

# **Azure EOS Modernization Series**

Microsoft Cloud Adoption Framework for Azure

Workshop 4 – Govern November 12, 2020

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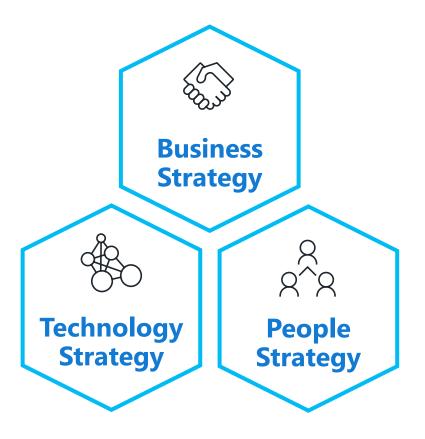
# Agenda

#### Govern

- Cloud Adoption Framework Overview
- Governance Methodology Overview
- Governance Disciplines
- Initial Governance State
- Management Baseline



# Microsoft Cloud Adoption Framework for Azure



Actionable, efficient, and comprehensive Azure cloud guidance from Microsoft to accelerate your adoption journey

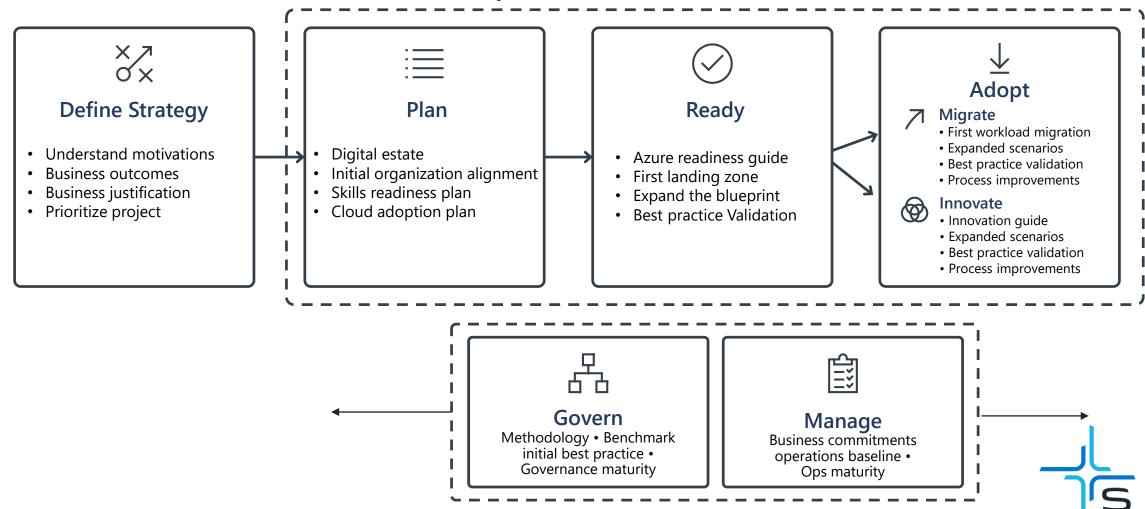
Microsoft Cloud Adoption Framework for Azure enables you align **business**, **people and technology strategy** to achieve your business goals



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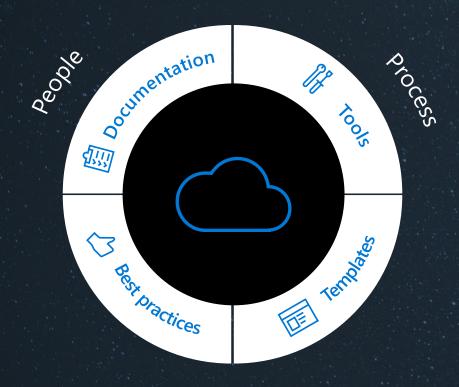
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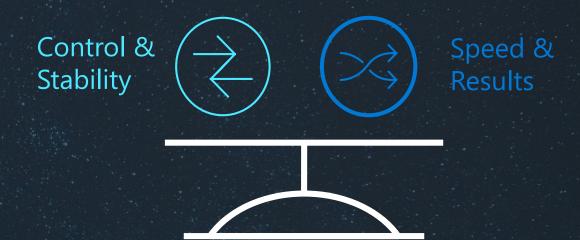
# Microsoft Cloud Adoption Framework for Azure



# Principle of Governance

Achieve Balance. Deliver modernization





Technology

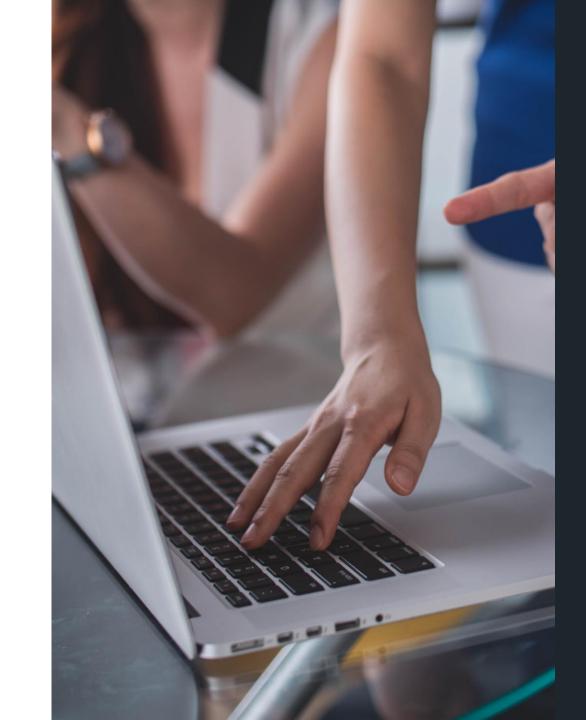
**Align**—business, people and technology strategy. **Achieve**—business goals with actionable, efficient, and comprehensive guidance. **Deliver**—fast results with control and stability.





An iterative process that supports your business ... as it evolves





# Why is Governance Important?

Transformation



Risk mitigation

- Maintaining full compliance
- Creating better cost visibility and control
- Improving security posture
- Being agile—to support scale



Who is responsible for monitoring? support? And operations?

Which services should be migrated to Azure?

What roles & responsibilities must be defined?

What are the core processes needed for service management?

What security measures should I consider?

What organizational changes are needed?

How do I ensure a balance between innovation, cost and agility?

What key capabilities I must develop?

Azure governance building blocks?



