IDC MaturityScape

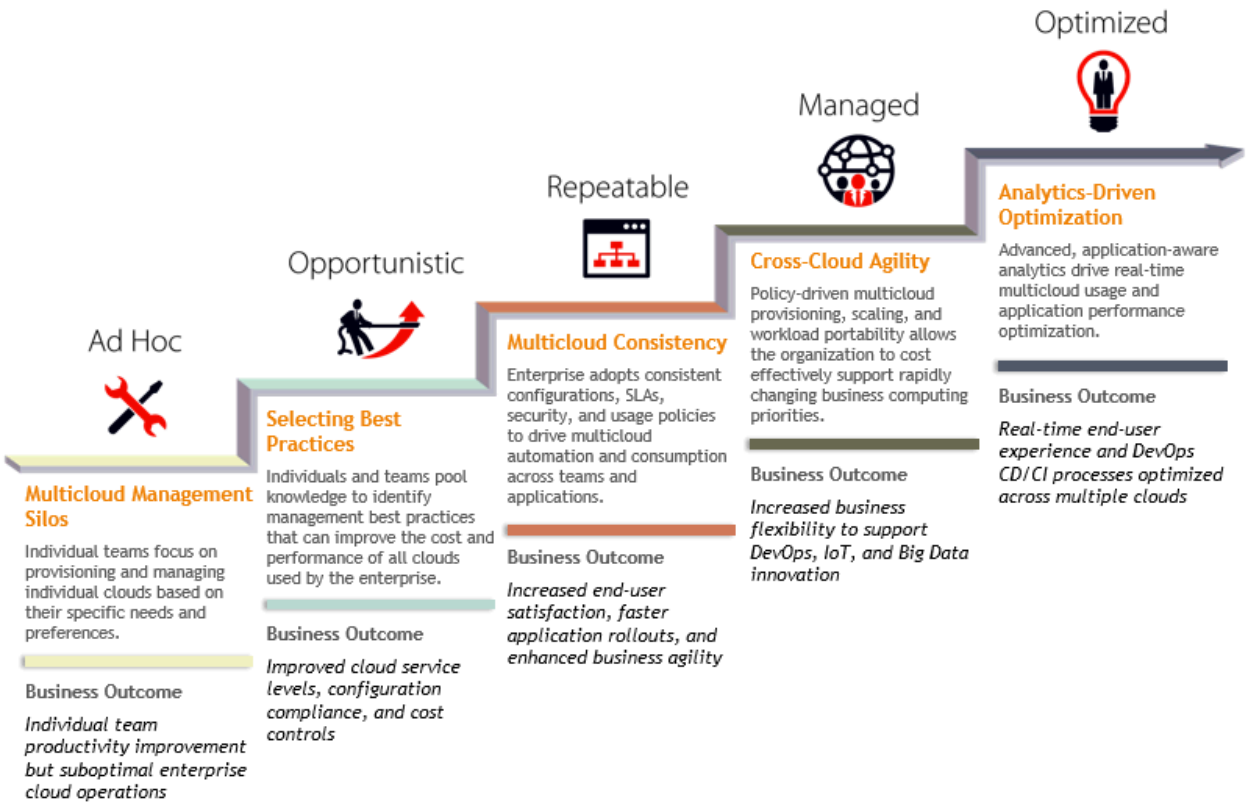
IDC MaturityScape: Multicloud Management 1.0

Mary Johnston Turner

IDC MATURITYSCAPE FIGURE

FIGURE 1

IDC MaturityScape: Multicloud Management — Stage Overview



Source: IDC, 2017

Figure 1 represents the IDC MaturityScape stages from the simplest, unstructured ad hoc stage to the advanced, systemized optimized stage.

March 2017, IDC #US42132917

EXECUTIVE SUMMARY

IDC's research indicates that over 90% of enterprise-scale organizations plan to make use of multiple clouds in the next several years. These organizations are focused on matching the needs of specific workloads to the cost, performance, and security profiles offered by a range of cloud options including public cloud services, hosted private clouds, community clouds, and on-premises private clouds. Each workload will have different dependencies and requirements.

