IBM **Cloud**

Ad Tech:

Where Milliseconds Matter

Maximise Cloud Performance with IBM **Cloud**

Introduction

In the time it takes to load a page, you either win the chance to display an ad or you lose it. If you want to get paid, you need to process requests faster than your competition. In short: Milliseconds matter.

Today, the speed and volume of ad tech transactions happen on a microsecond-by-microsecond basis which demands peak compute, storage and network performance and consistency. Tomorrow, machine learning and cognitive services will differentiate ad tech leaders from the competition.

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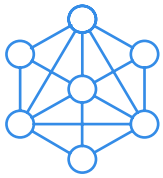
Contents

01 **Best practices for maximising cloud infrastructure performance**

02 **Tips for minimising latency to ad networks**

03  **How to make your platforms smarter with machine learning and cognitive services.**

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Infrastructure Performance

Maximise performance by choosing the right infrastructure

When milliseconds matter, every aspect of your ad platform's cloud infrastructure must be tuned and optimised. You require massive capacity, peak compute performance, low latency to disk, low latency among node and direct access to terabytes of high-I/O unstructured storage.

Those demands are challenging to meet consistently in the public cloud, and they're nearly impossible to meet with virtualised cloud infrastructure. To consistently and reliably process high volumes of ad traffic quickly, you need more. You need to scale out massive Hadoop clusters and run Apache Spark, Aerospike, or a proprietary data warehousing technology optimised to use flash storage, solid state drives, and massive amounts of memory.

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Cloud Infrastructure Best Practices

Avoid noisy neighbors and the hypervisor tax

Build on bare metal servers

Get the raw horsepower of bare metal hardware in a cloud deployment and improve your latency to disk. With IBM Cloud, you select and customize the hardware running in your cloud servers to optimise your platform's performance. And because you have complete control over the server, you don't have to worry about noisy neighbors.

Minimize latency to disk and maximise I/O performance

Use local SSD or NVMe hard drives

Ad tech workloads perform best on local SSD and NVMe drives. IBM® Cloud provides bare metal configuration options that allow for these high-performance storage resources.

Maximise bandwidth between nodes and to the Internet

Configure nodes with multiple 10Gbps network uplinks

You need to facilitate the massive data transfer volume required by high-transaction workloads. IBM Cloud bare metal servers can be configured with dual 10Gbps network uplinks for plenty of bandwidth between nodes and to/from ad exchanges.

Provision scalable storage for unstructured data

Integrate object storage

IBM Cloud Object Storage Standard Regional is integrated directly with IBM Cloud infrastructure. This reliable, low-latency, inexpensive object storage offering makes it easy to store and access your unstructured data.

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Network Performance

Increase your bandwidth capacity, shorten the distance your data travels

With high-performance bare metal hardware crunching numbers, analyzing variables, and completing transactions, your attention turns to the next performance bottleneck: Network travel time within your cloud infrastructure and between the ad exchanges that drive your revenue.

Given the volume of transactions that flow between your platform's nodes, you need to open the floodgates to allow data to move freely.

Many cloud providers offer dedicated 10Gbps network uplinks on their cloud servers, and some offer physical or virtual segregation of public network traffic and private network traffic.

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Cloud Networking Best Practices

Minimise the distance data travels between nodes

Colocate your cloud infrastructure

Reduce latency between nodes by deploying all your cloud infrastructure in the specific IBM Cloud data center of your choice. With many competitors, you provision resources in a region, and those resources may be housed in different data centers within the region.

Improve communication between nodes

Segregate public and private traffic

IBM Cloud bare metal servers and virtual servers are connected to a unique three-tiered network architecture that segregates public, private, and out-of-band management network traffic. Private network traffic and out-of-band management traffic are free and unmetered, and data transferred on those networks does not interfere with your public network bandwidth.

Provision infrastructure close to your target ad exchanges

Geographic positioning

IBM Cloud Data Centers are strategically located in geographic locations to meet our customers' needs. For advertising exchanges, we recommend customers choose San Jose (SJC03) and Washington, D.C. (WDC04) to take advantage of their proximity to Google and Facebook exchanges in the United States. For ad exchanges in Europe and Asia, we recommend Amsterdam (AMS04) and Hong Kong (HKG01).

