
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

STG216

# File storage for builders and data scientists on Amazon EFS


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Principal Product Manager,
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AWS

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Senior Product Manager,
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AWS

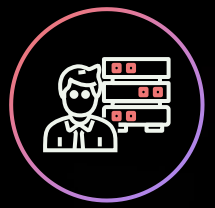
Darryl Osborne (he/him)

Principal Solutions Architect
AWS



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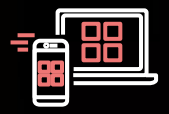
# File workloads: Broad spectrum



**Storage & IT admins and app owners**

**Builders and data scientists**





Enterprise IT applications



User shares



Line-of-business applications



Machine learning



SaaS applications



Software build environments



Backup and disaster recovery



Web serving and content management



Data science and analytics



DevOps platforms

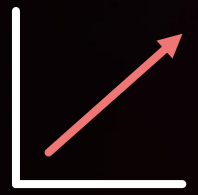
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# Three usage patterns for file storage in the cloud



Network-attached storage



Virtually unlimited compute scale



Cloud-native apps and workflows

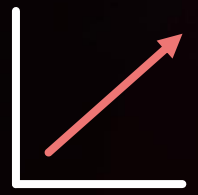
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# File solutions to serve the three usage patterns



Network-attached storage



Virtually unlimited compute scale



Cloud-native apps and workflows

FSx

Amazon FSx

FSx

Amazon FSx



Amazon EFS

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Cloud-native
apps and workflows



Amazon EFS

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# Put your
# data to work

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# Put your data to work



Builders and data scientists



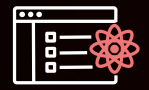
Line-of-business applications



Machine learning



SaaS applications



Web serving and content management



Data science and analytics



DevOps platforms

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# Storage is a critical enabler for these workloads

Builders need to

**share data**

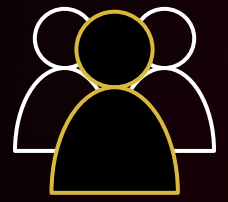
across cloud resources

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# Storage is a critical enabler for these workloads

Builders need to
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across cloud resources

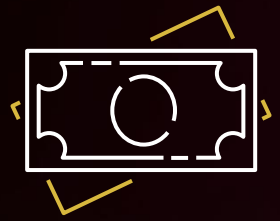
Why?



Collaboration



Scale



Efficiency

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# What do builders need from their storage?

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# What do builders need from their storage?

A solution that

**“just works”**

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# What do builders need from their storage?

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**Configuration-free**

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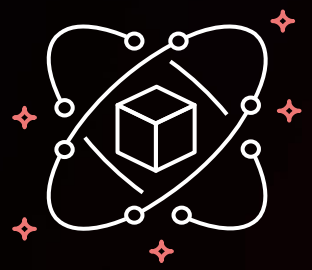
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**Configuration-free**



**Fully elastic, no provisioning**

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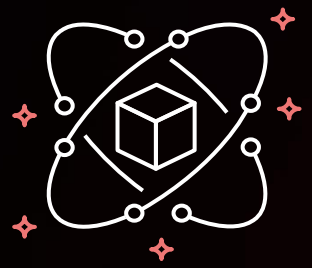
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**Accessible from anywhere**

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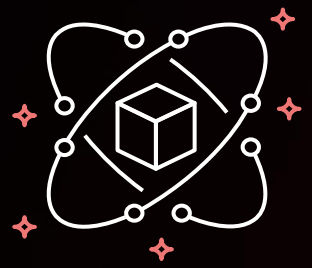
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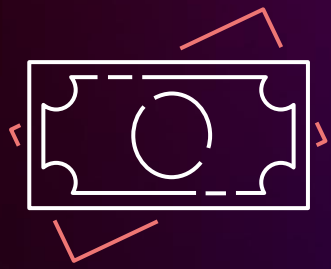
**Configuration-free**



**Fully elastic, no provisioning**



**Accessible from anywhere**



**Cost-optimized without any effort**

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# What do builders need from their storage?




