



## Public cloud infrastructure comparison: IBM Cloud vs. Alibaba Cloud

According to a recent survey on cloud computing, most organizations either have part of their infrastructure in the cloud or plan to migrate something there in the next year.<sup>1</sup> The cloud provider market has been growing in response to high demand, and now numerous companies from the United States and around the globe offer cloud services. One such company is the Alibaba Group, which was a popular e-commerce platform in China before it jumped into the cloud computing market in 2009 with Alibaba Cloud.

IBM also offers cloud services, but took a different route from the Alibaba Group. After many years of developing enterprise data center technologies, IBM moved naturally into the cloud provider market with IBM Cloud, an enterprise, full-stack cloud platform providing public, private, and hybrid environments. We researched publicly available data on both offerings and found several areas where companies looking for strong cloud performance may see advantages with IBM Cloud over Alibaba Cloud.

IBM Cloud has cloud-provided bare metal offerings with numerous configurations

IBM Cloud seems to offer better block storage read and write capability almost everywhere around the world

IBM Cloud offers fast data transfer technology for object storage, regardless of file size

IBM Cloud allows management of multiple cloud environments, regardless of provider

IBM Cloud offers drastically shorter maximum wait times for top-tier tech support

## Bare metal offerings

Most cloud providers offer a broad range of virtualized instances to meet the demands of many generalized workloads. However, there are still some cases where having dedicated access to a server's resources is crucial. Perhaps you may have applications with strict security or regulatory requirements that could be better satisfied with dedicated bare metal servers. For these and other specific use cases, the cloud may not seem to be a viable option. On the contrary, however, some cloud providers now offer bare metal solutions that give users dedicated access to an entire server.

IBM Cloud offers a wide range of configurations, including bare metal solutions with hundreds of highly configurable options to cater to any performance needs. You can choose from single- to quad-socket servers, customize the amount of RAM, and choose from several drive types and sizes to get exactly what you need for your workload.<sup>2</sup> Alibaba Cloud offers Elastic Compute Service (ECS) Bare Metal instances (EBM),<sup>3</sup> yet they aren't truly bare metal. Alibaba states that the EBM offerings combine traits from both virtual machines and bare metal services by leveraging a "nested virtualization technology."<sup>4</sup> Their website also states EBM instances have comparable performance to traditional bare metal servers, but according to their documentation, these instances are actually a different type of virtual server with some similarities to bare metal.

Another benefit to using IBM bare metal solutions is that you can get SAP-certified configurations.<sup>5</sup> Alibaba does not list SAP certification for their EBM instances, though some of their normal instances are certified.<sup>6</sup>

If the differences between bare metal servers and EBM are not as critical for your organization, the number of options available from Alibaba Cloud may limit you. EBM instances come in three core counts with only a handful of RAM configurations.<sup>7</sup> IBM Cloud offers a rich bare metal experience and allows you to leverage many configuration options for your workloads or tailor them to your specific business needs.

### Flexible GPU options from IBM Cloud can help compute-intensive workloads

If you're searching for bare metal server solutions for gaming, deep learning, AI, machine learning, and other compute-intensive applications, then GPUs are probably going to factor into your considerations. Both IBM Cloud and Alibaba Cloud offer GPU options on virtual machines, but IBM is unique in that they offer bare metal GPU as an option. Alibaba Cloud does not offer GPUs for any Elastic Compute Service Bare Metal (EBM) instances.<sup>8</sup> The GPU options from Alibaba Cloud are VM instances, some of which are available only in China.<sup>9</sup> IBM Cloud, however, offers bare metal servers with several different GPU options including NVIDIA® Tesla P100 and V100 GPUs.<sup>10</sup> For applications requiring the additional compute performance of a GPU as well as the benefits of bare metal architecture, IBM Cloud may be the better option.