Streamline network path to ad exchanges

Peer with ad exchanges

IBM Cloud infrastructure is provisioned on a global backbone network that interconnects all of our data centers and network presences with each other and with major transit and peering bandwidth providers around the world. We have private peering relationships with Google, Facebook and other major exchanges to streamline the flow of traffic.

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Machine Learning & Cognitive Services

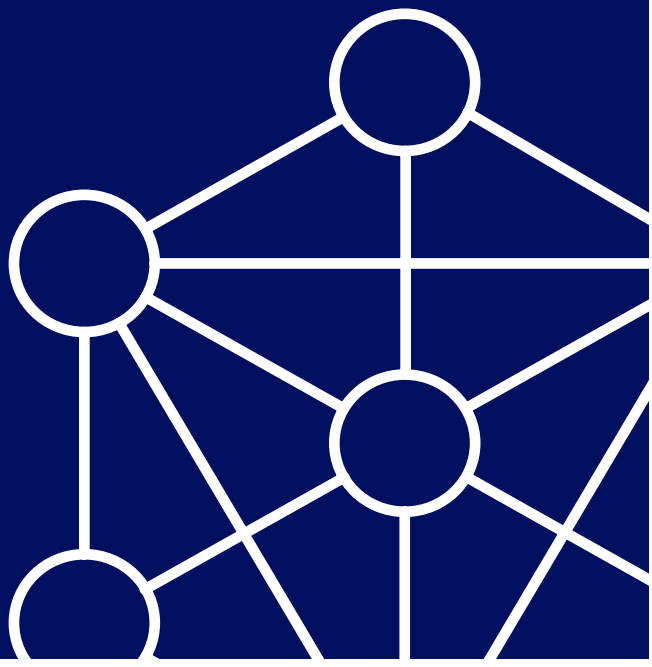
A faster, more intuitive ad buy

Combining the right mix of hardware and reducing latency assures steady performance. But looking toward the future, competitive advantage will center around not just raw performance, but smarter ad platforms.

Drive volume and maximise profit by making sense of the data you receive and by identifying opportunities to improve your platform.

Your ad platforms need machine learning capabilities to prepare for this new frontier.

Powerful, easy-to-consume cognitive services can be integrated into your systems on demand via APIs, so you don't need to develop new cognitive engines completely from scratch. Use these cloud services as a programmatic framework from which you can build and optimize your ad tech platform's machine learning systems and algorithms.



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Machine Learning Recommendations and Resources

Learn more about your audience

Use Watson Personality Insights to identify user traits

Watson Personality Insights, an IBM Cloud cognitive service, empowers you to derive information from transactional and social media data to identify psychological traits which determine behavioral traits, intent, and purchase decisions. This context will help you improve the conversion rates of the ads you present to users.

Identify context-relevant opportunities

Recognize patterns with Cognitive Commerce

Cognitive Commerce, an IBM Cloud service developed by Cognitive Scale, uses data mining, analysis, pattern recognition and natural language processing to navigate through multi-structured data including text, images and video to generate actionable insights from 'dark' data.

Make better (and quicker) decisions on each transaction

Make sense of your data with Watson Retrieve and Rank

Watson Retrieve and Rank, another powerful IBM Cloud cognitive service, helps you find the most relevant information for your queries by using a combination of search and machine learning algorithms to detect 'signals' in the data. These insights allow your systems to make better and quicker decisions.

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Move Faster. Get Smarter. Use IBM Cloud.

Milliseconds matter. Make your systems faster with an uncompromising approach to designing and deploying the cloud foundation.

With the cloud infrastructure and network performance considerations of your unique workloads, your cloud provider needs to be able to keep up with you. And as you build the next generation of your systems, integrate a framework of cognitive services to get smarter about the transactions you process.

IBM Cloud provides the infrastructure, networking, and cognitive services your workloads demand in an easy-to-use, unified cloud platform. Contact our cloud experts to start building your platform's new cloud environment.

Start building →

Visit **ibm.co/ad-tech**

"IBM Cloud has helped put us in a position where we now process billions of post-ad click events, support over 16 million purchase events each day and help our customers track over 1.5 billion user profiles."

—Ben Tregoe, Senior Vice President of Business Development, Nanigans

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