**Serverless, fully elastic file storage designed for builders**

Built from the ground up to deliver super-simple, virtually bottomless file storage that **“just works”**

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# File storage for builders

**Configuration-free**
Highly available, durable, and secure, without any knobs

**Fully elastic, no provisioning**
Fully elastic storage with no need to provision capacity



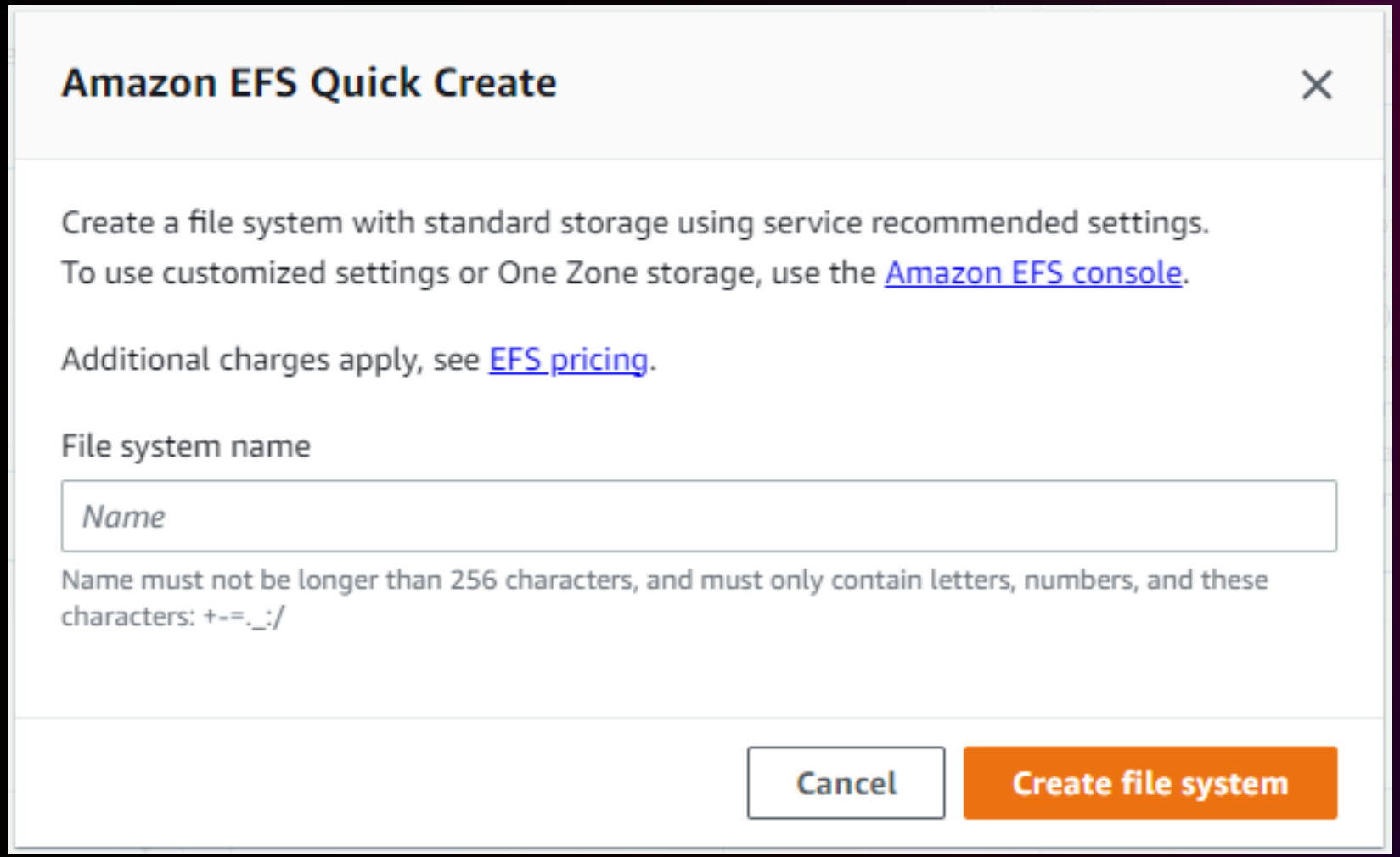
## Amazon EFS

Serverless, fully elastic file storage designed for builders

**Accessible from anywhere**
Accessible from virtually all forms of AWS compute, containers, and serverless functions

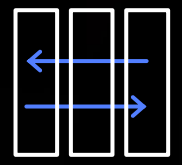
**Cost-optimized without any effort**
Pay-as-you-go storage with cost-optimized features