Multicloud management represents a set of technologies that are used to consistently configure, provision, monitor, and optimize the use of all types of cloud resources in a way that ensures consistent application of SLAs, security, and compliance policies while optimizing costs and promoting business agility. These technologies can be open source or proprietary and can be deployed as licensed software, SaaS-based subscriptions, or on-premises solutions or embedded as part of public cloud services. They support a range of functionality including:

- Cloud infrastructure configuration, provisioning, and life-cycle operations automation
- Cloud self-service catalogs and automation
- Infrastructure and application performance monitoring
- Workload scheduling and automation
- IT operations and log analytics
- Cloud brokering analytics and cost analytics

This IDC MaturityScape for multicloud management offers senior IT leaders and their teams a framework for assessing current cloud management capabilities and identifies opportunities to improve operations, service levels, skills, and governance.

Key findings of the IDC MaturityScape for multicloud management include:

- The need to shift away from the use of team- and department-level cloud management silos to reliance on more reusable, standardized process, tools, and SLAs
- Recognition that cross-cloud business agility depends on more than just initial automated cloud resource provisioning to include ongoing day-to-day optimization of usage, cost, and performance
- The importance of investing in application-aware monitoring and analytics to fully support the business agility priorities of multicloud management strategies

This IDC study is the IDC MaturityScape for multicloud management. After reading this study, IT decision makers will be equipped to effectively evaluate the existing maturity of their organization's cloud management tools, processes, and governance models and will be able to create a collaborative process to harness internal best practices and available services and tools in ways that best promote business agility and innovation.

"Multicloud management strategies need to look beyond the simple automated cloud resource provisioning and configuration needs of individual teams and departments," explains Mary Johnston Turner, research vice president, Enterprise Systems Management Software. "Enterprises need a structured process to harness best practices, standardize configurations and management tools, and take full advantage of state-of-the art cloud application performance monitoring and analytics."

ELEMENTS OF THE MULTICLOUD MANAGEMENT MATURITY FRAMEWORK

Stages of the Multicloud Management Maturity Framework

Ad Hoc

Description

Ad hoc multicloud management approaches are typically based on the priorities and preferences of individual departments and teams that have selected specific on-premises or public cloud platforms and services to support their specific operational requirements. These individual groups have little to no structured process or framework to share best practices or to pool purchasing power. In many cases, they are unaware of one another's efforts and may, in fact, be making individual choices that will make it harder for the broader organization to share information or integrate cloud-based workflows overtime.

Business Outcome

While individual teams and departments may find that they can operate more efficiently or save money by using specific cloud options, the overall organization often misses out on broader digital business agility benefits, end-user experience improvements, and cost savings that can result in reliance on more consistent cross-cloud management strategies, practices, and tools. Silo-based cloud management strategies allow an organization to test a number of different options but rarely scale effectively as organizations need to connect data and workflows across multiple clouds.

Opportunistic

Description

At the opportunistic stage of multicloud management, early adopters begin to recognize the value of moving from silos to best practices. Many organizations will start by adopting standardized cloud infrastructure provisioning templates and automation scripting tools to improve configuration compliance and auditing. At this stage, IT operations and DevOps teams begin to evaluate how to best coordinate workflows and define operational policies and SLAs to ensure more consistent application performance and better cloud resource consumption and reduce overall spend on cloud resources.

Business Outcome

As the organization can more quickly and consistently make development and production cloud resources available, the organization can better support the complete DevOps C/CI life cycle and ensure more consistent end-user experiences. The organization becomes able to consistently apply a common set of criteria and decision-making frameworks when it comes to choosing when to invest in in-house cloud management skills and tools versus relying on cloud-based management functionality and third-party services.

Repeatable

Description

As organizations move into the repeatable stage of multicloud management, the work of defining standards and best practices becomes the responsibility of a well-defined, collaborative governance process that represents the needs of business, development, and IT operations stakeholders. At this point in the maturity cycle, the organization will consistently implement standardized processes and tools and promote broad-based access to an enterprise-level self-service catalog and automation

platform. The organization has a well-understood, shared process for assessing existing multicloud management skills and gaps and determining which function is strategic for internal control versus better delivered by a cloud service provider or third party.