## Storage considerations

### Object storage

All cloud providers offer object storage, but not all object storage is created equally. For companies that transfer a lot of data in and out of their cloud environments, there's more to consider than the capacity, cost, and security of the storage. The speed and ease of the data transfers are also important considerations. How long will users wait for data to transfer? Even relatively short periods of time can add up over days and weeks. With IBM Cloud, organizations can benefit from native integration between IBM Cloud object storage and Aspera® high-speed data transfer. At no additional cost for traffic using the IBM high-speed network, and with no charge for transferring to the cloud (ingress), IBM Cloud object storage users can get transfer speeds faster than HTTP.<sup>11</sup> Alibaba Cloud offers Data Transport for large amounts of data from terabytes to petabytes via offline data migration. You transfer large amounts of data by storing it in a device Alibaba provides, which they will then physically transport to the cloud data center to place in the bucket.<sup>12</sup> For IBM Cloud, Aspera data transfer relies on patented Fast and Secure Protocol (FASP®) transport technology to bypass traditional network bottlenecks, and works for transfers of all sizes.<sup>13</sup> Aspera transfer technology is included with IBM Cloud object storage by default; Alibaba Cloud Data Transport is a separate service that requires a fee.<sup>14</sup>

While both IBM Cloud and Alibaba Cloud offer multiple object storage class tiers, IBM offers a flexible tier and policy-based auto-tiering. IBM Cloud's Flex storage class is created for workloads with unpredictable access patterns. When the workload is slow, IBM Cloud will charge less for storage and a fee for retrieval. When the workload warms and retrievals exceed a certain cap, IBM Cloud will increase storage fees but will waive retrieval fees.<sup>15</sup> Another way IBM Cloud provides users with flexibility is their policy-based automatic data tiering. When an application or workload reduces the frequency that it retrieves data, policies activate to move the data to cheaper, long-term storage class buckets automatically.<sup>16</sup>

Want to take cloud object storage out for a test run? You could get more out of IBM Cloud. Its free tier offers up to 25 GB of storage, 2,000 PUT requests, 20,000 GET requests, 10GB data retrieval, and 5 GB of public outbound bandwidth per month using Aspera high-speed transfer.<sup>17</sup> Alibaba Cloud offers up to 5 GB of storage and up to 5 GB of data transfer free per month.<sup>18</sup>

### Block storage

Block storage is a default offering from cloud providers, but the details can vary greatly. With traditional drives and storage configurations, multiple applications and hosts can access the same device. With IBM Cloud block storage, you can continue this practice by attaching up to eight hosts to a single block storage volume.<sup>19</sup> Alibaba Cloud allows multiple instances per disk only if the user configures a Share Block Storage offering. These shared disks also allow up to eight hosts to a single block storage volume, but the two performance levels only support up to 30K input/output operations per second (IOPS). Meanwhile with IBM Cloud, enterprises can get up to 48K IOPS with any instance when they use either IBM Cloud Endurance or Performance block storage options.<sup>20</sup>

As for the block storage options that cannot be shared among instances, Alibaba Cloud offers four performance levels: Basic Cloud Disk, Ultra Cloud Disk, SSD Cloud Disk, and ESSD Cloud Disk. The Basic, Ultra, and SSD levels range from several hundred IOPS to 25K IOPS, though the performance of the SSD tier relies on being attached to an input/output (I/O)-optimized instance.<sup>21</sup> An Alibaba website states the ESSD Cloud Disk can reach one million IOPS, but it is available only in one region in China, and some instance configurations can limit performance. The cloud provider must approve the instance for one million IOPS; otherwise, there's no guarantee that an instance will deliver that level of performance.<sup>22</sup>

## VMware capabilities

IBM and VMware have been partners for more than ten years,<sup>23</sup> and they have expanded on that partnership in the cloud environment. IBM Cloud offers fully certified VMware solutions that IT can govern the same way as on-premises VMware solutions. IBM Cloud provides full access to the VMware solution, which can allow organizations to expand existing on-premises VMware environments to the cloud while continuing to manage and govern the environment with the VMware tools and policies they already have in place.<sup>24</sup> For now, Alibaba Cloud does not offer a VMware-specific environment for customers. They announced a partnership with VMware in September 2018.<sup>25</sup>

