






Advanced Remote Access Services

- AWS Session Manager, VPN
- Azure Serial Console, VPN Gateway
- GCP Cloud SSH, VPN

		Internal Shell Access	Site-to-Site VPN	Point-to-Site VPN
AWS		Yes*	Yes	Yes
Azure		Yes*	Yes	Yes
GCP		Yes*	Yes	No




Application Services

- AWS Elastic Beanstalk
- Azure App Service
- GCP App Engine




		Shell Access	Default SA	Insecure Traffic	FTP Deployment
Azure		Yes (dangerous)	Least Privilege	Allowed by Default	Allowed by Default
GCP		Yes*	Excessive	Allowed by Default	No

Compliance Services




- AWS Security Hub
- Azure Security Center
- GCP Security Command Center

		Managed Benchmarks	Third-Party Integrations	Custom Findings	Event Hooks	Multicloud
AWS		Yes	Yes	Yes	Yes	No
Azure		Yes	No	No	Yes	Yes
GCP		Yes	Yes	Yes	Yes	No

Data Exfil Paths




		Disk Snapshots	Database Snapshots	Signed URLs	Misc. Resources
AWS		Yes	Yes	Yes	Yes
Azure		Yes (short-lived SAS)	No	Yes	No
GCP		Yes	No	Yes	Yes

Default Network Configuration

		Connected to the Internet	Admin Ports Open	Ingress Filtering	Egress Filtering	Consistent Controls
AWS		Yes	No	Yes	No	Yes
Azure		Yes	No	Yes	No	No
GCP		Yes	Yes	Limited	Limited	Yes




Flow Logs Network Monitoring

- AWS VPC Flow Logs
- Azure NSG Flow Logs
- GCP VPC Flow Logs

		Enabled by Default	Minimum Delay	Max Retention Period	Command Line Support	Log Blocked Ingress Traffic
AWS		No	1-6 minutes	Indefinite	Yes	Yes
Azure		No	10 minutes	Indefinite	Using Extension	Yes
GCP		No	5 seconds	3650 days	Yes	No




Key Management Service

- AWS KMS
- Azure Key Vault
- GCP Google Cloud KMS

		Flexible Access Policy	Audit Logging	Automatic Key Rotation	Deletion Schedule	Single-Tenant Option
AWS		Yes	Yes	Yes* (if turned on)	7-30 days	Yes
Azure		Yes*	Yes	No Policy Found	7-90 days (if turned on)	Yes
GCP		Yes	Yes	Yes* (if turned on)	24 hours	"Selected Customers"




Private Service Endpoints

- AWS VPC Endpoints
- Azure Network Service Endpoints
- GCP VPC Service Controls




		Internal Service Routes	Custom Service Endpoints	Service Access Control	Endpoint Policy	Principal Restrictions
AWS		Yes	Yes	Yes	Yes	Yes
Azure		Yes	Yes	Yes	Yes	No
GCP		Limited	TBD	Yes	TBD	No

Serverless Platforms Environment

- AWS Lambda
- Azure Functions
- GCP Cloud Functions




		Root User	Warm Environment	Credential Timeout	Read-Only File System	Default Network
AWS		No	11 minutes	12 hours	Yes*	Yes
Azure		Yes	6 minutes	8 hours	No	Yes
GCP		Yes	3 minutes	30 minutes	No	Yes

Serverless Platforms Security


		Default SA	Custom SA	HTTPS Access	VPC Integration
AWS		Least Privilege	Yes	API Gateway	Yes
Azure		Least Privilege	Yes	Built-In*	Yes*
GCP		Excessive	Yes	Built-In*	Yes*

Storage Platforms

- AWS S3
- Azure Storage
- GCP Cloud Storage

		Block Public Access Policy	Access Logging	Default Encryption	Data Retention
AWS		Yes	Yes	No	Yes
Azure		Yes	Yes*	Yes	Yes
GCP		No	Yes	Yes	Yes