Business Outcome

As the organization implements more consistent automation platforms, templates, and workflows, it becomes easier and faster to provision and support complex applications that depend on data and code deployed across complex multicloud architectures. Business agility, security, and end-user experience become the driving forces behind making choices about which clouds support which workloads. The organization can better support DevOps and big data-driven business innovation on a cost-effective basis.

Managed

Description

At the managed level of multicloud management, the enterprise can consistently monitor, evaluate, and report on the costs, SLAs, end-user experience, and digital business agility impact of each cloud being used across the organization. It can report on usage, costs, and performance and incent individual teams to select and standardize on a core set of cloud resources. Managed environments have invested in an integrated set of monitoring, reporting, and automation multicloud management tools that can be consistently used across on-premises and public or hosted clouds. Using standard templates, VMS and container management, and automation tools, the organization can migrate workloads as needed to optimize business outcomes, performance, and costs.

Business Outcome

As cloud management processes, configuration, infrastructure scaling, capacity management, and application performance become more consistent and standardized in cross-cloud environments, the enterprise can better manage costs, support business initiatives, and simplify operational processes and tools. This results in increased end-user and IT staff productivity and performance.

Optimized

Description

At the optimized stage, multicloud management strategies have been fully architected to support consistent cross-cloud provisioning, configuration, and workload migration. Automation is a given, and the organization has a consistent process for selecting and implementing open source innovations, automation scripting, and configuration templates and workflows. Optimized organizations understand that multicloud management needs to be an application-centric process that relies on application and end-user performance monitoring, predictive analytics, and dynamic capacity management to maintain the required SLA and security policies at the lowest reasonable cost. It carefully balances the use of cloud and third-party provided management functionality with decisions about on-premises tools and internal IT staff expertise and training.

Business Outcome

Optimized multicloud management environments allow the business to dynamically adapt in real time to DevOps, IoT, and big data-driven innovation. By using advanced analytics and automation to select, scale, and deploy cloud applications and infrastructure, the enterprise can compete more effectively as business requirements change and new online digital business capabilities are required.

DIMENSIONS OF THE MULTICLOUD MANAGEMENT MATURITY FRAMEWORK

Table 1 describes the dimensions and sub-dimensions of the IDC MaturityScape for multicloud management.

TABLE 1

IDC MaturityScape: Multicloud Management — Overview of Stages, Dimensions, and Sub-Dimensions

Dimensions/ Sub-Dimensions	Stage Names				
	Ad Hoc	Opportunistic	Repeatable	Managed	Optimized
Vision					
Strategy	Departmental focus emphasizes individual developer or IT operations resource provisioning time and costs using individual public and/or private cloud silos.	Small teams look to share and harness best practices and begin to identify shared, standardized public and/or private cloud resources.	Business units or enterprisewide teams identify corporate standards and best practices to optimize performance and costs across infrastructure and selected apps.	Focus shifts to proactive business agility improvements and workflow automation across teams taking a unified approach to managing on-premises and public clouds.	Automated, application-aware monitoring and analytics drive a unified cross-organization approach to optimizing multicloud SLAs, costs, and performance.
Governance	Departments and teams pursue individual agendas with varied SLAs and operational policies.	IT, development, and business teams partner to define selected standard configurations, SLAs, and security policies.	A documented, consistent governance process is in place to facilitate collaborative development of SLAs and standards across the organization.	A consistent process is in place to develop and apply collaborative defined SLAs and standards across multiple on-premises and public clouds.	Automated, application-aware configuration and provisioning systems maintain corporate SLAs, compliance, and standards across most organization's cloud resources.
Digital business impact	Primary digital business impact focuses on enabling individual development or operations teams to access infrastructure more quickly.	Digital business impact focuses on faster resources deployment and scaling for specific applications across development and operations.	Digital business impact prioritizes overall internal business and developer agility by using multicloud architectures to maintain SLAs and optimize costs.	Digital business impact relies on multicloud management, automation, and monitoring to improve end-user experience and time to revenue.	Digital business impact focuses on using multicloud management to enable new revenue-generating online services, big data insights, and IT cost optimization.

