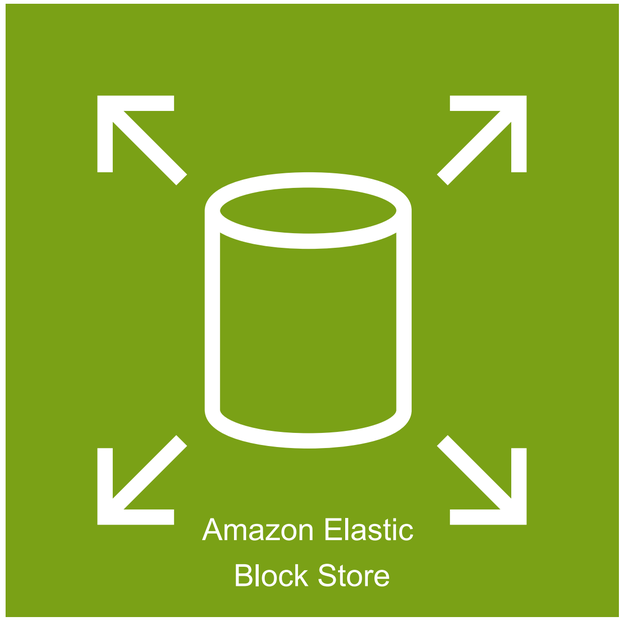
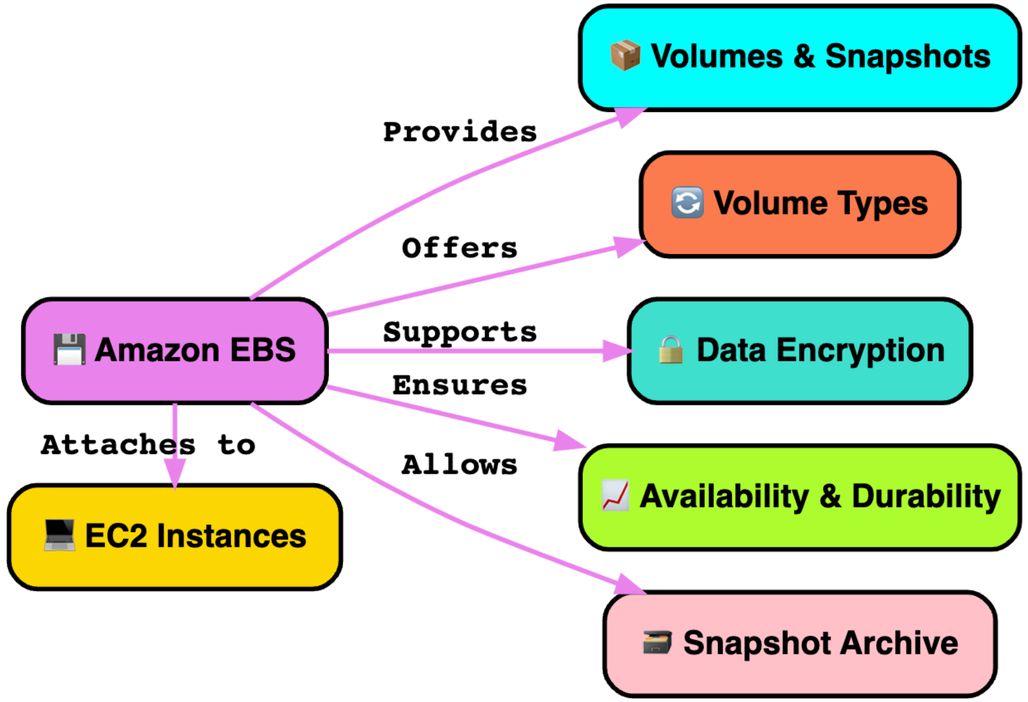


Amazon Elastic Block Store (EBS)