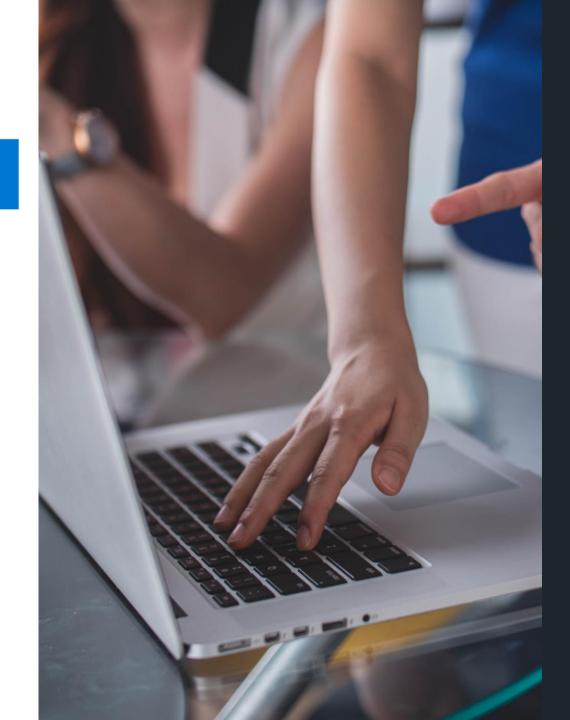
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### **Governance Best Practices**

1 Methodology overview

Establish a basic understanding of cloud governance





# Governance model

# Envision an end state—and incrementally build trust and confidence

GOVERN https://aka.ms/adopt/Gov

#### **Define Corporate Policy**

#### Business Risks





#### Policy & Compliance

Convert Risk decisions into policy statements to establish cloud adoption boundaries.



#### **Process**

Establish processes to monitor violations and adherence to corporate policies.

#### **Five Disciplines of Cloud Governance**



Evaluate & monitor costs, limit IT spend, scale to meet need, create cost accountability



#### Security Baseline

Ensure compliance with IT Security requirements by applying a security baseline to all adoption efforts



#### Resource Consistency

Ensure consistency in resource configuration. Enforce practices for on-boarding, recovery, and discoverability



#### Identity Baseline

Ensure the baseline for identity and access are enforced by consistently applying role definitions and assignments



Accelerate deployment through centralization, consistency, and standardization across deployment templates

Governance funnels corporate policy changes into five actionable disciplines—enabling your organization to modernize and reach business goals.



# Governance— develops and evolves corporate polices for:

- Resource consistency and management
- Security baseline
- Identity baseline
- Cost management
- Deployment acceleration

# Cloud governance team

A team consisting of cloud architects, legal, security and/or HR & Finance that develops and enforces these disciplines across your organization to ensure governance consistency

## Cloud governance team

A cloud governance team evaluates and manages risk tolerance, identifies high-risk areas for business, and converts risks into governing corporate policies.

#### Align with other teams to:

- Review your company's strategy and plan template with members of the cloud strategy team to understand motivations, metrics, and strategy.
- Review your company's cloud adoption plan template with members of the cloud adoption team to understand timelines and prioritization.
- Review the operation team's operations management workbook to understand the operational requirements and commitments that have been established with the business.

#### Establish cadence with teams that aligns with:

- release and planning cycles.
- the cloud strategy team to review risks of the next wave of adoption and gauge the team's level of tolerance for risks.
- Review and iterate

# Cloud governance team functions

- Ensures cloud-adoption risks and risk tolerance are properly evaluated and managed.
- Identifies risks that can't be tolerated by the business, and it converts risks into governing corporate policies.



# Cloud governance team

A cloud governance team evaluates and manages risk tolerance, identifies high-risk areas for business, and converts risks into governing corporate policies.

Review Govern module of Cloud Adoption Framework (methodology, approach, and implementation).

Complete the governance benchmark to assess your governance needs and priorities.

Implement the governance MVP approach (initial governance best practice and configuration) that best fits your organization's needs.

Continuously improve governance maturity—align with cloud adoption plan to continue to ensure governance controls guard against changing risks and governance needs.

As landing zones are deployed and expanded, evaluate deployments to ensure adherence to governance guidelines—as new risks or governance violations might emerge.

# Cloud governance team functions

- Ensures cloud-adoption risks and risk tolerance are properly evaluated and managed.
- Identifies risks that can't be tolerated by the business, and it converts risks into governing corporate policies.



- Azure Policy
- Azure Monitor
- Azure Advisor
- Resource Manager Templates
- Resource Graph
- Management Groups

# Resource Consistency

Implement the foundation for governance best practices—with correct resource organization

# Define Azure Management Groups & Subscriptions model and RACI

- To reflect security, operations and business/accounting hierarchies
- To group similar resources into logical collections

#### Define resource consistency roles & responsibilities

To further group applications or workloads into deployment and operations units

#### **Define Resource Consistency Policies**

- Naming Conventions
- Tagging
- Allowed Locations
- Allowed Resource Types
- Allowed Extensions
- Auditing



- Azure Policy
- Azure Security Center
- Azure Sentinel
- Subscription Design
- Encryption
- Hybrid Identity
- Azure Networking
- Azure Automation

# Security Baseline

Establish policies to protect your network, assets, and data—residing on cloud provider platform(s)

Document risks, business tolerance, and mitigation strategies related to the security of:

- Data and assets develop clear, simple, and well-communicated guidelines to identify, protect, and monitor the most important data assets
- Network control and monitor any allowed communication between on-premises environment and cloud workloads

Implement these best practices for corporate policy

- Network requirements on-premises networks must be secured against potential unauthorized access from cloud-based resources
- Hybrid identity strategies a key factor in structuring cloud-based identity services is the level of integration required with existing on-premises identity infrastructure.
- **Encryption** encryption mechanisms vary in cost and complexity, and both technical and policy requirements and can influence decisions on how encryption is applied and how to store and manage critical secrets and keys
- Security Baseline policies processes that manage updates to security policy based on inputs from stakeholders. (e.g., initial risk assessment and planning, deployment planning and testing, and quarterly review and planning)

- RBAC
- Azure AD
- Azure AD B2B
- Azure AD B2C
- Directory Federation
- Directory Replication

# Identity Baseline

Protect your data and assets in the cloud—implementing identity management and access control.

#### Define Azure RBAC Model –

• Using RBAC can segregate duties within a team and grant only the amount of access to users that they need to perform their jobs. Instead of giving everybody unrestricted permissions in an Azure subscription or resources, only certain actions with narrow scope can be allowed.

#### **Define Azure Access Management Process and RACI**

- Several options are available for managing identity in a cloud environment which vary in cost and complexity.
- A key factor in structuring your cloud-based identity services is the level of integration required with existing on-premises identity infrastructure.

#### **Operationalize Azure Privileged Identity Management**

Cloud-based identity management is an iterative process.



