

IBM Cloud - Public

Built for all your applications. AI ready. Secure to the core.

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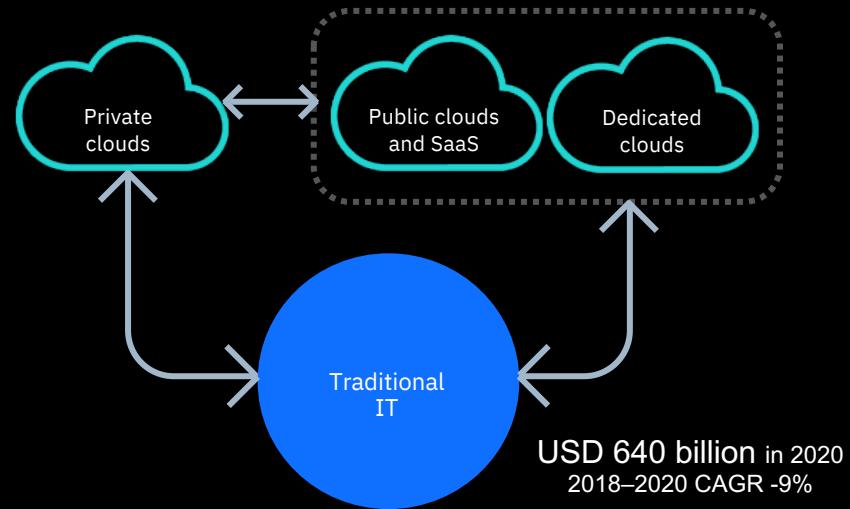
Ask not what IBM Cloud can do for you – ask what you want to do with IBM Cloud!

A hybrid, multicloud world

New opportunities and new challenges

USD 438 billion in 2020
2018–2020 CAGR 15%

USD 609 billion in 2020
2018–2020 CAGR 18%



A real-world look at multicloud

94%

Share of enterprise customers
using multiple clouds

67%

Share of enterprise customers using
more than one public cloud provider



Movement
between clouds

73% priority
concern



Connectivity
between clouds

82% priority
concern



Consistency
of management

67% priority
concern



Sources: IDC Cloud Forecast; BCG & McKinsey

IBM Cloud / April 2019 / © 2019 IBM Corporation

A faster, more secure journey to cloud

Hybrid

Enable enterprises across public, private, and traditional environments.

Multicloud

Manage other vendors' clouds, acknowledging the reality that client environments are heterogeneous.

Open

Build capabilities that are open by design, enabling client flexibility and reducing vendor lock-in.

Secure

Provide reliability and continuous security for the client's environment.

Management

Offer consistent service level support, logging, management and delivery across the cloud environment.

IBM has helped thousands of enterprises across 20 industries realize a faster, more secure journey to cloud.



Shifted AA.com and VMware applications to the cloud in four months.



