

ID Survey – Data Warehouse

Reference Architecture and Pricing Estimate



AWS Recognized as a Cloud Leader for the 12th Consecutive Year

Gartner 2022 Magic Quadrant for Cloud Infrastructure & Platform Services (CIPS)



Gartner, Magic Quadrant for Cloud Infrastructure & Platform Services, Raj Bala, Bob Gill, Dennis Smith, David Wright, Kevin Ji, 1 September 2022. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose. The Gartner logo is a trademark and service mark of Gartner, Inc., and/or its affiliates, and is used herein with permission. All rights reserved.



Breadth and Depth of Services: 200+ fully featured services



Analytics

Analytics
Data Exchange
Data Lake
Data Pipelines
Data Warehouse
Elasticsearch

Streaming
ETL
Hadoop / Spark
Interactive SQL Queries
Visualizations



Business Applications

Contact Center
Sharing & Collaboration
Online Meetings & Chat
Voice-Enabled Workplace

Unified Communications
Mobile & Web Apps Without
Programming



Blockchain

Blockchain Templates
Ledger Database

Managed Blockchain



Security, Identity, and Compliance

Access Control
Assessment & Reporting
Configuration Compliance
Data Protection
DDOS Protection
Identity Management

Key Management & Storage
Monitoring & Logging
Resource Management
Threat Detection
Web Application Firewall



Storage

Archive Storage
Backup & Restore
Block Storage
Data Transfer
Edge Processing & Computing
File Storage

High-Performance File System
Hybrid Cloud Storage
Object Storage
Unified Communications
Windows File System



Database

Aurora, a high-performance, relational database Built for the Cloud
Document Database
Graph Database
In-Memory Caching
Key-Value Store Database
Ledger Database
Time Series Database

Managed SQL Server
Managed MariaDB
Managed MySQL
Managed Oracle
Managed PostgreSQL



Development Tools

Analyze and Debug
Application Lifecycle
Management
Authoring
Build & Test
Containers

DevOps Resource
Management
One-Click App Development
Patching
Pipeline Orchestration
Resource Templates
Triggers



Compute

Compute
Auto-Scaling
Batch Jobs
Event-Driven Serverless
Computing
Instance Types
Managed Virtual Private Servers
Managed Repository for
Serverless Apps

Run & Manage Web Apps
Serverless Compute
Virtual Servers
Containers
Container Service
Managed Kubernetes
Store & Retrieve Docker Images



Media Services

Live Video Transport
Media Storage
Transcoding
Video Origination & Packaging

Video Personalization &
Monetization
Video Processing & Delivery
Video Streaming Analysis



Hybrid Architecture

AWS Services on Premises
Data Integration
Integrated Devices & Edge
Systems
Integrated Identity & Access

Integrated Networking
Integrated Resource &
Deployment Management
VMWare Cloud on AWS
Integrated SG



Internet of Things (IoT)

Rules Engine
Device Analytics
Device Gateway
Device SDK
Device Shadows
Event Detection & Response
Local Compute

Local Data Collection
Management & Security
Microcontroller Operating
System
Registry
Visual Applications
Development



Machine Learning (ML)

