AWS re:Invent

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Choosing between AWS Lambda data storage options

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Agenda

Brief overview of AWS Lambda

Data storage on AWS

6 common data storage types used with AWS Lambda

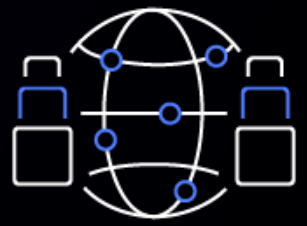
Whiteboarding – Case studies

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AWS Lambda



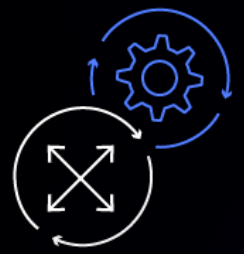
On-demand service



Highly available



Scales automatically



Triggered by events



Supports multiple runtimes

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Data storage



File-based



Amazon EFS



Object-based



Amazon S3



Database



Amazon DynamoDB



Amazon RDS

aws

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Amazon EFS – Elastic file storage

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Amazon EFS



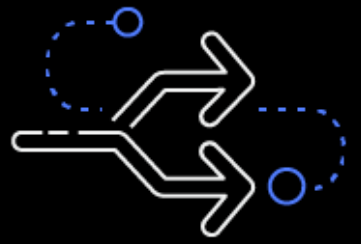
Network File System (NFS)–based file system



Scales elastically



Provides lifecycle management



Offers two performance modes

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When to use Amazon EFS

Use Amazon EFS

- You need to use file system operations (e.g., append)
- You need to use very large libraries (>50 MB)
- You need to work with a large number of small files durably
- You need to import machine learning (ML) models
- You need to share files across concurrent Lambda function instances

Consider alternatives

- You need to use events with AWS Lambda
- You need to transfer data across accounts or Availability Zones (AZs)

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Amazon S3 – Object storage

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Amazon S3



Object storage



Elastic scaling



High durability



Versioning and lifecycle management



Different storage classes



Integration with Lambda as an event source

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When to use Amazon S3

Use Amazon S3

- You need event-source integration
- You need high durability
- Your use case requires minimal configuration
- You need versioning
- You need lifecycle management
- You have very large files
- You have binary data – e.g., media

Consider alternatives

- You need NFS-style permissions
- You need access to large numbers of small files
- You need file-appending functionality
- You need the ability to mount storage in Lambda
- You need relational data storage

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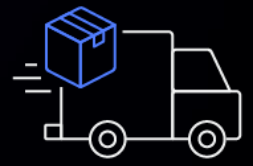
AWS Lambda local storage options

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/tmp – Lambda local storage



Ephemeral storage



Transient cache between invocations



10 GB (fixed size)



Fast input/output (I/O)



No additional cost

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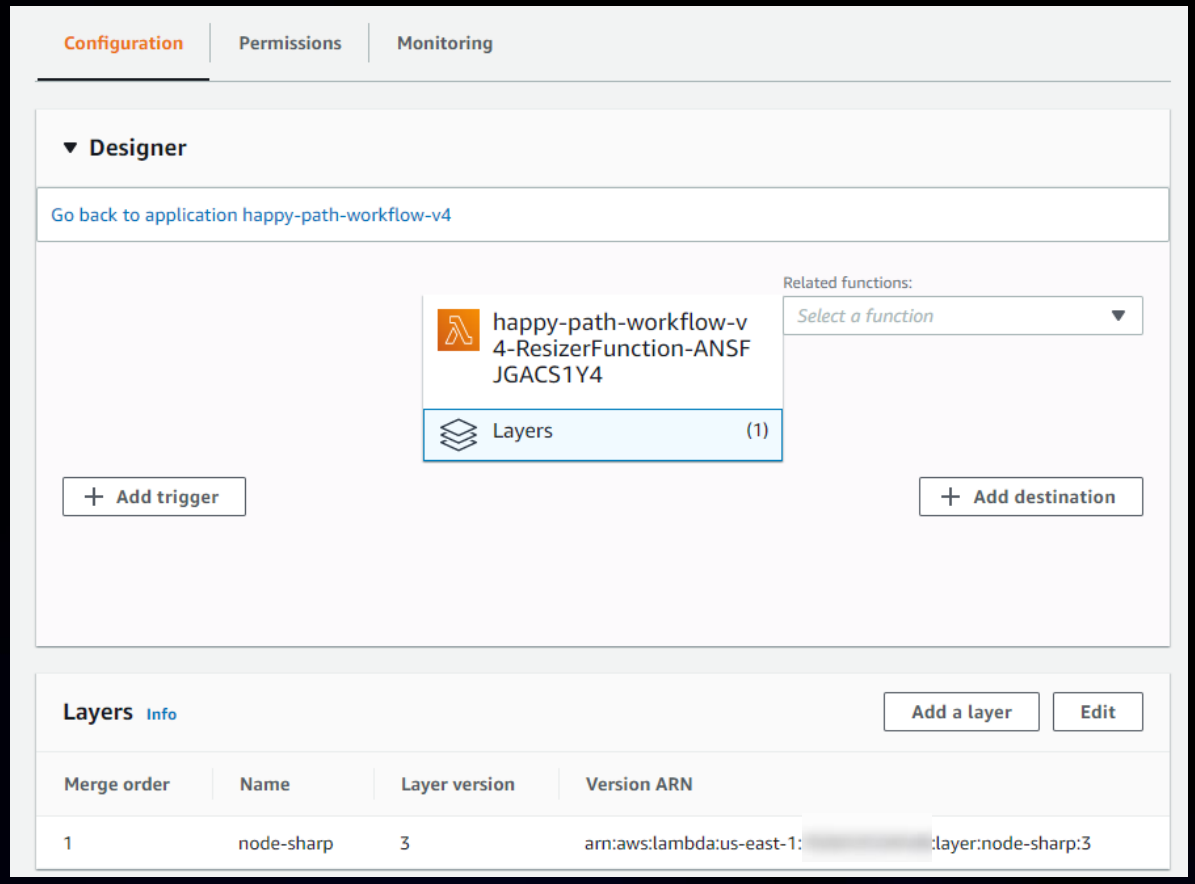
/tmp – Lambda local storage