Amazon Elastic Block Store

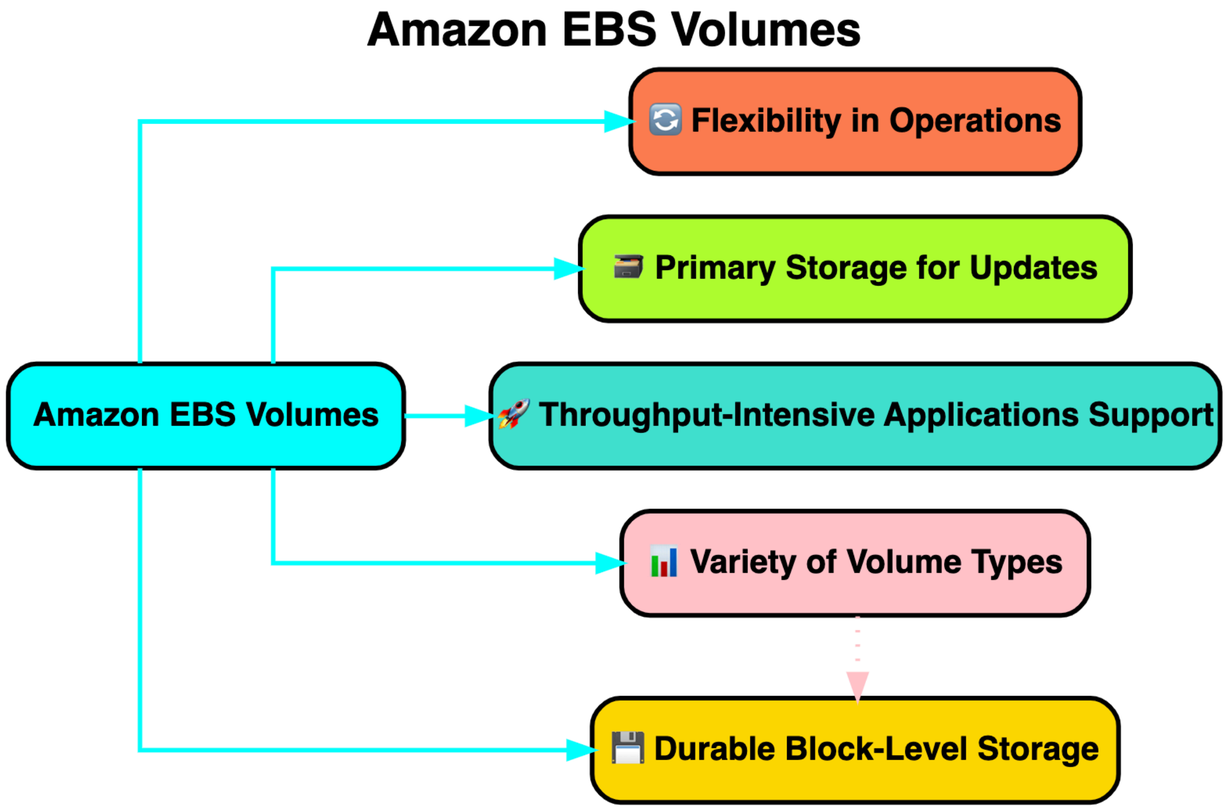


What is Amazon Elastic Block Store?

1. 💻 **High-performance block storage for EC2**: 💿 Scalable storage, 🌐 Cloud benefits
2. 📦 **Manage volumes and snapshots**: 🗄️ Storage volumes, 🔙 Snapshots for backups
3. 🔄 **Multiple volume types for performance & cost**: ⚖️ Balance cost and performance
4. 🔄 **Scalable and dynamic volume management**: 📐 Adjust size, performance
5. 🛡️ **Data encryption for security**: 🔐 Protect data at rest, in transit
6. 📈 **High availability and durability**: 🔁 Redundancy in Availability Zone
7. 🗃️ **Low-cost data archiving options**: 💸 EBS Snapshot Archive

Features of Amazon EBS.