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# Without any configuration, builders get secure, worry-free storage that's always there



**High availability**

99.99% availability, with data automatically replicated across multiple AZs



**High durability**

Storage designed for 11 9s of durability and provides automatic backup protection



**Comprehensive security**

Automatic encryption, file access permissions, and AWS security integrations (IAM, VPC, etc.)



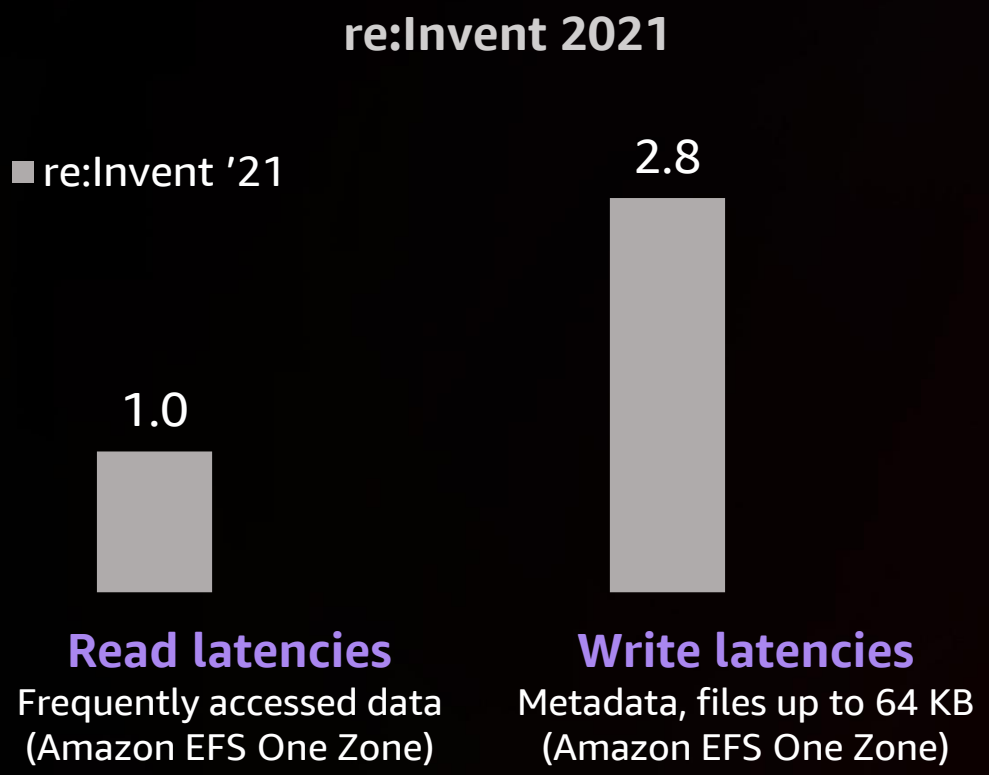
**Automatic performance**

Performance that fits a broad range of workloads

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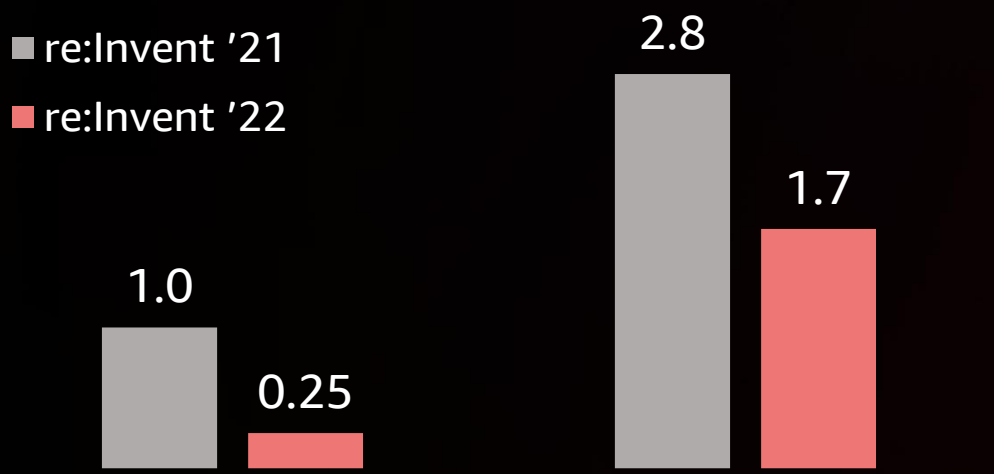
# Builders automatically benefit from Amazon EFS's ongoing performance enhancements