Modernized applications 10x faster, 3x less expensively



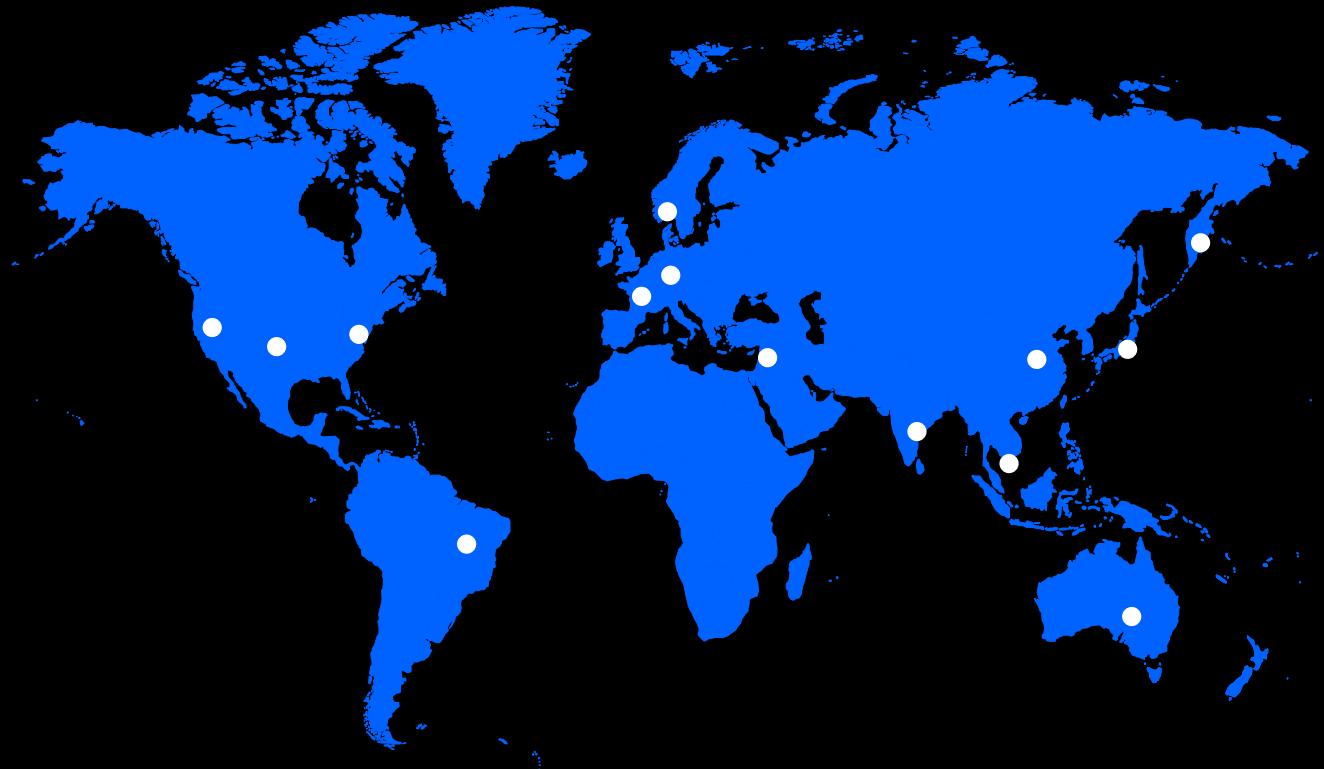
Added 3,000 new clients a day with new AI and mobile banking capabilities



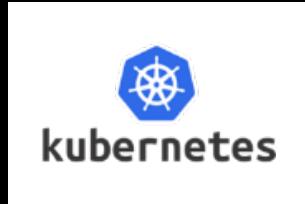
Gained consistency and control across IBM and Amazon Web Services clouds

cloud.ibm.com

IBM Cloud - Public



Open, standards-based cloud operating environment



Container Orchestration

- Manages scalable deployment and lifecycle management
- Large open source community and rapid enterprise adoption
- De facto choice for new applications



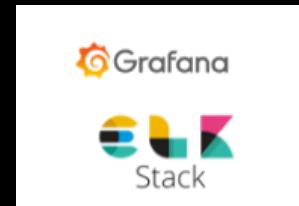
Security

- Identity and Access
- Key management
- Network Security



Containers

- Enables portability across hardware platforms and clouds
- Accelerating enterprise adoption
- Integrates Development and IT
- Open source and strong community



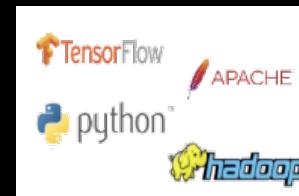
Management

- Monitoring
- Logging
- Metering



Operating Systems

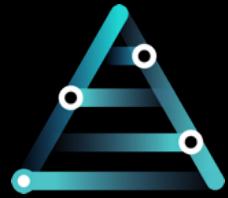
- Power, Z and Intel
- #1 Enterprise OS across cloud providers
- Open source with strong community
- Broad hardware vendor support



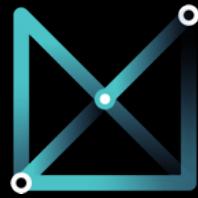
AI Enabled

- Watson Studio & AI OpenScale
- Machine Learning Frameworks
- Open Source Databases

Discover a faster, more secure journey to cloud.



