technical terms and jargon that will not be familiar to all. This section attempts to explain some of the most commonly used cloud computing terms in alphabetical order:

A

01. AMAZON ELASTIC COMPUTE CLOUD:

EC2 is a part of AWS. It provides scalable computing capacity in the cloud, which developers can use to deploy applications.

02. AMAZON SIMPLE STORAGE SERVICE:

S3 is also a part of AWS. S3 allows for retrieval and storage of data. Can also be used to host static websites.

C

03. CLOUDSOURCING:

Replacing traditional server-based IT operations with low-cost, cloud services.

04. CLOUDWARE:

A type of software that enables development, deployment and management of applications via the cloud.

05. CLOUD BROKER:

An entity that develops and maintains relations with multiple cloud service vendors. It acts as a liaison between the cloud customer and cloud service provider to ensure the customer selects the best cloud service provider that meets their requirement whilst monitoring services.

06. CLOUD OPERATING SYSTEM:

A cloud operating system is specially designed to run in a cloud provider's data center and off-premise servers. The cloud operating system is also used to deliver user requests over the internet or another network. Examples of cloud operating system include Windows Azure and Google's Chrome OS.

07. CLOUD ORIENTED ARCHITECTURE:

A term coined by Jeff Bar at AWS to describe an architecture where **applications act as services in the cloud and that serves other applications** in the cloud environment.

08. CLOUDSTORMING:

Connecting multiple **cloud architectures together**.

09. CONTENT DELIVERY NETWORK:

CDN a distributed system that consists of **servers in discrete physical locations**. These servers are configured where users clients can access the nearest servers on the network, thus improving speeds.

10. CONSUMER CLOUD:

Cloud services that are targeted towards personal use, **like Dropbox and iCloud**.

D

11. DISRUPTIVE TECHNOLOGY:

A term used to describe **innovations that improves either a product or service in unexpected ways**. These innovations drastically change methods to complete a process or task and can potentially re-shape the market for that particular process or task. Cloud computing is considered as a disruptive technology due to its flexible pricing models, elasticity, and low maintenance cost compared to on-premise IT services.

12. DOCKER:

Open-source software that is **able to automate the deployment of applications** inside virtualized software containers.

E

13. ELASTIC COMPUTING:

The ability to maintain computing and storage resources **during peak usage** without having to worry about capacity planning.

14. EXTERNAL CLOUD:

Private or public cloud services that are provided through a **third-party cloud-based provider**.

H

15. HYBRID CLOUD:

Hybrid clouds are composed of a **combination of private and public services**. Both public and private cloud infrastructures operate independently of each other but integrate using software and processes that enable portability of data and applications.

I

16. INTERNAL CLOUD:

A private cloud that is **provided by an organization's IT department**. Used for internal purposes.

L

17. LOADING BALANCE:

Loading balance **helps to improve the distribution of workloads across multiple computing resources**. It helps to optimize response time and avoid overload of any single resource in order to maximize throughput.

N

18. NODES:

A node is classed as either a **communication endpoint (i.e. IoTs) or a redistribution point**. In terms of cloud computing, devices which connect to a cloud infrastructure is classed as an end node. With dotCMS headless CMS model, each individual component such as authoring and production and loading balance is classed as a node.

P

19. PRIVATE CLOUD:

A cloud infrastructure used solely by a single organization and for internal purposes. The services provided by a private cloud is not available to the general public. Typical examples include **intranets and internal portals**. Some private clouds are managed internally or by a third-party hosting solution.

20. PUBLIC CLOUD:

Services that are rendered over a network (i.e. internet) and **available for general public**.

S

21. SOFTWARE PLUS SERVICES:

The combination of locally running software with cloud-hosted services. This method enables the use of a local system for processing power whilst operating cloud-based services for software license verification, syncing between devices, file storage and portable identities.

U

22. UTILITY COMPUTING:

A model where services are available as and when needed, and users are charged for a specific usage.

23. VENDOR LOCK-IN:

Dependency on a particular cloud vendor results in **reduced ability to migrate between vendors** due to an absence of support service models, APIs, data structures and standardized models.

24. VERTICAL CLOUD:

A cloud computing environment that has been optimized and built around the compliance requirement of specialized industries **like healthcare, government operations and financial services.**

25. VERTICAL PRIVATE CLOUD:

A private cloud which operates within a shared or public cloud.



Cloud vs On-Premise: What's the Difference?



With the above-mentioned benefits, it is time to differentiate between cloud and on-premise IT infrastructures. This section will give you a better picture of the pros and cons of each infrastructure by cost, security, customization and implementation.