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# Builders automatically benefit from Amazon EFS's ongoing performance enhancements

re:Invent 2021 vs. re:Invent 2022 NEW



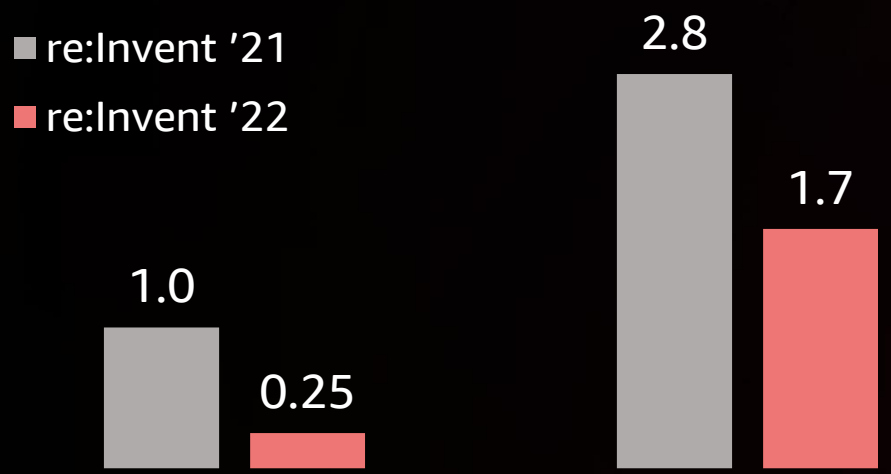

**Read latencies**
Frequently accessed data
(Amazon EFS One Zone)

**Write latencies**
Metadata, files up to 64 KB
(Amazon EFS One Zone)

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# Builders automatically benefit from Amazon EFS's ongoing performance enhancements

re:Invent 2021 vs. re:Invent 2022 NEW




**Read latencies**
Frequently accessed data
(Amazon EFS One Zone)

**Write latencies**
Metadata, files up to 64 KB
(Amazon EFS One Zone)

| Common storage benchmarks | Impact on test duration |
|---|---|
| Untar Linux kernel | 20% reduction |
| Wordpress "Hello World" | 40% reduction |

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# File storage for builders

**Configuration-free**
Highly available, durable, and secure, without any knobs

**Fully elastic, no provisioning**
Fully elastic storage with no need to provision capacity



## Amazon EFS

Serverless, fully elastic file storage designed for builders

**Accessible from anywhere**
Accessible from virtually all forms of AWS compute, containers, and serverless functions

**Cost-optimized without any effort**
Pay-as-you-go storage with cost-optimized features

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# The last thing builders want to think about is provisioning infrastructure



**Fully elastic storage**

Virtually bottomless capacity that automatically scales up and down to fit your changing needs

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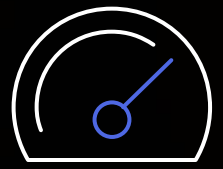
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# The last thing builders want to think about is provisioning infrastructure



