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Multi-Cloud SMB Guide

Avoid Vendor Lock-In Without Overcomplicating

Terraform, multi-cluster Kubernetes, federated identity — BOTUM case

AWS + Azure + GCP

Mars 2026

Introduction: Multi-Cloud, an Operational Reality

According to the Flexera State of the Cloud 2024 report, 70% of enterprises now use two or more public clouds. Among SMBs, this figure is often the result of organic accumulation rather than strategic decision-making. This guide is for CTOs and DevOps teams who want to move from accidental multi-cloud to controlled multi-cloud.

Why SMBs Become Multi-Cloud Without Deciding To

- SaaS integration: Salesforce (AWS), Teams (Azure), BigQuery (GCP) — each tool on its cloud
- Historical legacy: Azure migration for AD, then SageMaker for ML, then BigQuery for data
- Acquisitions: the acquired startup runs on GCP — migration takes 18 months
- "Just testing GCP for AI" — 2 years later, it's in production

Intentional vs. Accidental Multi-Cloud

Accidental multi-cloud:

✗ No central governance — nobody knows everything running
✗ Identities managed in silos in each provider
✗ Costs difficult to attribute — invisible egress fees
✗ Fragmented security — incomplete visibility

Intentional multi-cloud:

✓ Each cloud chosen for what it does best
✓ Unified abstraction layer (Terraform, Kubernetes)
✓ Federated identities — one login everywhere
✓ Visible and controlled costs — CloudHealth or equivalent

The Real Benefits (When Intentional)

Resilience

us-east-1 outage Dec 2021? Redirect to Azure or GCP. Requires preparation, but achievable.

Negotiation leverage

Demonstrate ability to move workloads. Typical savings: 20-30% on Enterprise contracts.

Best service per use case

AWS = compute/storage/ML. Azure = M365/identity. GCP = analytics/AI. Use the best tool.

Compliance and sovereignty

PIPEDA, PHIPA: choose the provider with the best Canada data residency guarantees.

The Real Challenges (No Sugar-Coating)

Operational complexity

Three consoles, three CLIs (aws/az/gcloud), three IAM models. A team of 3 DevOps can spend 40% of their time on this without the right tools.

Training costs

AWS + Azure + GCP certifications = 6-12 months of investment per engineer. Don't underestimate.

Inter-cloud egress fees

AWS/Azure/GCP charge 8-9 cents/GB outbound. 10 TB/month inter-cloud = $800-900 USD/month in transfers alone.

Unified security

AWS IAM, Azure Entra ID, GCP Cloud IAM = three different syntaxes. Without federated identity, three siloed access systems.

Practical Strategies for Controlled Multi-Cloud

1. Abstraction Layer: Terraform and Pulumi

Golden rule: never use cloud consoles directly. Everything goes through IaC.

- Terraform (HashiCorp): industry standard. AWS/Azure/GCP + 1000+ providers. Reusable modules. Terraform Cloud or Atlantis for CI/CD.
- Pulumi: same concepts, real languages (Python, TypeScript, Go). Ideal for teams preferring Python over HCL.
- Key advantage: versionable, auditable, reproducible infrastructure. Migration = changing provider variables.

2. Multi-Cluster Kubernetes

- EKS (AWS) + AKS (Azure) + GKE (GCP): same container workloads on all three
- Anthos (Google) or Rancher: unified multi-cluster management
- Azure Arc: extends Azure governance to AWS/GCP/on-prem
- Crossplane: provision cloud resources via Kubernetes CRDs
- Istio/Linkerd: inter-cluster mTLS + progressive routing (20% AWS / 80% Azure)

3. Federated Identity: One Login for All Clouds

- Okta: Enterprise standard. Federates to AWS (IAM Identity Center), Azure (Entra ID), GCP (Workforce Identity Federation)
- Azure Entra ID: if already on M365, natural solution. Federates to AWS via SAML/OIDC and GCP via WIF
- AWS IAM Identity Center: if AWS is primary cloud, manages multi-accounts + SP federation to Azure/GCP

When to Choose What

Choose AWS when:

- Best compute ecosystem (EC2, ECS, EKS, Lambda)
- Most mature object storage (S3)
- Largest ML marketplace (SageMaker, Bedrock)
- Tech stack without strong Microsoft dependency

Choose Azure when:

- You use M365 (Teams, SharePoint, Outlook) — native integration
- On-premises Active Directory to hybridize
- Windows Server workloads
- Regulated Canadian sector (OSFI, health) preferring Microsoft

Choose GCP when:

- Significant analytics needs (BigQuery unbeatable at the price)
- AI/ML projects with TPUs and Vertex AI / Gemini
- Mobile/web applications (Firebase)
- Premium low-latency network requirements

Comparison Table: AWS vs Azure vs GCP

Criteria	AWS	Azure	GCP
Compute	EC2, ECS, EKS, Lambda, Fargate	VM, AKS, Container Apps, Functions	GCE, GKE, Cloud Run, Cloud Functions
Storage	S3, EBS, EFS, Glacier	Blob, Disk, Files, Archive	GCS, Persistent Disk, Filestore
Databases	RDS, DynamoDB, Aurora, Redshift	Azure SQL, Cosmos DB, Synapse	Cloud SQL, Spanner, Firestore, BigQuery
AI / ML	SageMaker, Bedrock, Rekognition	Azure AI, OpenAI Service, Copilot	Vertex AI, Gemini, AutoML, TPUs
Identity	IAM, IAM Identity Center	Entra ID (Azure AD), PIM	Cloud IAM, Workforce Identity Fed.
Network	VPC, Route53, CloudFront, WAF	VNet, DNS, Front Door, WAF	VPC, Cloud DNS, Cloud CDN, Cloud Armor
Native IaC	CloudFormation, CDK	ARM, Bicep	Deployment Manager, Config Connector
SMB advantage	Ecosystem + #1 market share	M365 + hybrid Active Directory	BigQuery + cutting-edge AI

Multi-Cloud Management Tools

Google Anthos

Google multi-cloud and hybrid platform. Unified Kubernetes management on all clouds + on-prem.

Azure Arc

Extends Azure services (governance, policy, monitoring) to AWS, GCP, on-prem, edge.

Crossplane

Open-source CNCF. Cloud infrastructure via Kubernetes CRDs. Native GitOps.

CloudHealth (VMware Aria)

Cost visibility by cloud/team/project. Essential at $10k+/month cloud spend.

Spot.io (NetApp)

AI-driven cost optimization: transparent Spot/Preemptible mix. 60-80% savings on batch workloads.

Common Mistakes to Avoid

▯ Replicating Everything Everywhere

Double costs, double complexity, guaranteed desynchronization. Asymmetric architecture, not copy-paste.

▯ Underestimating Egress Fees

Invisible in estimates, devastating on the bill. Rule: colocate data with the services that consume it.

▯ No Centralized Governance

18 months without governance = 47 AWS accounts, 23 Azure subscriptions, 0 visibility. AWS Organization + SCP from day 1.

▯ Ignoring IAM Differences

AWS IAM ≠ Entra ID ≠ GCP Cloud IAM. Training teams on all 3 models is the foundation of multi-cloud security.

▯ No Exit Plan

Without annual portability exercises, vendor lock-in remains even with 3 providers.

BOTUM Real Case: Controlled Multi-Cloud SaaS SMB

Quebec SaaS publisher, 65 employees, $2.4M ARR. Initial state: AWS for prod, Azure unplanned (M365), GCP unplanned (BigQuery pilot became prod). Problem: 3 ungoverned clouds, invisible egress fees ($400/month BigQuery -> S3), siloed identities, no consolidated view.

What BOTUM implemented:

- Unified governance: AWS Organization + SCPs, Azure Management Group, GCP folder hierarchy. CloudHealth for consolidated billing.

- Federated identity: Azure Entra ID as primary IdP (already M365). Federated to AWS IAM Identity Center (SAML 2.0) + GCP Workforce Identity Federation.
- BigQuery data migration: GCS reads instead of S3 (nightly Cloud Run job S3 -> GCS). Savings: $380/month egress.
- Unified IaC: all Terraform, modules per cloud, state in S3 with DynamoDB locking.
- Unified monitoring: Datadog as common observability layer. AWS + Azure + GCP metrics in one dashboard.

Results after 6 months:

✓ Cloud costs reduced by 28% (egress + Spot.io + Azure EA negotiation)
✓ Incident MTTR reduced by 45% (unified monitoring)
✓ New dev onboarding: 3 weeks -> 5 days (IaC + federated identity)
✓ Zero vendor lock-in: batch workload migration AWS -> GCP demonstrated in 2 weeks

Conclusion

Multi-cloud is a reality for most growing SMBs. The real question isn't 'do I want to be multi-cloud' — it often already is. The question is: 'am I managing it intentionally, or am I accumulating operational debt?'

BOTUM rule: start with inventory, define each cloud's role, federate identities, then add abstraction layers. In that order.

▯ Multi-Cloud Architecture with BOTUM

Avoid vendor lock-in and optimize your multi-cloud strategy. BOTUM teams guide you through definition and implementation.

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