- SYNNEX Cost Management Premium
- Azure Policy
- Azure Cost Management
- Azure Advisor
- Azure Portal
- Azure EA Content Pack

# Cost Management

Establish controls and processes to ensure proper allocation of cost across business units, implement cost guardrails, and analyze the cost of applications

#### Define:

Enterprise Enrollment Hierarchy Process and RACI Azure Cost Management Budgets and Alerts + RACI Cost Management RBAC Model

#### **Define Cost Management Policies**

- Tagging
- Allowed VM SKUs
- Allowed Storage SKUs
- Allowed Networking SKUs
- Allowed Database SKUs



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#### Azure tools and services

- Resource Manager Templates
- Azure PowerShell
- Azure CLI
- Azure Policy
- Resource Grouping & Tagging
- Azure DevOps
- Github Azure Github Actions
- Azure Automation

# **Deployment Acceleration**

Establish policies to govern asset configurations or deployments—
manual, or automated through DevOps best practices

The DevOps practices in this discipline include

#### Infrastructure as Code

- Stand up environments in the fastest means possible.
- Remove the human element and reliably and repeatable deploy every time.
- Improve environment visibility and improve developer efficiency
- Store infrastructure definitions alongside application code.

#### Continuous Integration and Continuous Deployment

- Accelerate delivery through automation
- Simple and easy to use
- Global community for actions

Azure services that enable deployment acceleration include Azure Blueprints

**D**eploy and update cloud environments in a repeatable manner using composable artifacts

#### **Governance Best Practices**

Methodology overview

Establish a basic understanding of cloud governance

Governance benchmark

Assess your current state and the future state to get started



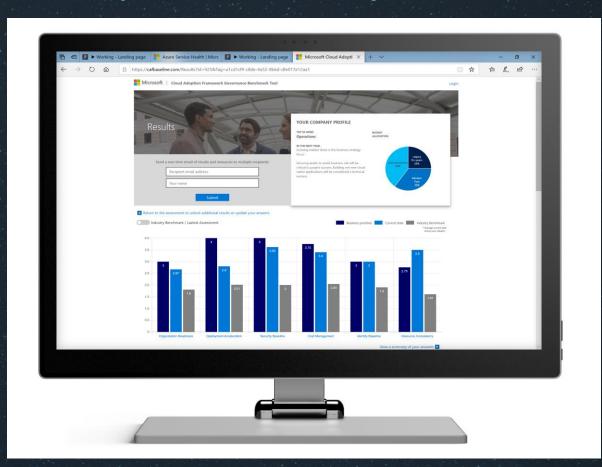


# Benchmark your governance state

Make governance actionable with processes and policies—

Use the Governance benchmark tool—

- Establish a governance baseline and recommended starting-point
- Understand gaps between your desired and current governance state, using the Cloud Adoption Framework.
- Remove blockers with curated guidance on how to build a proper Governance foundation.



https://cafbaseline.com/

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#### **Governance Best Practices**

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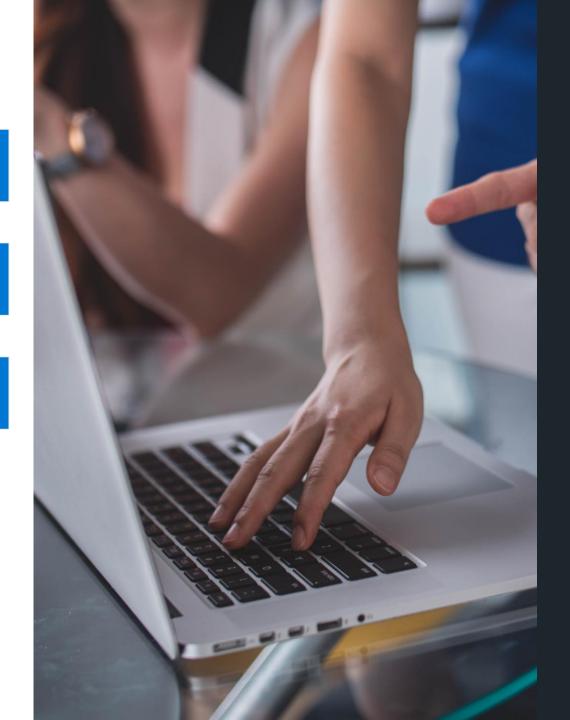
Governance benchmark

Assess your current state and the future state to get started

Initial governance foundation

Begin establishing your governance foundation by implementing a set of governance tools





# **Executing Incremental Governance**

#### Governance MVP



Identity Strategy



Network & Encryption Strategy



Configuration Strategy & Corporate Policy Implementation











Update Corporate Policy...





Update Corporate Policy...

Implement with Configuration Management changes

Risk: Protected Data

Configuration

Management

changes

Risk: Critical Apps Risk: Cost

Cloud Adoption (Adoption Timeline will trigger risks along the journey)

#### **Governance MVP**

Establish a foundation that can quickly evolve as cloud adoption and cloud governance mature. Mitigate tangible risks identified in the cloud adoption plan.

#### **Risk Evolutions**

The risk profile will change as you plan additional iterations of cloud adoption. The cloud governance team monitors those adoption plans to identify risks and evolve corporate policy statements.



## **Build the Governance MVP**

## **Standard Enterprise**

- 1. Customers or staff reside largely in one geography
- 2. Business units share a common IT infrastructure
- 3. Single IT budget
- 4. Capital expense-driven investments are planned yearly and usually cover only basic maintenance
- 5. Datacenter or third-party hosting providers with fewer than five datacenters
- 6. Networking includes no WAN; or 1-2 WAN providers
- 7. Identity is a single forest, single domain
- 8. Cost Management (cloud accounting) showback model—billing is centralized through IT
- 9. Security Baseline protected data: Company financial data and IP. Limited customer data. No third-party compliance requirements.

## **Complex Enterprise**

- 1. Customers or staff reside in multiple geographies or require sovereign clouds
- 2. Multiple business units that do not share a common IT infrastructure
- 3. Budget allocated across business units and currencies
- 4. Capital expense-driven investments are planned yearly; often include maintenance and refresh cycles of 3-5 years
- 5. Datacenter or third-party hosting providers with more than five datacenters
- 6. Networking includes complex network or global WAN
- 7. Identity consists of multiple forests, multiple domains
- Cost Management (cloud accounting) chargeback model—billing can be distributed through IT procurement
- 9. Security Baseline (protected data)—Multiple collections of customers' financial and personal data



# What is Enterprise Scale?

Enterprise-scale is an architecture approach and reference implementation— enabling effective construction and deployment of landing zones on Azure— at-scale—and aligned with Azure Roadmap and Microsoft Cloud Adoption Framework for Azure.

#### **Authoritative**

Provides a holistic design decision framework for Azure.

#### **Proven**

Based on success of large-scale migration projects at-scale.

#### **Prescriptive**

Apply this "Monday morning" in your Azure environment.

#### **Enterprise-scale architecture**

#### **Enterprise-scale design principles**:

Principles to help/guide you customize the design.