**Fully elastic storage**

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**Elastic throughput**

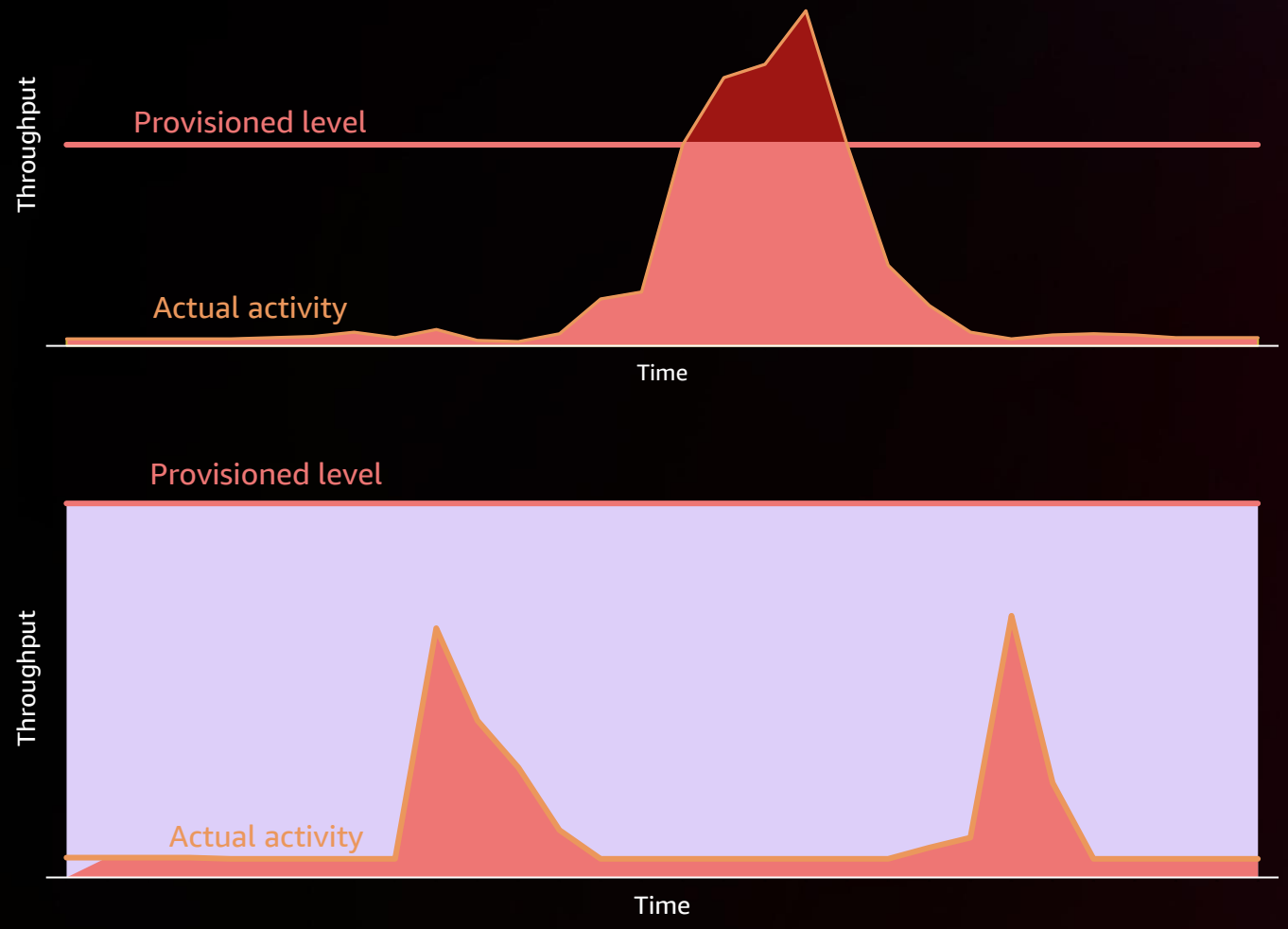
NEW

"Just works" performance for throughput-intensive applications, without any planning or provisioning

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# Traditional performance planning is hard




**Workload is throttled** due to under-provisioned throughput capacity

Over-provisioning performance means **paying for idle, underutilized resources**

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# Introducing Elastic Throughput

NEW

## Eliminate performance planning and only pay for what you use

Elastic Throughput is a new throughput option that automatically scales performance to meet your needs




### What it's for

Spiky, unpredictable, throughput-constrained workloads

### When to use

If you don't know what you need – for spiky workloads (average-to-peak throughput of <5%) and for new/changing workloads