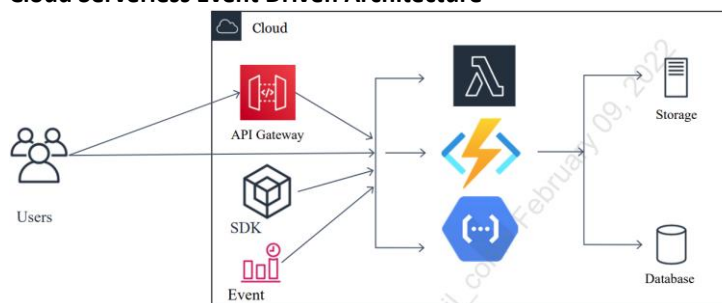
Instance Metadata API Summary

		SSRF Protection	Token Timeout	Token Scope	Requires REST API	Prevents Extraction
AWS v1		No	6 hours	No	No	No
AWS v2		Yes	6 hours	No	No	Yes
Azure		Yes	24 hours	Yes	Yes	No
GCP v1		Yes	1 hour	No	Yes*	No

Cloud End-User Identity Solutions

- AWS Cognito
- Azure Microsoft Identity Platform and Azure AD B2C
- GCP Google CICP and Firebase Authentication

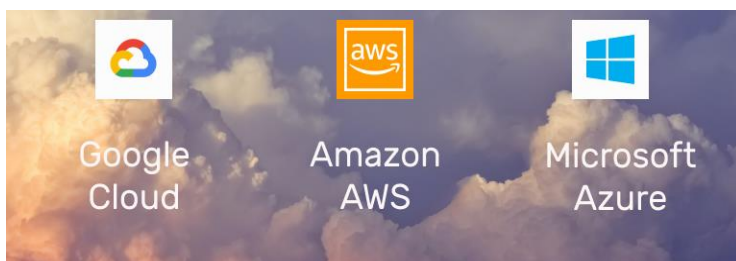
Cloud Serverless Event Driven Architecture



Cloud Single Sign-on

- AWS SSO
- Azure Microsoft Identity Platform and Azure AD
- GCP Google Cloud Identity

Service	Amazon Web Services	Microsoft Azure	Google Cloud Platform
Computing			
Instance Families	7	7	4
Instance Types Predefined	39 Current Gen, 15 Previous Gen, 54 Total	33	18
Custom Instance Types	-	-	Yes
Regions	12	22	4
New Regions (2016)	5	8	-
Zones	33	-	13
New Zones (2016)	11	-	-
IaaS	Amazon EC2 (Elastic Compute Cloud)	Virtual Machines	Google Compute Engine
Containers	Amazon EC2 Container Service	Docker Virtual Machine Extension	Google Container Engine
PaaS	AWS Elastic Beanstalk	Cloud Services, Azure Websites and Apps	Google App Engine
Serverless Compute	AWS Lambda	Azure Functions [Preview]	Google Cloud Functions [Alpha]
Storage			
Ephemeral (temporary)	Yes	Yes	Yes
Block Storage	Amazon EBS (Elastic Block Storage)	Blob Storage	Google Compute Engine Persistent Disks
Object Storage	Amazon S3	Azure Storage	Google Cloud Standard Storage, DRA
File Storage	Amazon EFS (Elastic File System) [Preview]	Azure File Storage	Avere
Archiving	Amazon Glacier	Azure Backup	Google Cloud Storage Nearline
Database			
Relational Database	Amazon RDS	Azure SQL Database	Google Cloud SQL
NoSQL: Indexed	Amazon SimpleDB	Azure Table Storage	Google Cloud Datastore



Market Share

6%	32%	18%
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PROs

<ul style="list-style-type: none"> - Open source support and portability - Doesn't require pre-warming - Straightforward interface - Discounts, flexible contracts 	<ul style="list-style-type: none"> - Extensive, mature offering - Scalability, flexibility - Support cost may skyrocket - Global reach 	<ul style="list-style-type: none"> - Offers significant discounts - Integration with MS tools - Opensource support - Hybrid cloud - Highest compliance standards over all providers
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CONs

<ul style="list-style-type: none"> - Less data centers over the world - Fewer services and features 	<ul style="list-style-type: none"> - Difficult to use - Support cost may skyrocket - Cost management - Overwhelming options 	<ul style="list-style-type: none"> - Steep learning curve for none-regular MS users - Complex pricing system
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Pricing

Per minute (minimum 10 minutes)	Per hour	Per minute
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