Migrate



Modernize



Build



Manage

What does IBM Cloud have for app developers?

1. IBM Cloud Services - Catalog
2. Developer services
3. Lift and Shift to IBM Cloud
4. Cloud Native compute options on IBM Cloud
5. Messaging and Data services
6. AI Services
7. Isolation, Hyper Secure and High Perf Computing

Note: The list of services is indicative and continues to evolve over time

IBM Cloud platform overview

↓ Compute	↓ Security	↓ IoT	↓ Integration
↓ Network	↓ Databases	↓ Mobile	↓ Migration
↓ Storage	↓ Analytics	↓ Developer Tools	↓ Private Cloud
↓ Management	↓ AI	↓ Blockchain	↓ VMware

<https://www.ibm.com/in-en/cloud/products>

Note: The list of services is indicative and continues to evolve over time

Developer services – Web, Mobile, Devops, monitoring

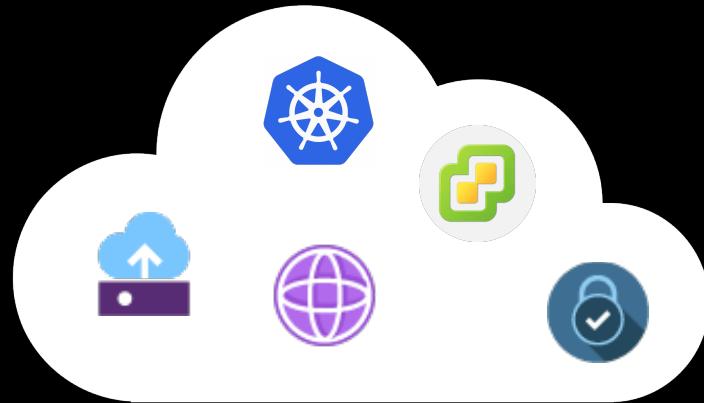
- Cloud Foundry – Build packs in various languages
- Hosted Websphere
- Mobile Foundation
- Push Notification
- Security - App ID, Certificate manager
- Devops Toolchains – Issue tracking, hosted git, delivery pipeline
- Monitoring (Sysdig, LogDNA)
- Internet services (CloudFlare)– DNS, GLB, DDoS, TLS
- Content Delivery Network (Akamai), DNS



Note: The list of services is indicative and continues to evolve over time

Lift and Shift

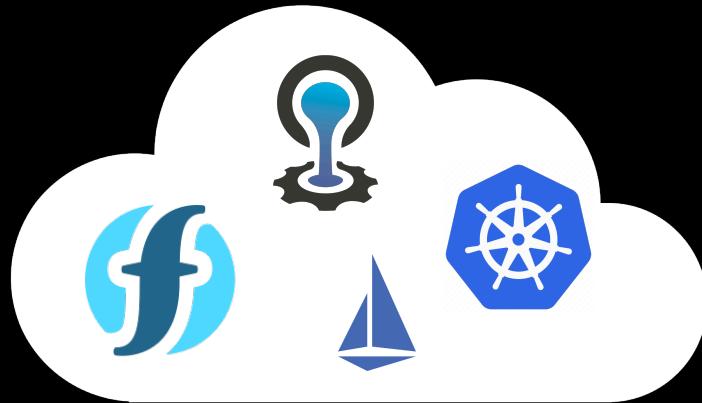
- Hosted Websphere
- Kubernetes Service – for containerize-able workloads
- Virtual Servers - Single tenant/Multi tenant VMs
- VMWare vCentre – Hosted private cloud on baremetal
- Bare metal servers
- VPNs – Secure Gateway, Ipsec VPN Hardware Firewalls