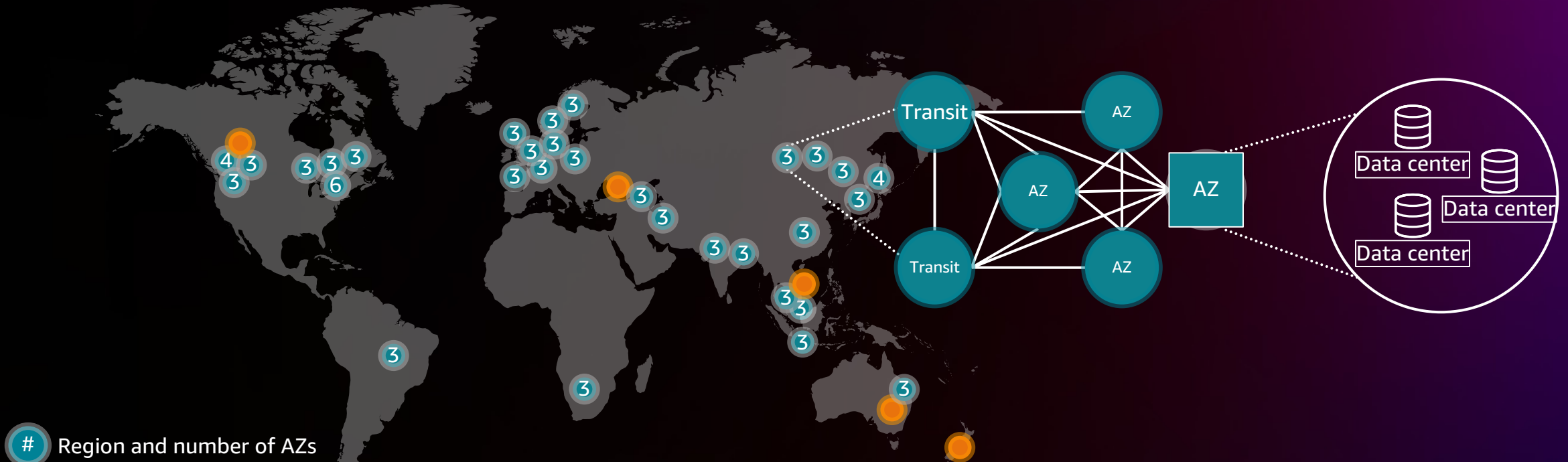
ML Frameworks
Deep Learning AMLs &
Containers
Hardware Acceleration
ML at the Edge
TensorFlow, PyTorch, MXNet
Sagemaker
Automatic Model Tuning
Data Labeling
Hosted Notebooks
ML Marketplace
Model Hosting
Model Optimization
Model Training
Pre-Built Algorithms
Topic Modeling
Deep Learning Models
Reinforcement Learning
Spot Instances
Batch Predictions
Real-Time Predictions

AI Services
Chatbots
Entity Extraction
Face Analytics
Face Search Forecasting
Image Labeling
Natural Language Processing
Personalization &
Recommendation
Sentiment Analysis
Speech Translation
Text & Data Extraction
Text to Speech Translation
Video & Image Analysis
Content Moderation

Uncompromising approach to infrastructure

32 GEOGRAPHICAL REGIONS, 102 AVAILABILITY ZONES, 410+ POPS

1



Region and number of AZs

Announced regions: Canada West, Israel, Melbourne, Thailand and Auckland

Updated as of November 27, 2022

AWS AZs

AZs consist of one or more discrete data centers, each with redundant power, networking, and connectivity, housed in separate facilities