#### **Enterprise-scale design guidelines**:

Guidelines (decisions and recommendations) for the 8 components of the enterprise-scale architecture

#### **Enterprise-scale Implementation guide:**

The way you create those things using reference implementation in GitHub and the deployment pipeline

#### **Enterprise-scale reference implementation**

#### **Enterprise-scale foundation:**

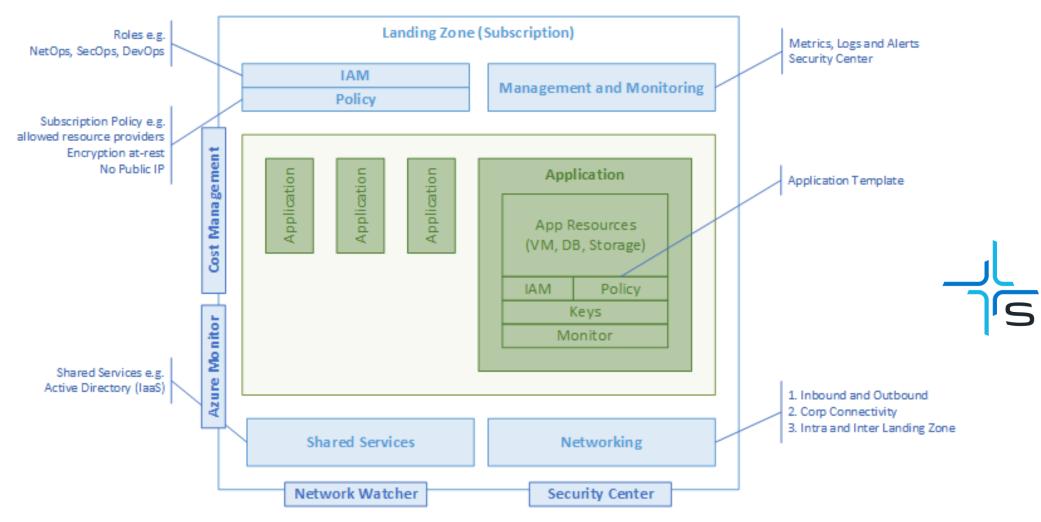
A reference implementation of shared services containing network, security, identity, governance services required to construct and operationalize an enterprise-scale landing zone

#### **Enterprise-scale landing zone(s):**

A reference implementation of a workload environment conforming to the enterprise-scale architecture (opinionated way to implement code)

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# **Enterprise-Scale Landing Zone(s)**



The Landing Zone ensures that when an application or workload lands on Azure, the required "plumbing" is already in place, providing greater agility and compliance with enterprise security and governance requirements.

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#### **Governance Best Practices**

Methodology overview

Establish a basic understanding of cloud governance

Governance benchmark

Assess your current state and the future state to get started

Initial governance foundation

Begin establishing your governance foundation by implementing a set of governance tools

Evolve governance foundation

Iteratively add governance controls to address risks





# Thank You





# **Azure EOS Modernization Series**

Microsoft Cloud Adoption Framework for Azure

Workshop 5 – Manage November 17, 2020

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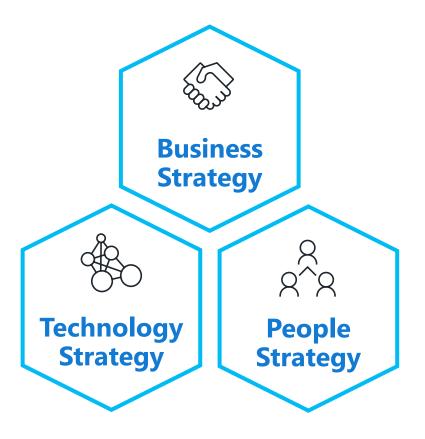
# Agenda

#### Manage

- Cloud Adoption Framework Overview
- Cloud Management Overview
- Management Exercises



# Microsoft Cloud Adoption Framework for Azure



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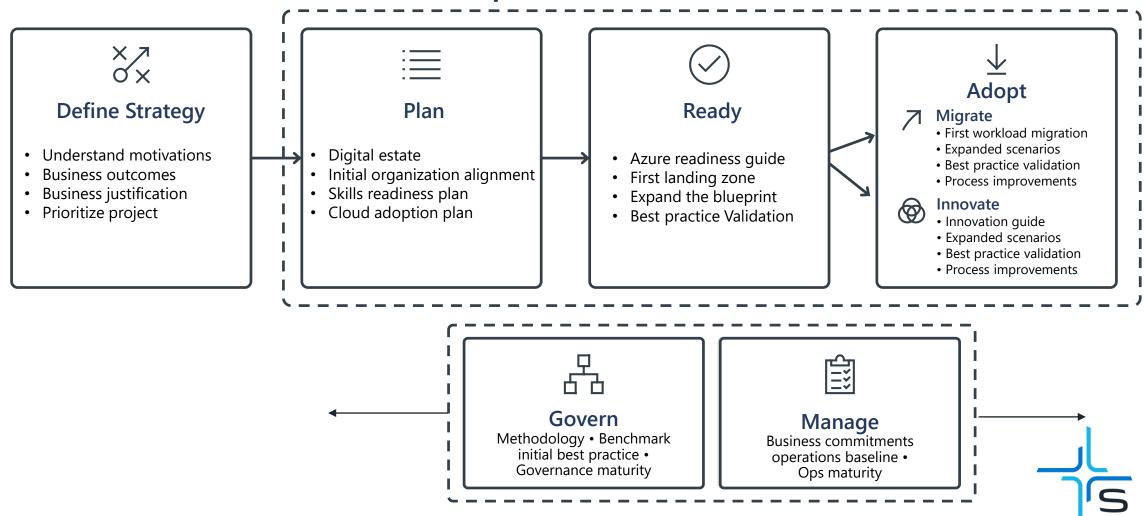
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# Microsoft Cloud Adoption Framework for Azure

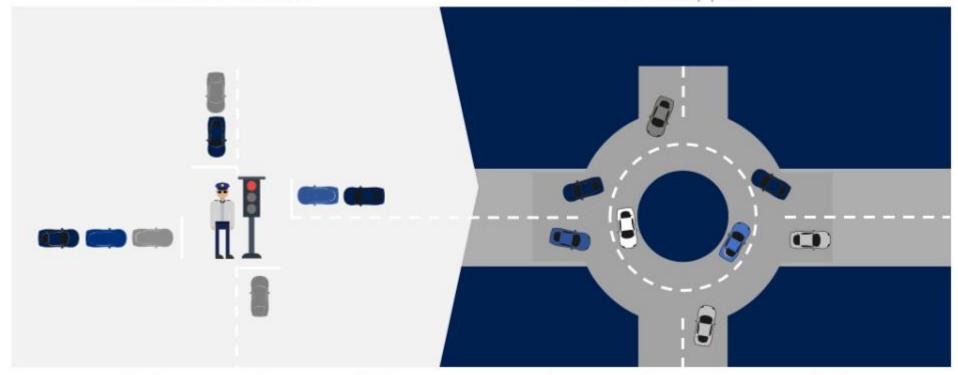


# **Evolution of the IT Business Model**

The cloud is causing a paradigm shift in the function of Operations Management

Enforce / Control

Enable / Support



Controlled & Central Responsibility

Freedom & Delegated Responsibility



# Cloud Management

Cloud Adoption Framework

# Operations management for cloud and hybrid solutions

Expand IT management and operations to ensure cloudbased solutions can be operated through secure, costeffective processes using modern, cloud-first tools.