Note: The list of services is indicative and continues to evolve over time

Cloud native compute

- Kubernetes Service – for containerize-able workloads
- Managed Istio service mesh
- Cloud Foundry – isolated CF Enterprise environment
- Functions – Openwhisk IBM Cloud Functions for serverless computing



Note: The list of services is indicative and continues to evolve over time

Message and Data storage

- Event streams – Kafka based Messaging, MQ
- Cache – Redis
- SQL Databases –PostgreSQL, DB2, MySQL
- NoSQL - Cloudant, Mongo
- Blockchain
- Flat – Object, File, Block
- Elastic search, etcd
- JanusGraph



Note: The list of services is indicative and continues to evolve over time

AI/ML

Watson services

- Assistant (Chatbots)
- Speech 2 text /text 2 speech, NLU, translate
- Visual Recognition (Image reco)

ML

- Watson Studio
- Open Scale
- Machine learning
- Knowledge studio



Note: The list of services is indicative and continues to evolve over time

Isolation, hyper secure and HPC

- High performance computing (HPC)
- IaaS capabilities
- Directlink – datacenter connectivity
- Virtual Private Cloud (VPC)
- ICP Hosted
- GPU (Nvidia), SAP (HANA)
- Bring your own encryption Key
- Hyper protect – Crypto, DBaaS
- HSM - Hardware key management



We eat at our own restaurant!

Example of some IBM SaaS built on IBM Cloud - public



The Weather Company

Migrated the world's largest weather websites to the IBM Cloud, gaining more secure, scalable, open and agile app development.

Business challenge

The Weather Company serves millions of users worldwide each day. In extreme weather, their sites must perform fast and reliably. People rely on getting timely information to stay safe.



Significant cost savings in both hosting & support



DevOps elasticity with managed Kubernetes accelerates delivery of new services



Greater data center reach expands access to more local markets globally

Transformation

The Weather Company web platform migrated to IBM Cloud **in 6 months**.

Result

100% uptime and **seamless scaling** during the 2018 hurricane season.

Service volume (daily):

30 million
normal page views

100 million
Extreme weather page views

250 billion
On demand forecasts

13 billion
API requests

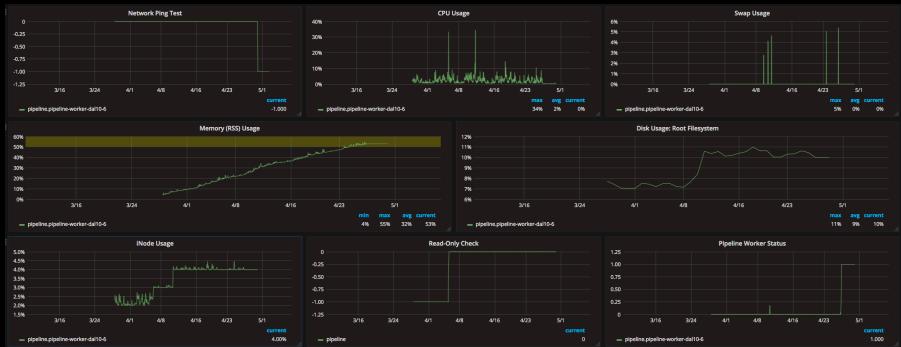
IBM Continuous Delivery (CD)

The screenshot shows the IBM Cloud DevOps Insights Toolchains interface. At the top, there's a navigation bar with 'IBM Cloud' and links for 'Catalog', 'Docs', 'Support', and 'Manage'. A search bar on the right says 'Search for resource...'. The main area is titled 'Toolchains / Devops Insights TC' with a 'Visit App URL' link. It shows the 'Org: DevOpsLifecycleAnalytics' and 'Location: Dallas'. The interface is divided into six columns: THINK, CODE, DELIVER, MANAGE, LEARN, and CULTURE. Each column contains a card for a specific tool: Issues (DevOps-Insights), GitHub Enterprise Whitewater (DevOps-Insights), Delivery Pipeline (Grafeas), PagerDuty (Deployment Risk Anal...), SonarQube (SQServer), and Slack (#dla-deploy). Status icons are present: a green checkmark for configured tools and a yellow warning icon for the Delivery Pipeline card.