Cloud: Pros and Cons

01. COSTS

the pros

- ✓ Cloud-based solutions offer a fixed monthly cost.
- ✓ Cheaper to zero upfront investment
- ✓ No investment in hardware investment

the cons

- ✗ The only disadvantage to the cost side of cloud computing is over time, the monthly expenditure can accumulate to cost more than the upfront capital cost of an on-premise IT infrastructure. However, the costs would still be lower compared to the costs involved with maintaining and updating an on-premise solution.

02. SECURITY

the pros

- ✓ Data security in hands of the vendor. This provides brands peace of mind and will not have to worry about running regular security updates.

the cons

- ✗ Even though data security is in the hands of the vendor, this might cause some concern for those who are overprotective about their data. Vendors are obligated to ensure their data security protocols are kept up-to-date. And all vendors abide by their Service Level Agreement, not doing so would lead to a breach and can potentially damage their reputation. Hence, why all vendors will want to make sure all their customer's data is kept secure.

03. CUSTOMIZATION

the pros

- ✔ Organizations are able to work with vendors to see what changes can be made. dotCMS cloud provides headless CMS which provide for a greater degree of customization and flexibility and is able to deliver content through various channels (more on this later).

the cons

- ✘ If the cloud vendor does not provide aheadless CMS model, then there is less flexibility in terms of customization.

04. IMPLEMENTATION

the pros

- ✔ Cloud solutions take less time to implement, as customers can sign up and start using the software immediately.

the cons

- ✘ With a shorter implementation process, you can expect a less-customized solution.

On-Premise: Pros and Cons

01. COST

the pros

- ✔ Requires a one-off upfront capital payment for the license.

the cons

- ✘ The upfront capital cost can be hefty, which makes it a little riskier.
- ✘ Ongoing hardware and IT maintenance costs.

02. SECURITY

the pros

- ✔ With on-premise servers, you have direct, physical control over data and content.

the cons

- ✘ It is the organization's responsibility to ensure that data is kept secure and that servers are maintained. Some organizations may be unaware of the best data security practices, and this can be seen as a risk.

03. CUSTOMIZATION

the pros

- ✓ During the initial design and setup of on-premise infrastructures, organizations have a greater degree of control in terms of customization in order to meet their business requirements.

the cons

- ✗ Design and set-up can delay implementation time.
- ✗ Once implementation has been completed there is little flexibility in terms of updating and deploying the on-premise system. Further updates or deployment will require more investment and development time.

Why Cloud (Usually) Trumps On-Premise

Data security is a major concern when it comes to deciding between cloud adoption and on-premise. Consumers in recent years have become less skeptical about cloud security, as recent cloud adoption rates show. Many cloud vendors have strict security standards when it comes to keeping data safe. In addition, these cloud vendors also undergo numerous audits by external organizations to ensure they are adhering the data security standards.

In addition, the alleviation of IT resources and capacities is another factor encouraging brands to adopt the cloud. Since data security, deployments and updates are all taken care by the cloud vendors, IT teams can focus on more pressing matters like product development.



DATA SECURITY IS A

major concern

many cloud vendors have strict security standards to keep data safe.





What is dotCMS Cloud?



The dotCMS Cloud provides all the capabilities of a comprehensive content management system without an IT department. Giving brands more control to serve business purposes and to effectively deliver consumer needs. dotCMS Cloud is secure, scalable and fully customizable and is capable of deploying websites, intranets, extranets, portals, app and any Headless CMS strategy (more on this later).

In addition, every dotCMS Cloud installation comes with the award-winning dotCMS Enterprise Professional.

The benefits of using dotCMS cloud are as follows:

01. RAPID DEVELOPMENT:

Go from weeks and months of set up to days with dotCMS Cloud's on-demand access and scalability.

02. DECREASED TOTAL COST OF OWNERSHIP (TCO):

dotCMS Cloud removes the spending on equipment and maintenance and overall IT spend.

03. ENTERPRISE-LEVEL SCALABILITY:

dotCMS Cloud provides extensibility and flexibility to grow to meet rising consumer demands.

04. EASY TO USE:

Business teams can start authoring, editing and publishing pages, content and other assets easily.

05. REDUCED DEPENDENCY ON I.T:

With Amazon Web Services (AWS) secure and private infrastructure, along with dotCMS' push-publishing and auto-scaling capabilities, IT can focus on business innovation, rather than server administration.

06. REAL-TIME EXECUTION:

Fast, powerful and simple, dotCMS Cloud gives business teams the control and delivery they need to meet market demands in real time.