# Cloud Management for Cloud Adoption Efficiency



Establish management baseline

Define the criticality classifications, cloud management tools, and processes

2 Define business commitments

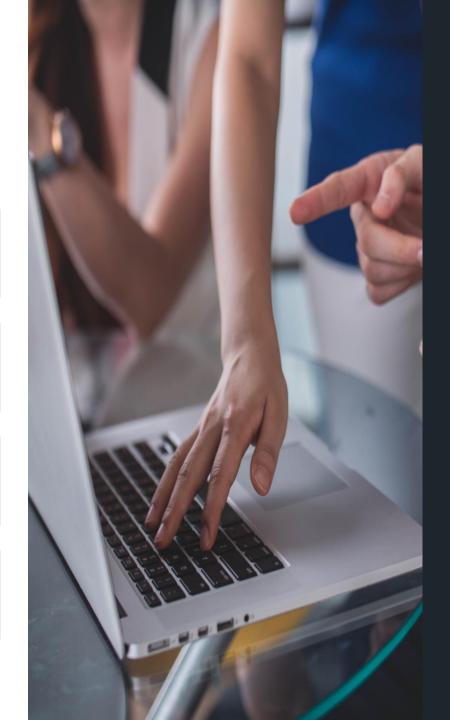
Document supported workloads to establish operational commitments

Expand management baseline

Make use of the included best practices based on business commitments and operations decisions

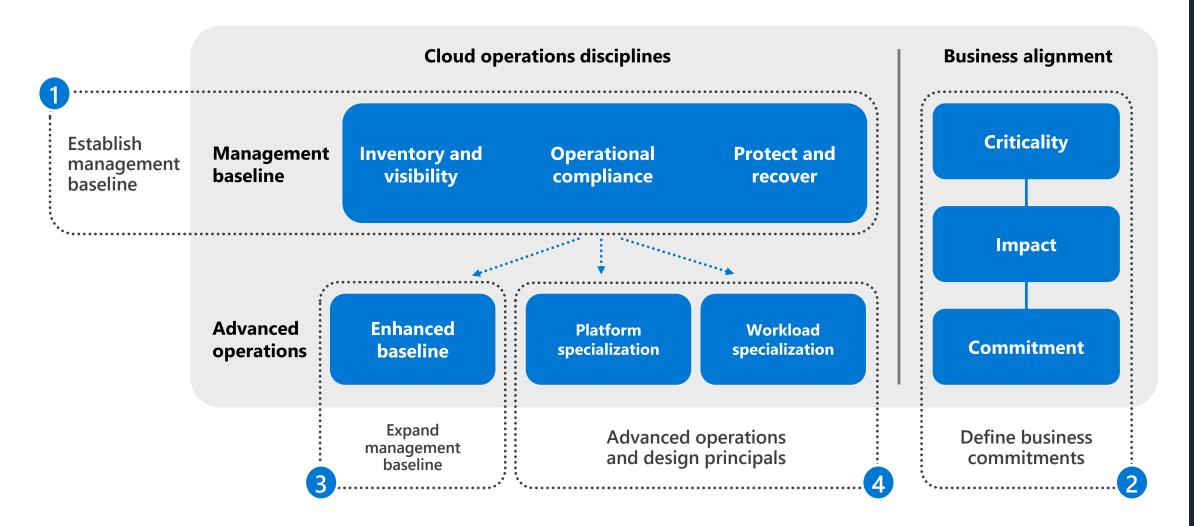
Advanced operations and design principles

Use a deeper architecture review to deliver on resiliency and reliability commitments



# Methodology to Enable Cloud Management





# Cloud Management for Cloud Adoption Efficiency

Establish management baseline

Define the criticality classifications, cloud management tools, and processes

2 Define business commitments

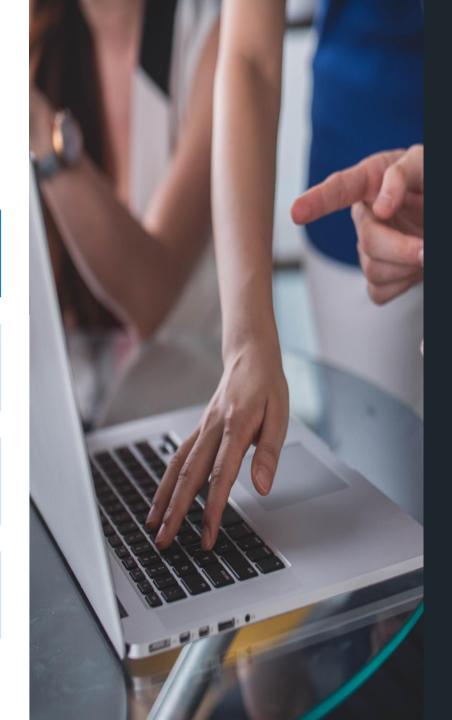
Document supported workloads to establish operational commitments

Expand management baseline

Make use of the included best practices based on business commitments and operations decisions

Advanced operations and design principals

Use a deeper architecture review to deliver or resiliency and reliability commitments



# Management Baseline

#### Why do you need this?

A well-guided management baseline defines a set of cloud management tools and processes required to deliver your minimum commitment to operations management.

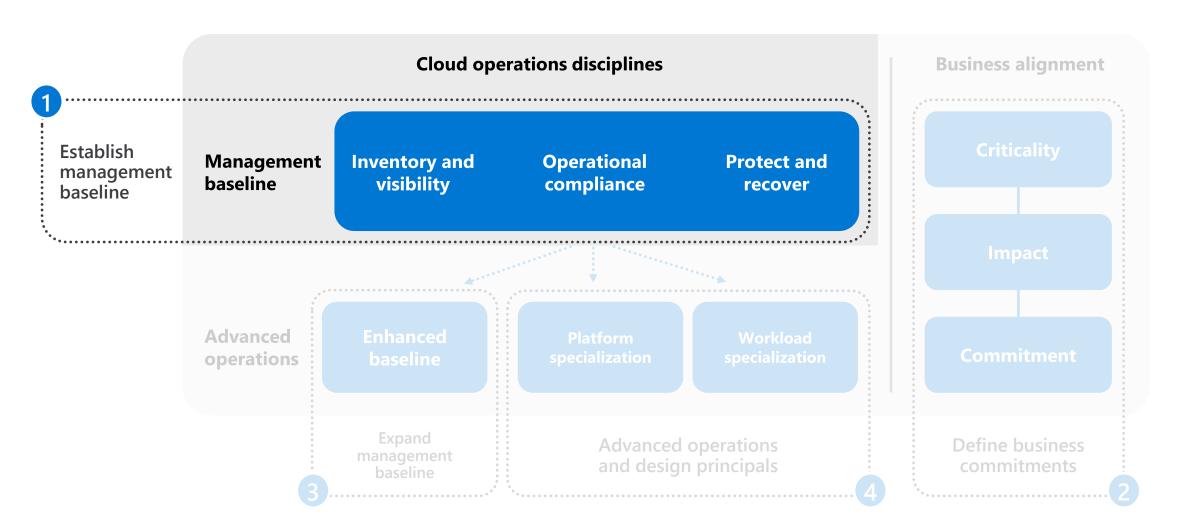
#### **Goals for management baseline**

- Define the basic tools needed for managing operations around any Azure production environments
- Focus on the minimum options and processes necessary instead of all the available options
- Use the management baseline to apply resource consistency across different resources on the Azure platform