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Technology					
Multicloud management platform	Individuals and small teams rely on cloud-specific configuration and management tools to provision individual cloud-specific resources.	The organization begins to build a unified service catalog and self-service portal to support selected departments and roles — often developers and IT ops.	Enterprise-level multicloud inventories and monitoring platforms provide organizationwide insight into multicloud usage and costs.	Consistent enterprise policies and configurations are implemented using shared, unified multicloud management platforms.	Application-aware multicloud management platforms optimize cloud provisioning and resource consumption.
Automation	Cloud-specific self-service templates and provisioning automation solutions provided are deployed independently without broader integrations.	Standardized VM and middleware templates are developed and shared on a selected basis to drive consistent automated cloud resource provisioning.	Automation extends beyond provisioning to support multicloud workload portability and dynamic resource scaling.	Automated provisioning and configuration platforms include awareness of detailed public and private cloud service capabilities, pricing, and availability for real-time decision making.	Real-time application, infrastructure, and end-user analytics dynamically optimize workload provisioning and resource scaling.
Monitoring/ analytics	Organizations rely almost exclusively on performance monitoring and reporting provided by individual cloud services or on-premises cloud infrastructure platforms.	Organizations invest in unified graphical monitoring to provide operators and developers with consistent multicloud infrastructure visibility and control.	Multicloud management platforms consistently collect, normalize, visualize, and correlate data from multiple clouds to enable consistent cloud monitoring and reporting.	The use of big data IT operations and capacity analytics is selective to optimize application performance and costs across multicloud architectures.	The use of big data IT operations and capacity analytics is proactive to optimize application performance and costs across multicloud architectures.

TABLE 1

IDC MaturityScape: Multicloud Management — Overview of Stages, Dimensions, and Sub-Dimensions

Dimensions/ Sub-Dimensions	Stage Names				
	Ad Hoc	Opportunistic	Repeatable	Managed	Optimized
Security	Security is often managed by individuals or departments with inconsistent compliance to corporate rules.	Standardized security and compliance monitoring is selectively extended to individual cloud services.	IT operations and end-user security monitoring are expanded and standardized across public and private cloud services.	Consistent automated security monitoring, configuration compliance control, and audit reporting are the norm across multiple clouds.	Advanced analytics proactively identify risks and maintain compliance across multicloud resources.
People					
Skills and training	Individual developers and IT infrastructure ops staff are "learning on the job."	Internal cloud teams begin to develop skills and best practices with help from third parties, but variation still exists across different clouds.	Shared, management best practices and preferred tools are well defined and supported by training for end users, development, and IT roles.	Targeted enterprise-level hiring shifts to emphasize cloud-specific management skills and roles.	Multicloud management awareness and the skills to use advanced automation and analytics are expected of all cloud management staff.
Sourcing	Individual groups and teams make their own decisions about funding internal staff and training versus relying on cloud providers or third parties.	The organization begins to identify opportunities to use repeatable, automated multicloud management processes and tools to improve productivity and focus internal staff on value add.	The enterprise identifies cloud-based management capabilities that enable staff to optimize productivity and leverage on-premises management resources as needed.	The organization makes conscious choices about strategic multicloud management capabilities to be managed by internal staff versus by cloud providers or third parties.	The organization documents a clear delineation of multicloud management roles and responsibilities including expectations and metrics for cloud providers and third parties.

TABLE 1

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Dimensions/ Sub-Dimensions	Stage Names				
	Ad Hoc	Opportunistic	Repeatable	Managed	Optimized
Innovation					
Open source	Individuals and small teams make their own decisions about which open source-based technologies to implement to support multicloud management.	Selected groups begin to evaluate competing open source technologies to determine which are best suited to support the broader organization's multicloud management needs.	The enterprise defines core open source choices and standards to promote broader workflow integration, automation, and reuse across multicloud resources.	Organizations move from unsupported to supported, enterprise-grade open source cloud management solutions that can scale across multicloud architectures.	The organization makes consistent use of enterprise strength open source-based multicloud management technology and innovation.
DevOps life-cycle support	Small DevOps teams focus on automated development and test infrastructure provisioning using specific cloud resources.	Broader DevOps governance teams evaluate competing approaches to using multicloud DevOps life-cycle support and align around a core set of workflows and technologies.	The enterprise defines standard DevOps life-cycle workflows and automation technologies for multicloud management and operations.	Standard enterprise DevOps life-cycle workflows and automation technologies for multicloud management and operations are consistently deployed and used.	Automated DevOps infrastructure provisioning, updating, and migration driven by analytics and SLAs are consistently used across multiple clouds to optimize costs and performance.