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# Builders want to use the right architecture for the job



**Compute instances**
Amazon EC2




**Containers**
Amazon ECS,
Amazon EKS




**Serverless**
AWS Lambda,
AWS Fargate

Data that's accessible from anywhere you need it, powering everything from traditional server-based architectures to modern, containerized, and event-driven applications

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# Machine learning at scale



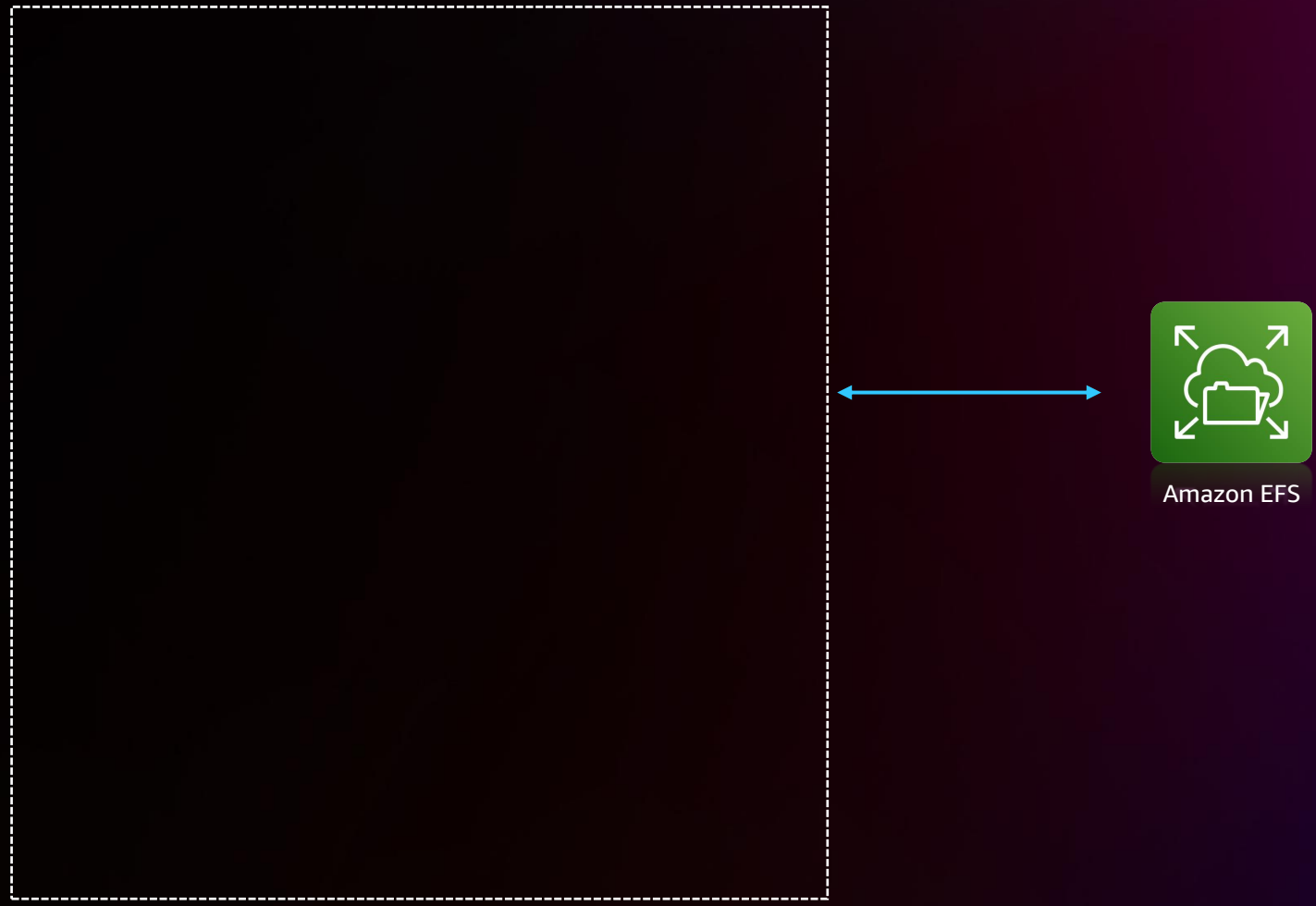

Machine learning (ML) toolkit for Kubernetes

Notebook | Pipeline | Training | Serving

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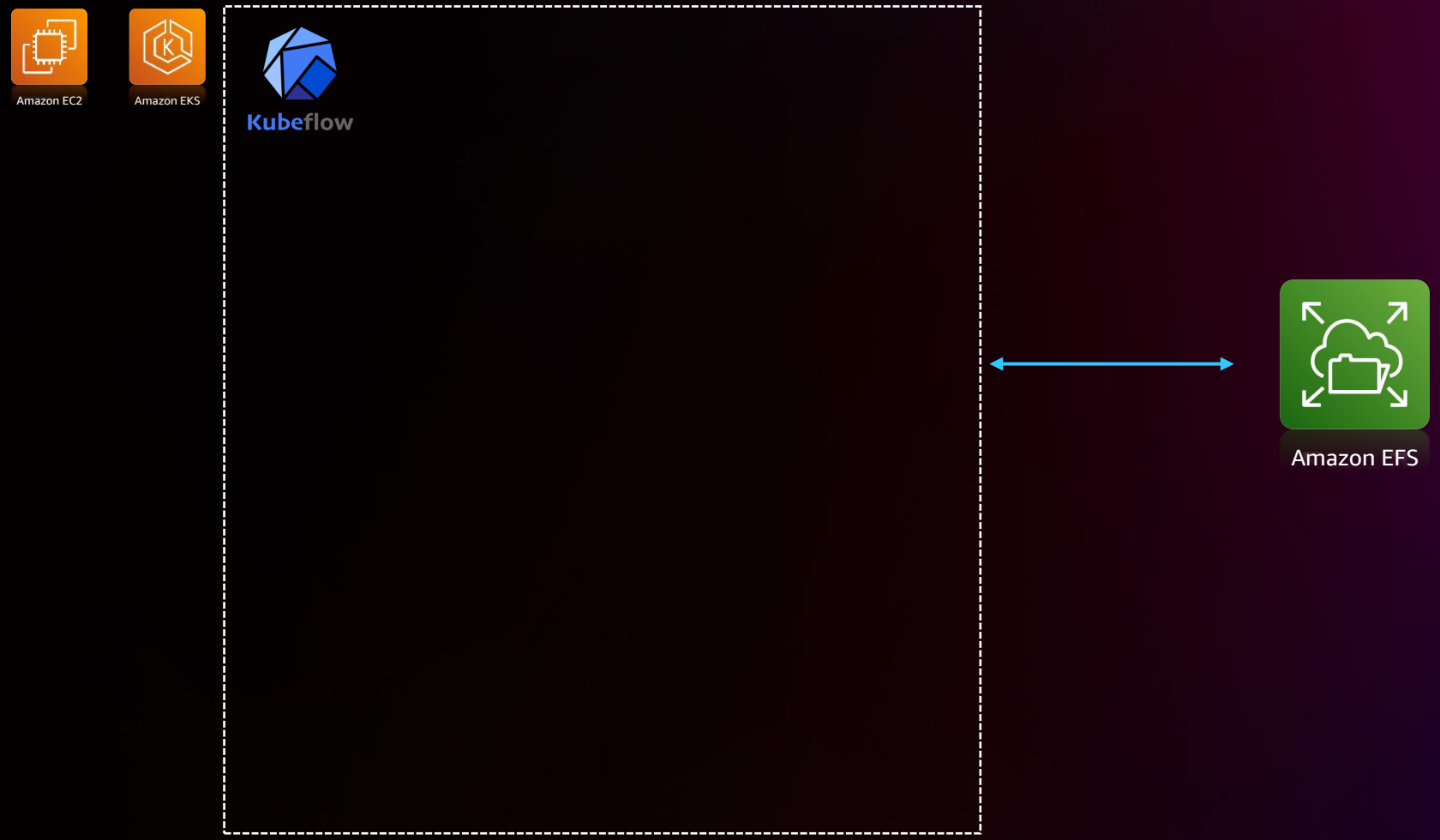
# Machine learning at scale on Amazon EFS