## Methodology to Enable Cloud Management





## **Inventory and Visibility**

#### Management Baseline

Create an inventory of assets across multiple clouds, and develop deep visibility into the run state of each asset

- Each monitoring tool has been configured with **proper access and scope** for each operations team
- Each asset must be **inventoried and classified** towards stable operations
- **Centralization of logging** drives reports about change management, service health, and configuration for IT operations
- Awareness and understanding of technical changes across multiple workloads is essential for reliable operations
- Understand the **telemetry about the stability, performance, and operations** of the workload, and the assets which support the workload

#### Azure tools and services

- Service health
- Log analytics
- Azure change tracking and inventory service
- Azure activity log
- Azure monitor for VMs
- Azure network watcher
- DNS analytics

Management baseline

Inventory and visibility



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## **Operational Compliance**

#### **Management Baseline**

Establish controls and processes to ensure each state is properly configured and running in a well-governed environment

- Streamline and **update management solutions** to schedule and control all required updates to be deployed
- Ensure policy enforcement across configuration of operating systems, applications, and underlying environments
- Get **automated compliance** for core services to enforce operational compliance in an environment
- **Effective operational compliance** requires consistency:
  - Established resource consistency with resource organization and tagging
  - Consistent environment or landing zones enforced through automated tools
  - Resource configuration consistency with ongoing monitoring and evaluation processes
  - Updated consistency with scheduling, controlling, and automating necessary updates
  - Automated remediation to reduce cloud management efforts and increase user satisfaction

#### Azure tools and services

- Azure Primitives
- Azure automation
- Azure update management service
- Azure policy
- Azure blueprint

Management Operational compliance



#### **Protect and Recover**

#### **Management Baseline**

Ensure all managed assets are protected and can be recovered using baseline management tooling

- **Protect and recover** business critical workloads in the cloud to anticipate and prepare for a potential workload outage
- **Define plans** to back up, protect, and recover your data and VMs in Azure
- Get **short- and long-term backup** without the need to deploy complex on-premises backup solutions
- Replicate VMs and workloads to the secondary location to ensure business continuity
- Failover to secondary location, and access apps and workloads even during outages

#### Azure tools and services

- Azure Backup
- Azure Site Recovery

Management baseline

Protect and recover



# Cloud Management for Cloud Adoption Efficiency



Establish management baseline

Define the criticality classifications, cloud management tools, and processes

2 Define business commitments

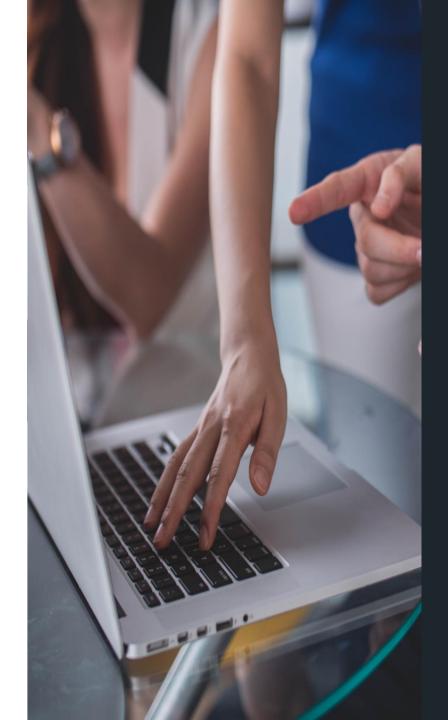
Document supported workloads to establish operational commitments

Expand management baseline

Make use of the included best practices based on business commitments and operations decisions

Advanced operations and design principals

Use a deeper architecture review to deliver or resiliency and reliability commitments



# Business Alignments and Commitments

#### Why do you need this?

Business alignment with cloud management is required to rethink commitments to operational management in partnership with the business.

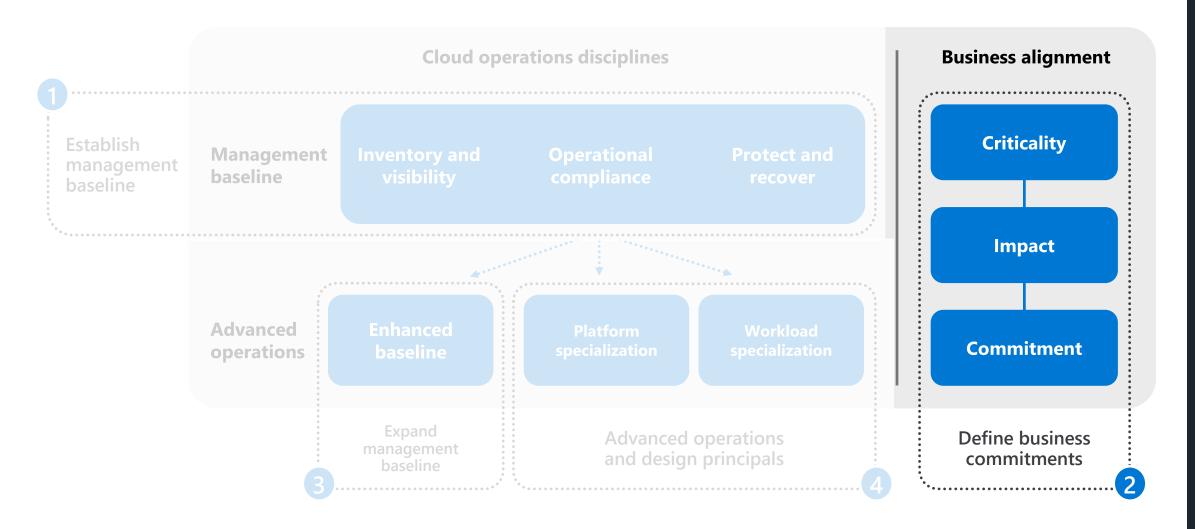
#### **Goals for management baseline**

- Document the criticality and relative business value of each workload
- Establish clear performance expectations and business interruption time/value metrics
- Document, track, and report on commitments to cost and performance



## Methodology to Enable Cloud Management





## Define business criticality

#### **Business alignment**

Map workloads to business processes and rank their criticality to focus investments