AWS Regions

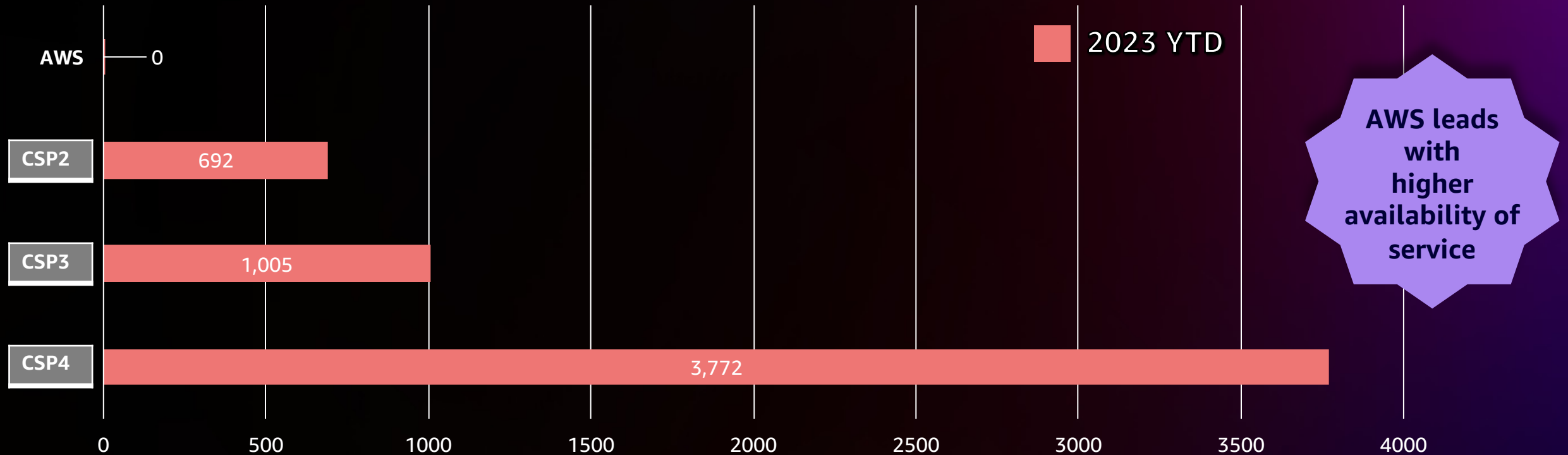
AWS Regions are physical locations in the world where we have multiple AZs

2023 YTD Downtime by Major Cloud Provider 1

AWS provides ~3000x higher availability of services as compared to its closest competitor

Detailed Downtime by Provider (actual downtime in hrs) – Total of Singapore and Jakarta region

Downtime = Downtime Published X Regions Affected X Services Affected X Error Rate

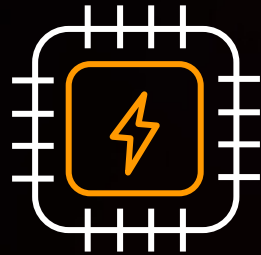


Source: Vendors' health dashboard: [AWS](#), MSFT [Azure](#), [OCI](#), and [GCP](#). Timeframe January 01 2023 – Oct 02 2023, as published by major Cloud Service Providers (CSPs).

AWS is the leader in cloud security



The only cloud vetted
and accepted as
secure enough for
top-secret workloads



Reduced attack
surface with the AWS
Nitro System



Security infrastructure built
to satisfy military, global
banks & other highly
regulated organizations



25% more security
features and services
than the next closest
provider*



Most secure infrastructure

Global		United States			
	CSA Cloud Security Alliance Controls		CJIS Criminal Justice Information Services		ITAR International Arms Regulations
	ISO 9001 Global Quality Standard		DoD SRG DoD Data Processing		MPAA Protected Media Content
	ISO 27001 Security Management Controls		FedRAMP Government Data Standards		NIST National Institute of Standards and Technology
	ISO 27017 Cloud Specific Controls		FERPA Educational Privacy Act		SEC Rule 17a-4(f) Financial Data Standards
	ISO 27018 Personal Data Protection		ISO FFIEC Financial Institutions Regulation		VPAT/Section 508 Accountability Standards
	PCI DSS Level 1 Payment Card Standards		FIPS Government Security Standards	Asia Pacific	
	SOC 1 Audit Controls Report		FISMA Federal Information Security Management		
	SOC 2 Security, Availability, & Confidentiality Report		GxP Quality Guidelines and Regulations		
	SOC 3 General Controls Report		HIPPA Protected Health Information		IRAP [Australia] Australian Security Standards
					K-ISMS [Korea] Korean Information Security
Europe					
					MTCS Tier 3 [Singapore] Multi-Tier Cloud Security Standard
					My Number Act [Japan] Personal Information Protection
					C5 [Germany] Operational Security Attestation
					Cyber Essentials Plus [UK] Cyber Threat Protection
					G-Cloud [UK] UK Government Standards
					IT-Grundschutz [Germany] Baseline Protection Methodology