## Management, monitoring, and tech support

Once you've built your cloud environment with various instances, storage options, and the like, the next step is to keep things running smoothly. The IBM Multicloud Manager helps you manage your Linux® Kubernetes® environments, whether they live in IBM Cloud, a private cloud, or other cloud providers. Your organization can deploy, automate, review, and set consistent security and governance policies across all your Kubernetes clusters.<sup>26</sup> Looking to avoid outages and down time across your IBM Cloud infrastructure? IBM Operations Analytics allows your organization to take advantage of IBM machine learning technology to collect, analyze, and use statistics from your environment as well as detect behavioral changes that could lead to a critical issue. IBM Operations Analytics also can help improve efficiency with automation and noise reduction.<sup>27</sup>

Alibaba Cloud offers some management and monitoring tools. None of the tools appear to include AI-based predictive analytics or work with multiple cloud environments outside of Alibaba Cloud.<sup>28</sup>

For those times when something does go wrong with your cloud, tech support is necessary to get your business back up and running. If a critical application goes offline, time is of the essence. IBM Cloud and Alibaba Cloud both offer several tiers of tech support, but there are important differences in the details. Both cloud providers offer a free tier of support, with IBM Cloud offering 24/7 access via tickets, phone, and chat, but Alibaba Cloud offers only three tickets per quarter. These tickets cover general questions and may be answered only during local business hours. Alibaba Cloud currently offers a short-term upgrade to six tickets per quarter until the end of March 2019.

The first paid tier of Alibaba Cloud support again offers only local business hours and an up-to-36-hour response time for questions. The longest an IBM Cloud customer would have to wait is eight hours at their lowest paid tier. Only at the highest tier of support does an Alibaba Cloud customer get additional communication outlets with instant messaging and phone options. Although the Alibaba Cloud support window is 24/7 at that level, customers will still have to wait up to 36 hours for a response depending on the severity of the issue.<sup>29</sup> IBM Cloud customers, however, can wait up to four hours, maximum, for a response at the top support tier.<sup>30</sup>

## Research summary

Cloud feature	IBM Cloud	Alibaba Cloud
<b>Bare metal</b>	<p>Hundreds of highly customizable bare metal configurations</p> <p>Bare metal options range from simple single-socket to high-performance quad-socket configurations</p> <p>Bare metal configurations with physical NVIDIA GPUs</p>	<p>No true bare metal offerings</p> <p>Limited configurations of what they call bare metal options</p> <p>No GPUs with bare metal configurations</p>
<b>Object storage</b>	<p>Aspera high-speed data transfer default with all object storage buckets</p> <p>Flex storage class bucket for unpredictable data</p> <p>Auto-tiering of data through policies</p> <p>Up to 25 GB of storage for an unlimited time with free tier of object storage</p>	<p>Accelerated data transfer options are for extremely large sets of data</p> <p>No flexible storage classes</p> <p>No data auto-tiering</p> <p>Only 5 GB of free per month</p>
<b>Block storage</b>	<p>Attach up to eight instances to each block storage volume</p> <p>Up to 48K IOPS with Endurance or Performance tier block storage</p>	<p>Limited block storage options with multiple instances</p> <p>Up to 30K IOPS except for one region in China</p>
<b>VMware capabilities</b>	Fully certified hybrid cloud VMware solutions	Only recently announced a partnership with VMware
<b>Management, monitoring, and tech support</b>	<p>Use Multicloud Manager for Kubernetes environments across IBM, public clouds from other providers, and private clouds</p> <p>Operations Analytics can offer predictive maintenance and increased efficiency</p> <p>Free level of tech support with 24/7 access</p> <p>Offers 15-minute to four-hour wait times for high-tier tech support</p>	<p>No multi-cloud management</p> <p>No AI-controlled predictive analytics</p> <p>Free level of tech support during business hours and limited to three tickets per quarter</p> <p>Up to 36-hour wait times for high-level tech support</p>

## Conclusion

With so many choices of cloud providers, it's hard to navigate the landscape. Organizations should be able to find a cloud platform that meets their business needs and goals. The Alibaba Group and IBM Cloud have features that may interest enterprises, but we confirmed that IBM Cloud has advantages in five key areas. We reviewed publicly available information on both platforms, and in addition to offering true bare metal configurations, IBM Cloud offers many advantages compared to Alibaba Cloud as well as management, monitoring, and support features that Alibaba Cloud doesn't have. IBM also offers layers of other services and products that move and manage data, services, and workflows across a multi-cloud environment.

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