Source: IDC, 2017

Vision Dimension

Successful multicloud management strategies recognize the impact that effective multicloud management has on an organization's ability to implement its digital business vision and to improve overall business agility and responsiveness. IDC sub-dimensions include:

- **Strategy:** Mature multicloud management environments are built on a strategy that calls for cross-enterprise alignment supported by consistent automation, integrated workflows, unified monitoring, and broad-based analytics to optimize cloud workload deployment choices, service levels, and costs.

- **Governance:** A mature multicloud management approach relies on a collaborative enterprise, which governs processes that develop and consistently apply SLAs, standards, and process models. The ability to manage consistently across multiple clouds depends on the organization adopting and embracing the need for a cross-enterprise management framework and policies.
- **Digital business impact:** Mature multicloud management strategies take full advantage of automation, monitoring, and analytics to help organizations dynamically respond to evolving application needs and new business priorities related to IoT, DevOps, and big data-powered innovation. Effective multicloud management approaches match workloads to the most appropriate cloud resources and adapt as needed in near real time to maintain service levels, security, and compliance while controlling costs.

Technology Dimension

Cloud management configuration and provisioning automation, workload optimization, performance monitoring, and IT operations analytics are all critical technological building blocks of a mature multicloud management approach. IDC sub-dimensions include:

- **Multicloud management platform:** Mature multicloud management requires that enterprises have access to a platform that can unify and normalize multicloud monitoring and reporting as well as support consistent use of configuration automation scripts and templates. Fragmented silos of cloud management are difficult to optimize and often result in gaps across end-to-end cloud-based application performance and support.
- **Automation:** Automated provisioning and configuration platforms in mature multicloud management environments have detailed awareness of public and private cloud service capabilities, pricing, and availability for real-time decision making. Mature application and infrastructure automation dynamically optimize workload provisioning, migration, and resource scaling.
- **Monitoring/analytics:** Proactive use of big data IT operations and capacity analytics to optimize application performance and costs across multicloud architectures is a vital part of a mature multicloud management strategy. These environments rely on analytics to optimize resource consumption and workload placement as needed on an ongoing basis.
- **Security:** Consistent automated security monitoring, configuration compliance control, and audit reporting are the norm across effective multicloud management environments. Advanced analytics proactively identify risks and maintain compliance across multicloud resources.

People Dimension

Mature multicloud management strategies consciously focus on a way to optimize IT staff and developer productivity by taking full advantage of cloud automation, monitoring, and analytics. In some cases, an organization may decide that selected cloud management functions are best provided as a cloud service that free internal staff from having to manage and support on-premises tools. This drives careful consideration of specific skill needs and training requirements for in-house staff versus capabilities that are best supplied by third parties. IDC sub-dimensions include:

- **Skills and training:** Multicloud management awareness and the skills to use advanced automation and analytics are expected of all cloud management staff. This may require the organization to invest in training for staff to take full advantage of management functionality provided by open source innovation, public cloud services, and on-premises automation and analytics tools.

- **Sourcing:** Effective multicloud management organizations make conscious choices about strategic multicloud management capabilities to be managed by internal staff versus by cloud providers or third parties. The organization documents a clear delineation of multicloud management roles and responsibilities including expectations and metrics for cloud providers and third parties.

Innovation Dimension

Mature multicloud management programs take full advantage of emerging innovation provided by the open source community and are positioned to support mission-critical business innovation programs being driven by investments in DevOps innovations. IDC sub-dimensions include:

- **Open source:** Mature organizations monitor open source innovation and make strategic choices about when to invest in enterprise-grade open source cloud management solutions that can scale across multicloud architectures.
- **DevOps life-cycle support:** Standard enterprise DevOps life-cycle workflows and automation technologies for multicloud management and operations are consistently deployed and used by mature multicloud management organizations. Automated DevOps multicloud infrastructure provisioning, updating, and migration driven by analytics and SLAs can optimize costs and performance on an end-to-end basis.