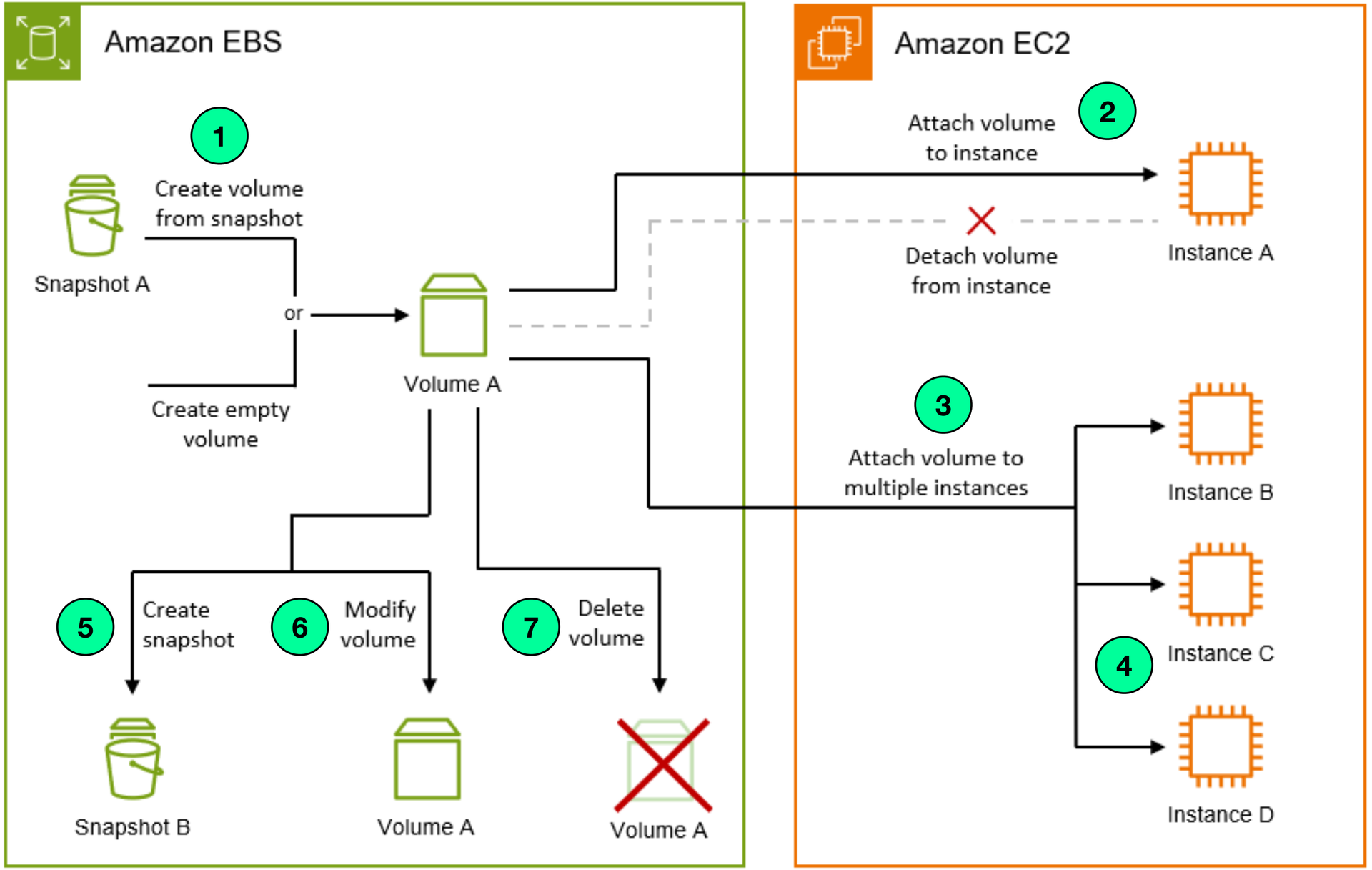
1. 🔄 Multiple volume types
   - 🚀 SSD-backed for transactional workloads
   - 🔃 HDD-backed for throughput tasks
   - ⚙️ Optimizes performance and cost
2. 📈 Scalability and dynamic management
   - ✨ Elastic Volumes
   - 🔧 Capacity, performance tuning
   - 🕛 No downtime
3. 🔒 Backup and recovery capabilities
   - 💾 EBS snapshots
   - 🔄 Easy data backup, migration
   - ⚡ Quick volume restoration, data transfer
4. 🔐 Data protection with encryption
   - 🔒 Encrypts volumes, snapshots
   - 🛡️ Secures data-at-rest, in-transit
5. 📊 High availability and durability
   - 💪 io2 Block Express volumes
   - 🛡️ Up to 99.999% durability
   - 🔁 Data replicated across servers in AZ
6. 🗄️ Cost-effective data archiving
   - 💸 EBS Snapshots Archive
   - 📉 Low-cost archiving solution
   - 📜 For regulatory compliance, future projects



Amazon EBS Volumes

1. 💾 **Durable, block-level storage**: 🔗 Attachable to instances, 🛠️ Functions like hard drive
2. 🔄 **Flexibility in operations**: ⬆️ Increase size, 🔧 Modify IOPS, 🔄 Change volume type
3. 🗃️ **Primary storage for updates**: 💿 System drives, database storage
4. 🚀 **Throughput-intensive applications**: 🔍 Continuous disk scans
5. General Purpose SSD (gp2 and gp3), Provisioned IOPS SSD (io1 and io2), Throughput Optimized HDD (st1), Cold HDD (sc1), and Magnetic (standard)