NIST Cybersecurity Framework with AWS Security Services

- Industry standard to manage security risks
- Comprehensive AWS security services to provide defense-in-depth



Identify



AWS Systems Manager



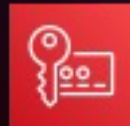
AWS Config



Protect



Amazon VPC



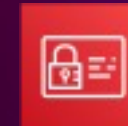
AWS Key Management Service



AWS Secrets Manager



AWS Firewall Manager



AWS Identity and Access Management (IAM)



AWS Shield



AWS Single Sign-On



AWS WAF



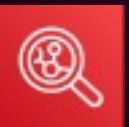
Detect



AWS Security Hub



Amazon GuardDuty



Amazon Inspector



Respond



Amazon CloudWatch



AWS CloudTrail



Recover

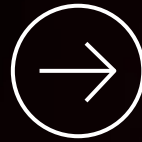
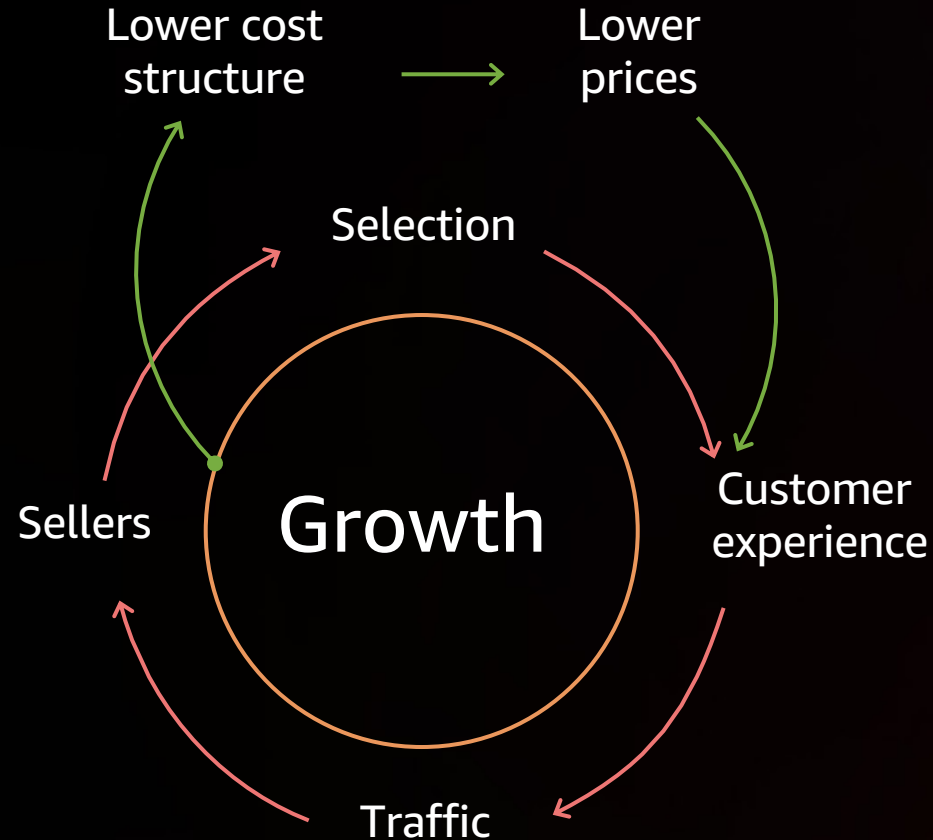


AWS Backup



AWS Elastic Disaster Recovery

Customer obsessed pricing



107

price reductions since 2006

(as of April 20, 2021)