About dotCMS Enterprise

dotCMS Enterprise is a powerful content management system that comes with dotCMS Cloud. dotCMS Enterprise simplifies the complex needs and integration requirements of large organizations. This content management system is able to deliver content to websites, intranets, mobile apps and to the latest IoT devices. It can also integrate with third-party systems, like marketing automation, eCommerce, CRMs and ERPs.

dotCMS Enterprise can enable teams to push entire websites to geographically distributed servers or CDNs and can also incorporate a fully customizable workflows that adapt individual business needs.

The benefits of using dotCMS cloud are as follows:

01. CLOUD, ON-PREMISE OR HYBRID SOLUTIONS:

Maximum flexibility for hosting a dotCMS platform solution. In addition, get full access to source code for easier integration and customization to meet more complex business needs.

02. MULTI-TENANT/MULTILINGUAL:

Create dozens, hundreds or even thousands of websites quickly and easily. And effortlessly manage multilingual sites with i18n and multilingual support.

03. GLOBAL PUBLISHING:

Set up authoring and publishing environment across geographic regions for a globally distributed publishing network.

04. BUILD INTRANETS & EXTRANETS:

Power public-facing websites, intranets, and extranet sites with the same software.

05. HEADLESS CMS:

dotCMS Enterprise enables brands to take advantage of headless content management. A headless CMS is a content management system which is built from the ground up to act as a content repository where content can be delivered via RESTful APIs for display on any device or screen.

CREATE
EVEN THOUSANDS OF

websites quickly and easily



With IoT devices popping up in all walks of life, a headless CMS is becoming a necessity to brands looking to stay relevant in this next phase of the digital revolution. The model gives developers greater flexibility to innovate and also helps site owners to future-proof their websites by allowing developers to rejuvenate the design without having to re-implement the whole CMS. And thanks to RESTful APIs, developers and brands can adapt their content to the latest IoTs.

An Overview of the Migration Process to dotCMS Cloud

One factor that does come under considerations is how brands can migrate to cloud from an on-premise system to the cloud. One of the main features of dotCMS is that it offers seamless transition through the dotCMS Enterprise Cloud (dEC) Migration Process.

dotCMS is able to convert custom made databases (i.e. MySQL, Oracle, or MS SQL) to Postgres, which is dotCMS' standard database format, and migrate legacy pages and files. If previous have utilizes custom plugins, then dotCMS can also migrate this too.

The static plugins that can be managed on the dEC environment are as follows:

01. SAML AUTHENTICATION

02. WYSIWYG EDITOR CUSTOMIZER

03. CONTENT IMPORT AND EXPORT

Any other plugin will need to be converted into a dynamic (OSGI) plugin.

Once the database, files and plugins have been migrated, dotCMS can allow users to test their system. Support is also available on hand to assist with the testing and tweaking phase. Once everything is okay, then the system is ready to go live.

aws

Amazon AWS: What It Is and Why dotCMS Uses It



Amazon Web Services (AWS) provides a range of cloud services such as database storage, content delivery and other functionalities to help businesses scale and grow. The range of products and solutions provided by AWS cloud helps developers to build sophisticated applications with added flexibility and scalability. This allows brands to deploy and modify applications in line with consumer demands.

“

“Amazon is in a league of their own with their global cloud infrastructure services of 31 percent — more than three times their nearest competitor Microsoft at 9 percent⁹”.

— BUSINESS INSIDER



31%

Leader of the category

VS



9%

Nearest competitor

There are a number of benefits of using AWS, and these benefits further cement why AWS has dominated the cloud services market share in recent years:

01. EASY TO USE

AWS allows application creators and providers and vendors to host a variety of applications. Whether it's an existing application or a SaaS-based

application, the AWS management console can enable brands to migrate existing applications or create new ones. The interface even allows integration of well-documented web services API as well.

02. FLEXIBLE:

AWS enables developers to create their own applications using their preferred operating system, programming language, web application platform, database and other services they need. AWS provides developers with a platform that lets developers load their software and service that is required by their application. This allows for smoother migration for existing applications.

03. COST EFFECTIVE:

AWS is a cost-effective solution as customers only pay for computing power, storage and other resources that they use. No long-term contracts are used nor any upfront commitments.

04. RELIABLE:

As the most dominant cloud service provider, it has built its reputation as a scalable, reliable and secure global computing infrastructure. Thanks to Amazon.com's multi-billion dollar online that has been honed over a decade.

05. ELASTIC SCALABILITY AND HIGH PERFORMANCE:

With AWS tools like Auto Scaling and Elastic Load Balancing, applications can be scaled up or down based on current consumer demand.