Amazon EBS Volume Lifecycle Overview



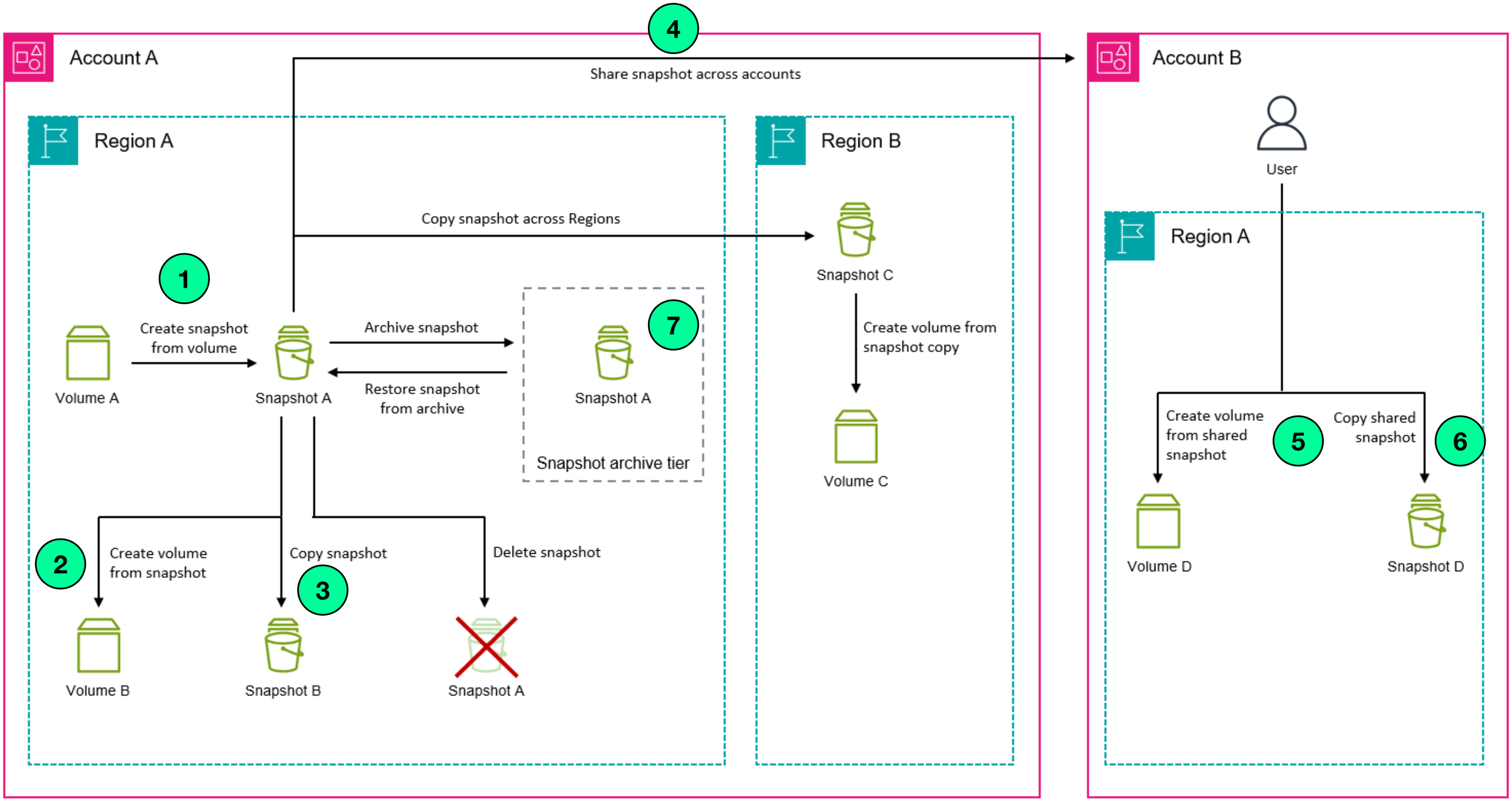
Amazon EBS Snapshot

1. 🔄 Incremental backup technology
   - 💾 Saves changed data blocks
   - ⏳ Optimizes time, storage costs
2. 🛠️ User's role in snapshot creation
   - 👤 Regular creation or automation
   - 🔒 Ensures data protection, recovery
3. 🗃️ Storage in Amazon S3
   - ☁️ Securely stored
   - 🚫 No direct access
4. 🔁 Restoration from snapshots
   - 🆕 Creates exact volume replica
   - 🚀 Immediate usability, background loading
5. 💾 Background data loading
   - 📥 Immediate download for not yet loaded data
   - ⌚ Ensures no downtime
6. 🧯 Important user responsibility
   - 🖐️ AWS doesn't auto-backup
   - 🔐 User manages snapshots
7. 🕵️ Tracking snapshot status
   - 👀 CloudWatch Events monitoring
8. 🖥️ Application-consistent snapshots
   - 💿 VSS for Windows instances
   - 🔒 Preserves application integrity
9. 📦 Multi-volume snapshots
   - 🔄 Consistent across multiple volumes
   - 🧯 For complex, critical workloads
10. 💰 Snapshot pricing
    - $ Charges based on stored data
    - 🔄 Incremental nature affects costs

🔒 Encryption Support for Snapshots.