<https://bit.ly/price-reduction-blogs>



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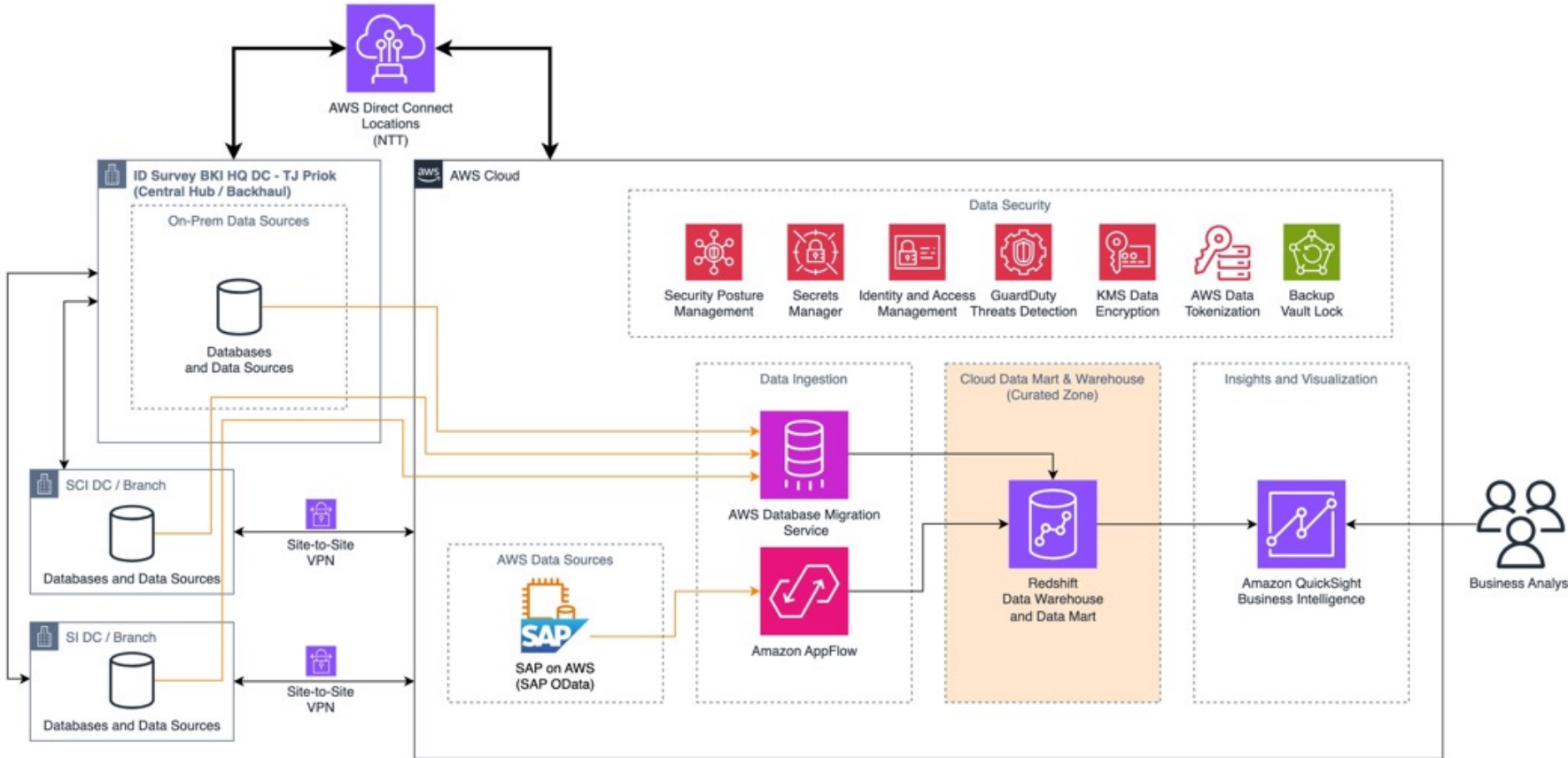
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Reference Architecture and Pricing Estimate