ADVICE FOR TECHNOLOGY BUYERS

Table 2 provides actionable guidance for IT organizations that want to advance to the next higher level of maturity in each stage of the IDC MaturityScape for multicloud management.

TABLE 2

IDC MaturityScape: Multicloud Management — Progressing Through the Stages

Stage	Guidance
Ad hoc	▪ Inventory and catalog existing cloud management tools, workflows, and skills. ▪ Identify internal champions and thought leaders who can help identify and define common standards and processes. ▪ Define evaluation criteria to selecting preferred cloud management tools, processes, and standards. ▪ Promote cross-group information sharing. ▪ Select three to five proof-of-concept projects to demonstrate value of common multicloud management processes and tools.

TABLE 2

IDC MaturityScape: Multicloud Management — Progressing Through the Stages

Stage	Guidance
Opportunistic	▪ Create cloud management leadership team tasks to evaluate and recommend best practices and promote cross-team sharing. ▪ Assess existing multicloud management skills and gaps and determine which are strategic for internal control versus better delivered by a cloud service provider or third party. ▪ Implement resource sharing platforms on-premises or in the public cloud to encourage cross-organization use of existing cloud templates and automation scripts. ▪ Evaluate value and benefit of monitoring and management services provided by existing public cloud contracts and evaluate gaps. ▪ Create common multicloud management evaluation criteria.
Repeatable	▪ Implement a formal governance process for reviewing and approving multicloud service catalog items, SLAs, and operational policies. ▪ Explore chargeback and showback processes to help incent cloud usage decisions that optimize costs and performance. ▪ Develop standard policies for multicloud workload and data portability and reclamation, service-level reporting, data governance, and security. ▪ Invest in a roles-based, unified multicloud management and monitoring platform to promote cross-organization coordination and SLA delivery. ▪ Define core open source choices and standards.
Managed	▪ Ensure that most users can dynamically access private and public cloud resources via a consistent, policy-driven, automated self-service portal and service catalog. ▪ Consistently monitor, evaluate, and report on the costs, SLAs, end-user experience, and business agility impact of each cloud being used, and incent individual teams to select and standardize on a core set of multicloud management tools and services that best optimize multicloud utilization. ▪ Continue to build out standard corporate configuration libraries, templates, and tools leveraging open source community initiatives wherever possible. ▪ Continue to evaluate management capabilities provided by public cloud providers, and make ongoing decisions about what management functions are best supported by internal staff and on-premises management tools versus the public cloud. ▪ Standardize enterprise DevOps life-cycle workflows and automation technologies for multicloud management and operations.

TABLE 2

IDC MaturityScape: Multicloud Management — Progressing Through the Stages

Stage	Guidance
Optimized	▪ Invest in application-aware multicloud performance monitoring, big data predictive analytics, and capacity optimization and innovation. ▪ Foster a mature business/IT governance process to continually review and update enterprise multicloud standards, processes, and tools. ▪ Foster IT's collaborative role with business and development to provide guidance on how to best optimize use and management of multicloud architectures to increase digital business agility. ▪ Continue to migrate and replatform existing noncloud management solutions to support multicloud management as needed. ▪ Continue to monitor and evaluate open source-based multicloud management innovation and implement as appropriate.

Source: IDC, 2017

LEARN MORE

Related Research

- *Capacity Optimization Ranks as Top Cloud Management ITOA Priority* (IDC #US41373517, February 2017)
- *IDC FutureScape: Worldwide Cloud 2017 Predictions* (IDC #US41863916, November 2016)
- *Market Analysis Perspective: Worldwide IT Cloud and Software-Defined Datacenter Decision Economics, 2016* (IDC #US41373716, August 2016)
- *Effective Multicloud Management Strategies Support Digital Transformation and Business/IT Collaboration* (IDC #US41672016, August 2016)
- *Multicloud Management Priorities: Automation, Portability, and Unified Self-Service* (IDC #US41587016, July 2016)
- *North American Enterprise Hybrid Cloud Managers Prioritize Automation and Orchestration* (IDC #US41177116, April 2016)
- *IDC MaturityScape: Cloud 2.0* (IDC #259534, October 2015)

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