- Understand the criticality of each workload in the IT portfolio to identify missing critical workloads
- **Create a criticality scale** for criticality with business and categorize them with custom criticality classifications
- **Define default criticality** to apply to all workloads and ensure criticality classification doesn't block your broader cloud strategy
- Use pre-defined templates to record the criticality scale, define default criticality, and provide the correct value to reflect any deviations

#### **Azure tools and services**

Operations management workbook

**Business alignment** 

**Criticality** 



## **Understanding business impact**

#### **Business alignment**

Understand the impact of potential outages to aid in evaluating return on investment for cloud management

- Business impact serves as a prioritization variable when recovering systems during an outage.
- **Calculate impact time** depending on the nature of workloads, from high to low frequency of workload usage
- Calculate the total business impact more accurately with three approaches, including adjusted losses, historical losses, and complete loss calculation
- Calculate workload impact, which must be attributed across each of the workloads

#### Azure tools and services

 Operations management workbook

**Business alignment** 

**Impact** 



#### **Establish business commitments**

#### **Business alignment**

Develop true partnerships by creating and documenting agreements with the business

- Define business commitment by aligning the proper level of operational management at an acceptable operating cost
- **Commitments to business stability**, via technical resiliency or other SLA impacts, are a business justification decision
- Establish commitment with the business by aligning the following aspects:
  - IT operations prerequisites
  - Management responsibility
  - Cloud tenancy
  - Soft-cost factors
  - Loss avoidance ROI
  - Validation of management level

#### Azure tools and services

Operations management workbook

**Business alignment** 

**Commitments** 



## Ops Management planning workbook



Help capture decisions that result from business alignment conversations

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1	Microsof	t Cloud Adop	tion	Frameworl	k for Azure											
2		anagement - Commit														
3	•															
4	Business inputs			Ops management responses												
5	Workload /	1 Criticality	<b>▼ Time</b>	/Value impact <sup>*</sup> 🔻	Comitment Level 🔻			onthly Cost 🔻	Est. Outage**▼	St	andard II 💌	Commitm -	Com	parison basis 🔻	Annua	I ROI ▼
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	workload 17	Low	\$		Standard Commitmen	99.9000%	-	100.00	8.76000	\$	-	\$ -	\$	-		-100%
	workload 18	Low	\$		Standard Commitmen	99.9000%		100.00	8.76000	\$	-	\$ -	\$	-		-100%
	workload 19	Low	\$	-	Standard Commitmen	99.9000%	_	100.00	8.76000	\$	-	\$ -	\$	-		-100%
	workload 20	Low	\$	-	Standard Commitmen		-	100.00	8.76000	\$	-	\$ -	\$	-		-100%
	workload 21	Low	\$		Standard Commitmen	99.9000%	_	100.00	8.76000	\$	-	\$ -	\$	-		-100%
	workload 22	Low	\$		Standard Commitmen		_	100.00	8.76000	\$	-	\$ -	\$	-		-100%
	workload 23	Low	\$		Standard Commitmen	99.9000%	-	100.00	8.76000	\$	-	\$ -	\$	-		-100%
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# Cloud Management for Cloud Adoption Efficiency



Establish management baseline

Define the criticality classifications, cloud management tools, and processes

2 Define business commitments

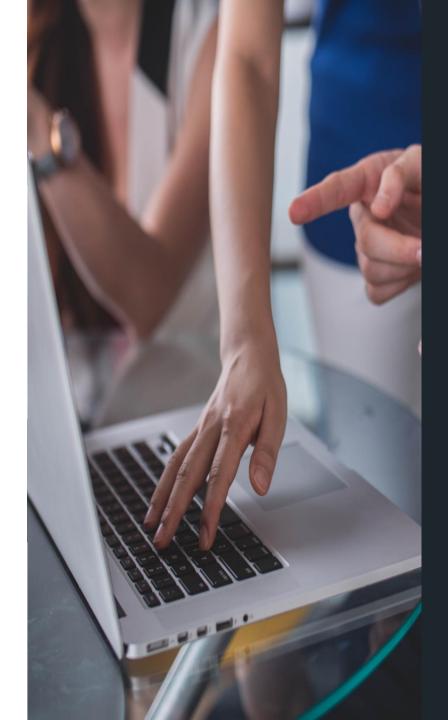
Document supported workloads to establish operational commitments

Expand management baseline

Make use of the included best practices based on business commitments and operations decisions

Advanced operations and design principals

Use a deeper architecture review to deliver or resiliency and reliability commitments



## Enhance Management Baseline

#### Why do you need this?

Outline a minimum viable product (MVP) for cloud management services, referred to as a management baseline, and add common improvements to the baseline.

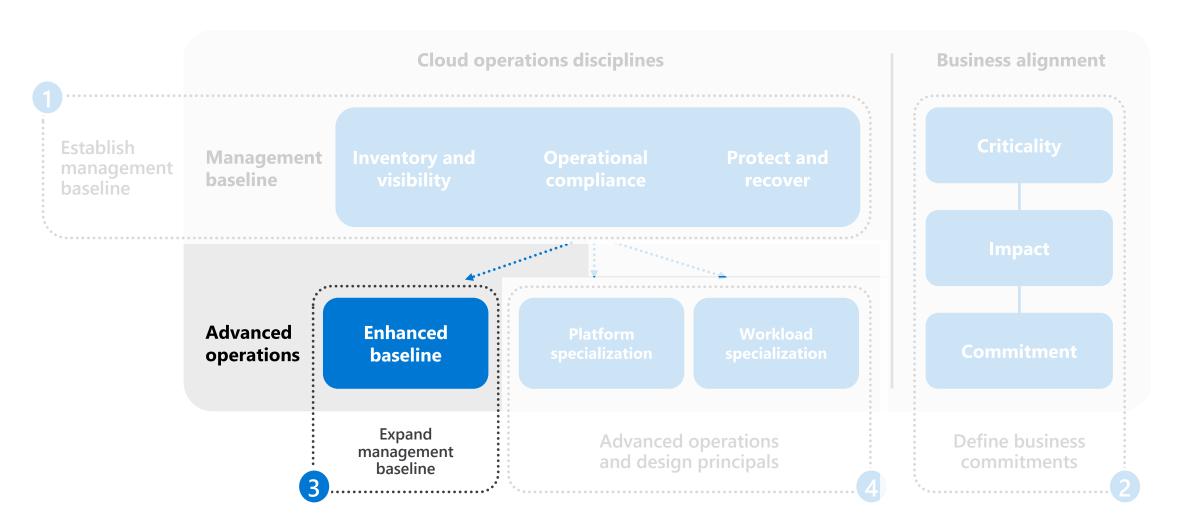
#### **Goals for management baseline**

- In addition to management baseline, improve business commitments with enhanced management baseline
- Improve uptime and decrease recovery times for the entire portfolio of workloads with cloud-native tools