1. 🔐 Automatic encryption for new snapshots
   - 🛏️ At rest encryption
   - 🔒 Amazon EBS's default mechanism
2. 🔄 Conversion for existing snapshots
   - 🆕 Enables seamless transition to encryption
3.  Integration with AWS Key Management Service (KMS)
   - 🔑 Manages encryption keys
   - 🛡️ Robust security and control
4. 🔍 Transparent data encryption
   - 👀 Transparent to user
   - ⚙️ No change in access or restore process
5. 🛡️ Enhanced data security and compliance
   - 🚀 Meets compliance requirements
   - 🚀 Enhances security posture

Amazon EBS Snapshot Lifecycle



Amazon Data Lifecycle Manager.

1. 🎯 Automates snapshot lifecycle
   - 🔄 Creating, retaining, deleting
   - 📦 EBS volume snapshots
2. 📅 Schedule-based policies
   - 🗒️ Define policies
   - 🔁 Snapshot creation, retention
3. 💾 Retention management for snapshots
   - ⏳ Control over retention period
   - 🗑️ Automatically deletes old snapshots
4. 🛡️ Ensures compliance and data protection
   - 📜 Compliance with policies
   - 🔒 Safeguarding against data loss
5. 🤖 Integration with Amazon EBS snapshots
   - 🔄 Automated lifecycle management
   - 🛡️ Enhances data availability, protection

How Amazon Data Lifecycle Manager Works.

1. 📜 Policies
   - 🔧 Defines backup creation, retention rules
   - 🔍 Specifies resource type, targets
   - ⏱️ Sets creation frequency, duration
   - 🏷️ Includes archiving, tagging actions
2. 🕒 Policy Schedules (Custom Policies Only)
   - 🔄 Up to four schedules
   - 🗓️ Manages multiple backup frequencies
3. 🏷️ Target Resource Tags (Custom Policies Only)
   - 🎯 Identifies resources to backup
   - 📌 Uses tags for targeting
4. 📸 Snapshots
   - 🔄 Incremental backups
   - 💾 Saves changed data
   - 🗑️ Deleting removes unique data
5. 🖥️ EBS-backed AMIs
   - 🚀 Launch information for instances
   - 📸 Includes snapshots for volumes
6. 🏷️ Amazon Data Lifecycle Manager Tags
   - 🏷️ System-generated tags
   - 📊 Helps distinguish managed resources
   - 🗂️ Includes policy ID, schedule, expiration

Amazon CloudWatch Metrics for Amazon EBS.

1. 🚀 Real-time performance monitoring	👀 Immediate visibility
	📊 Performance, health
2. 📊 Comprehensive metrics suite	📚 Volume read/write, IOPS, latency
	🔍 Assess EBS performance
3. 💡 Insight into volume performance	🔎 Deep performance insights
	📈 Data-driven decisions
4. 🔔 Alarms for proactive issue resolution	⏰ Configure based on metrics
	🚨 Notify potential issues
5. 🛠️ Integration with AWS services	🔗 Enhances monitoring capabilities
	🌐 Holistic view of AWS resources

Amazon EventBridge for Amazon EBS.

1. 🚀 Real-time event-driven architecture
2. 🔄 Automates EBS snapshot workflows
3. 🔗 Integrates with AWS services
4. 🛠️ Custom event pattern matching
5. 📊 Enhanced monitoring and alerting

🚌 Serverless event bus

🔗 Connects application data

📸 Snapshot creation, deletion

🔄 Lifecycle management

🔀 AWS Lambda, SNS, SQS

🤖 Workflow automation

🎯 Define custom event patterns

⚙️ Trigger specific workflows

👀 Monitor EBS volume status

🔔 Proactive alerting

AWS CloudTrail for Amazon EBS.

1. 📚 Comprehensive activity logging

2. 🕵️ Track API calls and user activity

3. 🛡️ Enhance security and compliance

4. 🔄 Integration with monitoring tools

5. 📈 Analyze and react to events

🔍 Records every API call

📖 Detailed log of actions

👀 Insights into user activities

🚫 Identify unauthorized actions

📜 Audit trail for all actions

🔐 Aids in meeting compliance

🔗 CloudWatch and others

🚨 Real-time analysis and alerting

🔎 Analyze event patterns

⚙️ Automated responses

Thanks for Watching