- Entire architecture running on Kubernetes
- Multi-tenant
- Regional isolation:
 - US-South, Germany (EU-managed), United Kingdom, US-East, Tokyo
 - Coming soon: Sydney
- Leveraging multiple availability zones per region: able to survive the loss of 1 zone
 - Load balancing across 3 zones in each region
- Compliance: ISO27k, GDPR, SOC2 (soon)

CD - operations

- Automatic continuous delivery with separation of concerns (CI / CD)
- Credentials in Hashicorp Vault (IBM managed)
- Monitored using consumption monitors and New Relic
- Alerting using PagerDuty, communication with Slack
- Incidents, change requests, tickets managed with ServiceNow, issues in GitHub Enterprise (IBM managed),
- User metrics in Amplitude, KPI



IBM Cloud: the most open and secure public cloud for business



Open Innovation

Best public cloud for open source, including OpenShift

- Kubernetes on IBM Cloud supports 1k+ enterprise clients, 16k+ clusters in prod
- Managed Red Hat OpenShift on IBM Cloud
- Major contributor to Open Source Projects like Razee, Istio, Knative, Eirini, Tekton, CouchDB and Foundation DB
- Automated deployment of Cloud Paks using Schematics with Catalog consistency supporting thousands of client containers



Security Leadership

Market leading data protection across the platform

- Highest industry compliance for data encryption
- Configurable so that not even IBMers can see your data
- Threat management with IBM Security integration
- Industry leader in container security



Enterprise Grade

Reliable foundation for enterprise workloads

- #1 VMware public cloud with ~2,000 clients
- Cloud migration for Power AIX, IBMi, Z, SAP and mission critical
- Broadest portfolio of secure compute choices: Bare metal, Virtual Private Cloud, virtual servers, containers, and serverless resources

Red Hat OpenShift on IBM Cloud

- Move and build OpenShift-based workloads on a managed public cloud service to gain increased responsiveness, scalability, and reliability.

Additional Value Propositions

- Continuous availability with [multizone clusters](#) across 6 regions and 35 datacenters.
- Hourly worker node billing and monthly OpenShift Container Platform billing, for short-term projects.

Features available on IBM Cloud:

As-a-Service (Managed)

Automated provisioning, install, config, upgrades, patch management, scaling, performance tuning and 24/7 global SRE support.

Resilient and Secure

Automatic multizone deployments with failure recovery, security hardening, compliant, and enterprise isolation options including dedicated compute, bare metal and private clusters.

Complete Platform

Built in monitoring, logging, [Key Protect](#), IAM, Activity Tracker, Storage, [COS Volumes](#), [Security Advisor](#), Service Catalog, Container Registry and [Vulnerability Advisor](#).

Cloud Paks on IBM Public Cloud

The preferred destination to run IBM middleware is **Red Hat OpenShift on IBM Cloud** with click to deployment and pre-loaded content

IBM Cloud Pak for Applications

IBM Cloud Pak for Data

IBM Cloud Pak for Integration

IBM Cloud Pak for Automation

IBM Cloud Pak for Multicloud Management



- Enterprise-proven managed Kubernetes service running [at scale](#) and hosting critical production workloads for Maersk, AA, Hertz, car2go, Daimler, and many others.
- Enterprise secure environment for containerized workloads with [built-in container level security](#), [isolation](#), [bare metal support](#), and [broad industry compliance \(PCI, HIPAA, etc.\)](#)
- [Built in load balancing](#) & [multizone availability](#) for simplified management & resiliency.
- [Cloud Paks are pre-loaded and certified for IBM's public cloud](#) for accelerated migration of your workloads to the cloud.