## Methodology to Enable Cloud Management





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#### **Enhanced baseline**

#### Advanced operations

Evaluate common additions to the baseline that might meet business needs

- Use enhanced management baseline cloud-native operations tools and processes to extend the business commitment
- A number of mission-critical workloads might require enhancements to the management baseline for better commitment
- Enhanced baseline can be enabled to **perform advanced management operations and processes** such as:
  - Service change tracking
  - ITSM integration
  - Operations automation
  - Multi-cloud operations
  - Guest automation
  - Breach notification

#### Azure tools and services

- Azure Resource Graph
- IT Service Management Connector
- Azure Automation
- Azure Automation Hybrid Runbook Worker
- Desired State Configuration (DSC)
- Azure Security Center

Advanced operations

**Enhanced** baseline



# Cloud Management for Cloud Adoption Efficiency



Establish management baseline

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Define business commitments

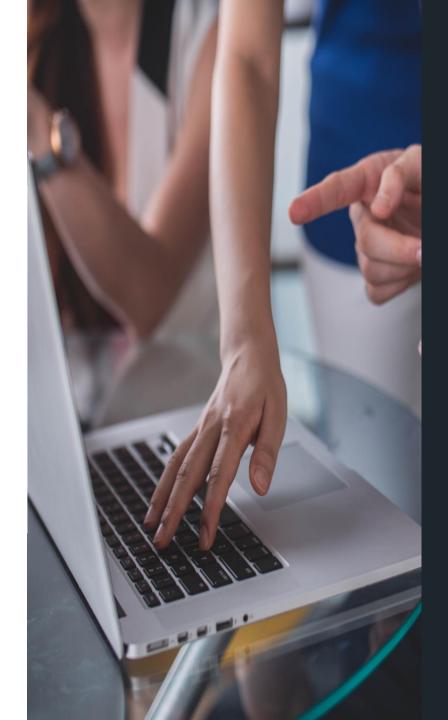
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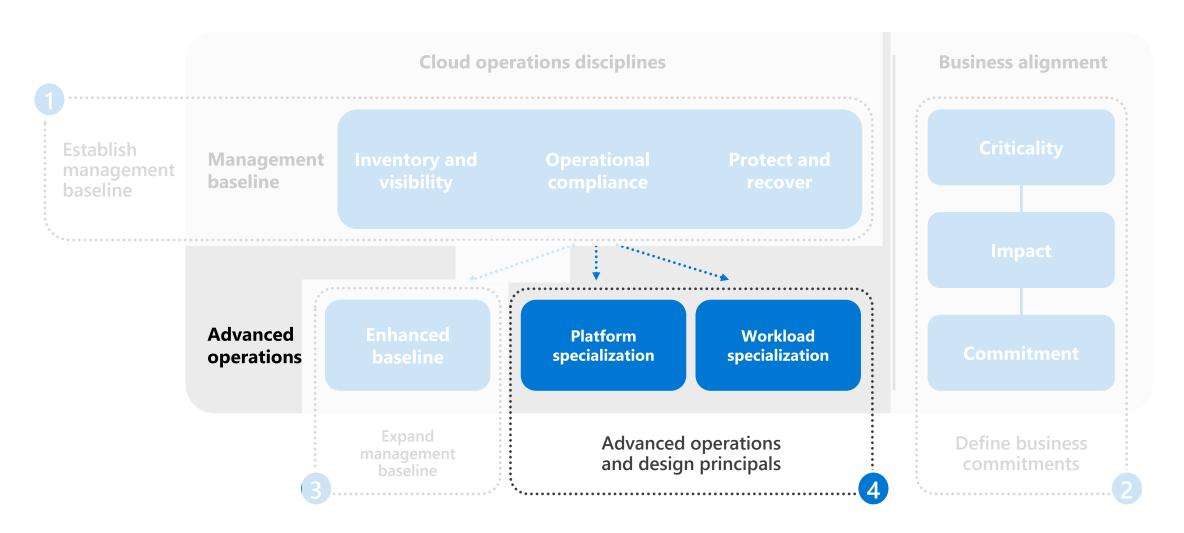
Advanced operations and design principles

Use a deeper architecture review to deliver on resiliency and reliability commitments



## Methodology to Enable Cloud Management





## **Platform Specialization**

#### Advanced operations

Invest in ongoing operations of a specific workload, generally reserved for mission-critical workloads

Platform specialization consists of a disciplined execution of the following processes in an iterative approach:

- **Improve the design** of common systems (platforms) or specific workloads by considering best practices for architecture frameworks with Azure Architecture Frameworks
- **Minimize business interruptions** with Azure Architecture Framework by improving systems designs with scalability, availability, resiliency, security, and management
- Automate remediation and reduce the impact of interruptions
- Scale changes across the environment through the service catalog
- **Discover incremental improvements** to address in the next pass of system design, automation, and scale

## Azure tools and services

- Azure Managed Applications
- Azure Monitor for containers
- Azure SQL analytics
- SQL Server health check
- Azure Automation
- Azure Architecture Framework

**Platform operations** 

Platform specialization



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## **Workload Specialization**

#### Advanced operations

Invest in ongoing operations of a shared platform, distributing the investment across multiple workloads

- **Trigger a cultural change** in traditional IT build processes that focus on delivering a management baseline, enhanced baselines, and platform operations
- Apply best practices for improving the resiliency and design of a specific system with Azure Architecture Frameworks
- Get the flexibility of advanced monitoring of options for monitoring performance, availability, usage, and dependencies
- **Operational tasks shift** to an application-development or business-unit organization
- Application insights—to get deep insights on the specific workload are required to provide clear workload operations

#### Azure tools and services

- Azure Monitor logs
- Application Insights
- Azure Automation
- Azure Architecture Framework

**Workload operations** 

Workload specialization



# Cloud Management for Cloud Adoption Efficiency



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2 Define business commitments

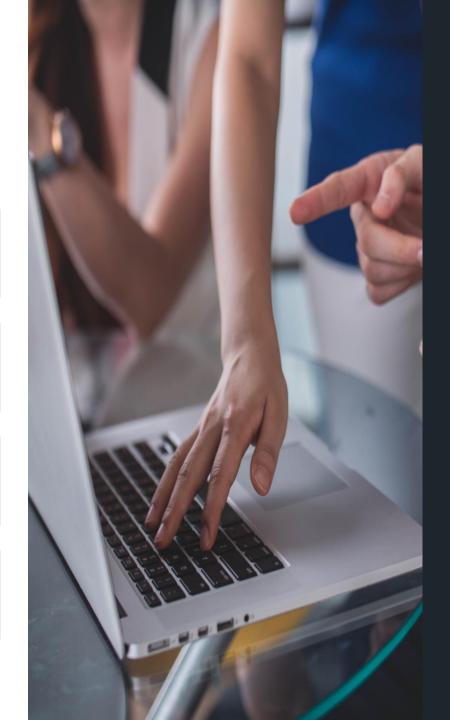
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## Thank You