- Always available
- Access /tmp as any other file system
- Not shared across function environments
- Contents not wiped between warm invocations
- 10 GB of temporary space
- Empty on a cold invocation

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Local storage – Lambda layers

- Up to 5 layers per function
- Part of the 50 MB zipped/ 250 MB unzipped overall deployment package limit
- Available in /opt during invocation
- Immutable versions
- Sharable with other accounts/public



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When to use Lambda layers

Use Lambda layers

- You need to share code libraries across functions
- You need to share libraries with other teams
- You need to link to a set AWS SDK version
- You need to use a custom runtime
- You need to embed/include static libraries

Consider alternatives

- You need access to dynamic content
- You need the ability to persist data
- You need the ability to mount storage in Lambda

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Amazon DynamoDB – NoSQL database

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Amazon DynamoDB



Fully managed NoSQL



Supports document or key-value data structures



Scales to virtually any workload



Fast and consistent



Provides access control



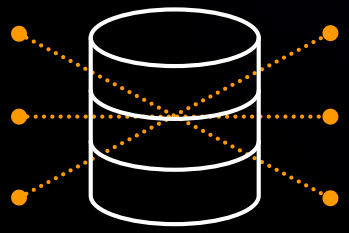
Offers event-driven programming

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Amazon RDS – Relational database

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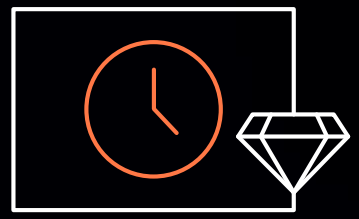
Amazon RDS



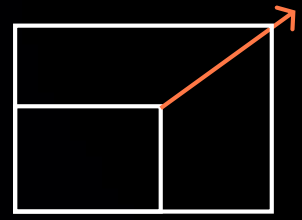
Easy to administer



Secure and compliant



Available and durable



Performant and scalable



Amazon RDS Proxy

aws

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When to use Amazon DynamoDB or Amazon RDS

Use DynamoDB

- You have a massive scale
- You have non-relational data
- You need single-digit millisecond performance
- You need an event-driven architecture
- You have known access patterns

Use Amazon RDS

- You have unknown access patterns
- You are lifting and shifting/migrating an existing project that uses another database
- You need to run ad hoc analytics and aggregations
- You need flexible querying

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Amazon ElastiCache – in-memory data store

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Amazon ElastiCache



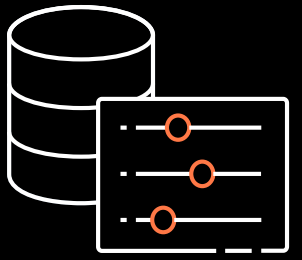
Scalable



Extreme performance



Fully managed



Compatible with open-source software (OSS)

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When to use Amazon ElastiCache

Use Amazon ElastiCache

- Your use case requires in-memory cache capabilities
- You need to manage session information for both Redis and Memcached applications
- Your use case requires on-demand, live leaderboards

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Whiteboarding

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Thank you!

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