Reference Architecture

ID Survey Financial Data Warehouse Analytics and Dashboard Reference Architecture



Benefits:

1. Security, reliability, dan scalability untuk data sampai ke level petabytes, karena tidak menggunakan VM self-managed.
2. Performa dan biaya yang lebih optimal dengan tools ingestion yang sesuai dengan jenis data.
3. Cloud Data Warehouse dan Data Mart yang kaya fitur dengan performa tinggi
4. Solusi dashboard as a service yang bisa di-embed ke web app, support mobile, dan juga support format reporting. Dashboard juga mempunyai in-memory cache untuk meningkatkan performa

Flow data ELT (Extract, Load, Transform):

1. Data dari on-premises DC atau kantor cabang bisa dibackhaul lewat BKI HQ DC atau langsung lewat site-to-site VPN
2. Data ingestion menggunakan tools sesuai jenis data seperti DMS dan AppFlow
3. Data disimpan dan diolah di data warehouse dan dibuat materialized view
4. Visualisasi menggunakan data dari DWH

Pricing Estimate

Detailed Estimate				
Component	Service	Monthly	Currency	Configuration summary
Redshift Data Warehouse Backup	S3 Standard	12.50	USD	S3 Standard storage (500 GB per month)
GuardDuty Threat Detection	Amazon GuardDuty	13.80	USD	AWS CloudTrail Management Event Analysis (2 million per month), EC2 VPC Flow Log Analysis (2 GB per month), EC2 DNS Query Log Analysis (2 GB per month)
Security Hub	AWS Security Hub	10.00	USD	Number of Accounts (1), Number of Security Checks per Account (10000), Number of Finding Ingested per Account (10000)
Secrets manager	AWS Secrets Manager	0.80	USD	Number of secrets (2), Average duration of each secret (30 days), Number of API calls (30 per month)
Database Migration Service	AWS Database Migration Service	253.10	USD	Storage for each database migration instance (General Purpose SSD (gp2)), Storage amount (single AZ) (300 GB), Number of instances (1), Instance type (r6i.large), Deployment option (Single)
AppFlow	Amazon AppFlow	29.78	USD	Number of flows (100 per day), Volume of data per flow (100 MB)
Redshift Data Warehouse	Amazon Redshift	569.40	USD	Nodes (3), Instance type (dc2.large), Utilization (On-Demand only) (100 %Utilized/Month), Pricing strategy (Reserved No Upfront 1yr)
QuickSight Business Intelligence Dashboard	Amazon QuickSight Readers, Authors, SPICE	520.00	USD	SPICE capacity in gigabytes (GB) (10), Number of authors (10), Number of readers (100)
VPN	VPN Connection	73.00	USD	Working days per month (22), Number of Site-to-Site VPN Connections (2)
Data Transfer Out to Internet	AWS Data Transfer	16.50	USD	DT Inbound: Not selected (0 TB per month), DT Outbound: Internet (100 GB per month), DT Outbound: All other regions (50 GB per month), DT Intra-Region: (0 TB per month), Data transfer cost (16.5)
Data Transfer via Direct Connect	AWS Direct Connect	11.88	USD	Number of ports (0), Location (DCI Indonesia, JK3), Port type (Dedicated), Port capacity (100G), Data transfer out (200 GB)
Business support plan	AWS Support	151.08	USD	Supports 24/7 phone, chat, and email access to Cloud Support Engineers for unlimited contacts, with and a response time of less than 1 hour.
	Total	1,661.84		

Acknowledgement

* AWS Pricing Calculator provides only an estimate of your AWS fees and doesn't include any taxes that might apply. Your actual fees depend on a variety of factors, including your actual usage of AWS services.

Calculator Link

<https://calculator.aws/#/estimate?id=e81c2c223db24457e94f9c086f4f87bbf5e83740>



Thank you!