06. SECURE:

AWS utilizes an end-to-end approach to secure and harden their infrastructure. This includes physical operation and software measures.



Why dotCMS Uses AWS

dotCMS does leverage a number of AWS features in order to insure the uptime and scalability of the dotCMS Cloud. Since AWS's cloud is currently unrivaled and provides numerous compelling cloud services and solutions for developers to create their own cloud product, there is a risk of an over-reliance which can lead to a vendor lock-in.

dotCMS is fully aware of this over-reliance on AWS to create applications. With AWS being dotCMS' current cloud offering, Will Ezell, CTO at dotCMS, has made sure dotCMS cloud does not fall into the vendor lock-in trap:



Many of dotCMS's customers have utilized AWS's features to create their own Content-as-a-Service products. Gettysburg College, a dotCMS customer, used AWS to create their own set of Alexa Skills to help their students be informed of the daily lunch menu.

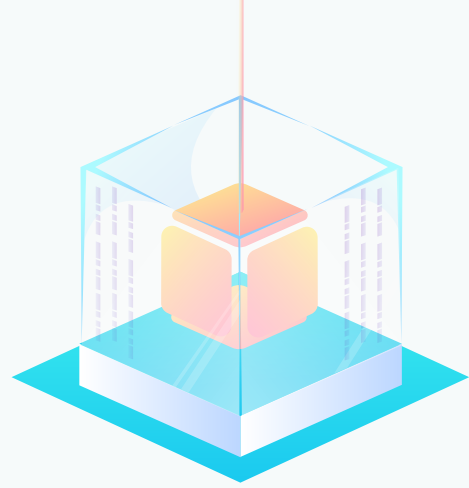


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About dotCMS



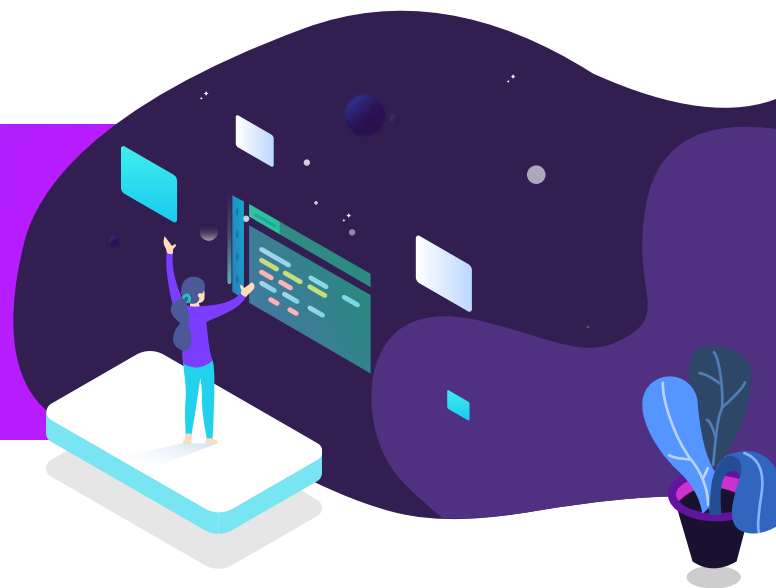
dotCMS is an open-source Java, customer experience orchestration hub for companies that want to drive business outcomes with their websites and other content-driven applications. dotCMS provides the technology to deliver connected and continuous customer experiences that business teams can orchestrate.

dExtensible, scalable, and with headless content management capabilities, organizations can rapidly build their Digital Experience Platform and drive innovation while their marketing and business teams drive customer experiences for every touchpoint, in every customer journey, on any device – all from a single system.

Founded in 2003, dotCMS is a privately owned U.S. company with offices in Miami (Florida), Boston (Massachusetts), and San Jose (Costa Rica). With a global network of certified implementation partners and an active open-source community, dotCMS has generated more than a half-million downloads and over 10,000 implementations and integration projects in over 70 countries. Notable dotCMS customers include: Telus, Standard & Poors, Hospital Corporation of America, Royal Bank of Canada, DirecTV, Nomura Bank, Thomson Reuters, China Mobile, Aon, DriveTest Ontario, and ICANN.

**SCHEDULE A
dotCMS demo at dotcms.com**

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About dotCMS

contact

WEB: dotcms.com

PHONE: + 1 - 305 - 900 - 2001

EMAIL: info@dotcms.com



office locations



BOSTON

200 Portland St
Boston, MA, 02114
U.S.A



MIAMI

3059 Grand Avenue
Miami, FL, 33133
U.S.A



HEREDIA, CR

Eurocenter
Primera Etapa, Piso 1
106 Heredia, Costa Rica

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