IBM Technology Atlas

Hybrid Cloud roadmap

Composable applications, services, and infrastructure enable enterprises to create a dynamic and trusted virtual computing environment across multiple clouds, with simplicity for development and operations.

Updated May 2024

- ✅ completed
- ⏩ pushed to next year
- 🎯 on target

	2023	2024	2025	2027	2029	2030+
Hybrid Cloud journey	✅ ***Provide consistency across multicloud with a hybrid cloud platform.***	🎯 ***Scale generative AI-infused workloads across multicloud.***	***Automate hybrid cloud management.***	***Standardize to enable dynamic optimization.***	***Realize the convergence of bits, neurons, and qubits.***	***Enable one seamless compute.***
Strategy overview	✅ In 2023, enterprises will use common platforms to build, deploy, and manage workloads in multiple clouds with tools from multiple vendors. ✅ OpenShift and serverless pipelines will accelerate and scale AI development.	🎯 Scale generative AI on heterogenous IT by orchestrating multi-model workflows, leveraging distributed data, and building and deploying across enterprise functions and teams with diverse environments.	Increase automation with generative AI to reduce the need for human management of enterprise IT. Provide tools to address cost, efficiency, sustainability, regulatory compliance, and policy-based management concerns.	Use common standards for uniform management and operability of applications and services on different on-prem, cloud environments, and edge devices.	Enable the composition and dynamic deployment of enterprise applications using combinations of AI, quantum computing, and classical computing.	The multicloud as a global utility will deliver computing with simplicity, seamlessly integrating multiple computing models—classical and quantum—and providers and meeting regulatory, security, and sovereignty constraints.
Why this matters to our clients and the world	✅ A consistent multicloud platform will provide increasing levels of automation. Together with core services across deployment locations, this will give enterprises agility and efficiency at scale as they adopt AI and multiple clouds.	🎯 Managing heterogeneity in distributed IT stacks and data to train, tune, and infer generative AI will enable enterprises to move generative AI from pilot to production and deliver business value.	Cross-environment resource optimization and visibility allows enterprises to improve ROI. Single posture reduces governance and compliance risks and lowers related regulation costs.	Technical and business standards will enable enterprises to seamlessly broker access across cloud providers, taking advantage of specific providers' capabilities, such as cost, technology, sustainability, geography, industry specialization.	Advances in AI, quantum computing, and automation will dramatically accelerate the rate of innovation, with hybrid tools decoupling business applications from computing locations, services, and providers to let enterprises speed up the creation of new products.	Specialized computing (e.g., quantum computing, specialized hardware) will bring an unprecedented ability to solve increasingly more challenging problems, with a simple user experience.
The technology or innovations that will make this possible	✅ Linux and Kubernetes with low-code, no-code, and serverless will enable flexible deployment. ✅ Infrastructure-as-Code, as-a-service infrastructure, and programmable domain-specific control planes will automate deployment. ✅ AIOps helps manage the hybrid cloud. ✅ Cloud-native platform and runtimes will be developed for AI.	🎯 Expanded control planes to on-prem and edge systems will support end-to-end generative AI-infused workloads, AI pipelines, and data services. 🎯 Holistic application-centric management across domains of SRE and SecCom with AI will be used to increase automation. 🎯 Kubernetes orchestration and configuration management will be used across multiple clusters.	Consistent security models and tools embedded into IBM's aaS portfolio will be used to execute workloads in the multi-cloud with consistent security. An expanded programming model will support the execution of AI workloads across the hybrid cloud. We will improve scalability to support edge computing. AI technologies accelerate the integration of cloud services and improve productivity of cloud ops.	Cloud deployment and optimization capabilities will include cost optimization across cloud providers. Our programming model will evolve abstractions to discover and compose hybrid cloud services according to functional and non-functional objectives. We will optimize data placement and access.	The cloud programming model, abstractions, orchestration, and management capabilities will be expanded to support IBM Quantum systems and enable easy development and experimentation with quantum workloads by SaaS vendors.	Management of quantum workloads will be done with the same resiliency, cybersecurity, and sustainability standards as traditional, AI-infused workloads.
How these advancements will be delivered to IBM clients and partners	✅ Watsonx was built on OpenShift AI. ✅ Ansible, RHACM, and OpenShift are being used today by multiple clients in consistent ways across multicloud. ✅ As-a-service experience is supported for hundreds of clients via Satellite, transitioning to Red OCP aaS in 2024.	🎯 All watsonx components will be deployed across clouds and on-prem environments, and a watsonx@Client aaS product will launch. 🎯 One IBM multicloud application management platform will be delivered, with a client-facing version (ROJA). 🎯 On-prem infrastructure aaS will be available.	The hybrid application management platform (ROJA) will be enhanced with AI-infused automation. Watsonx will support the automation of a compliant hybrid cloud. A security platform aaS will be embedded into IBM SaaS / PaaS offerings.	The hybrid cloud platform will include the ability to dynamically discover and compose services and cost-optimize the selection of cloud providers and services among them.	Access to quantum computing will be seamlessly integrated into the multicloud environment.	These innovations will be delivered in multicloud marketplaces and exchanges. The multicloud world will be hyper-scalable, with decentralized orchestration and automation, and will be delivered predominantly via SaaS capabilities.