Configuration-free

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# Machine learning at scale on Amazon EFS

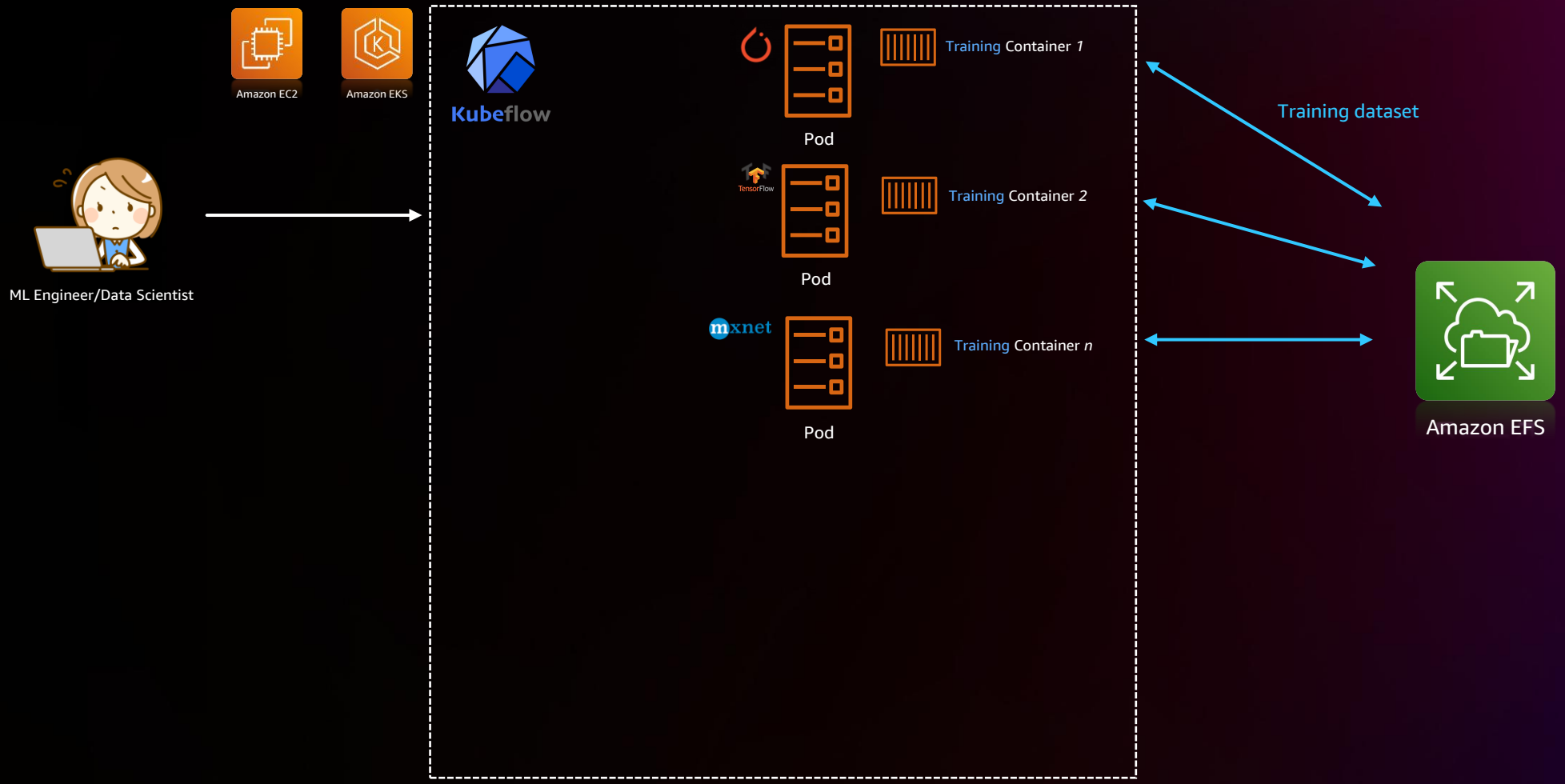



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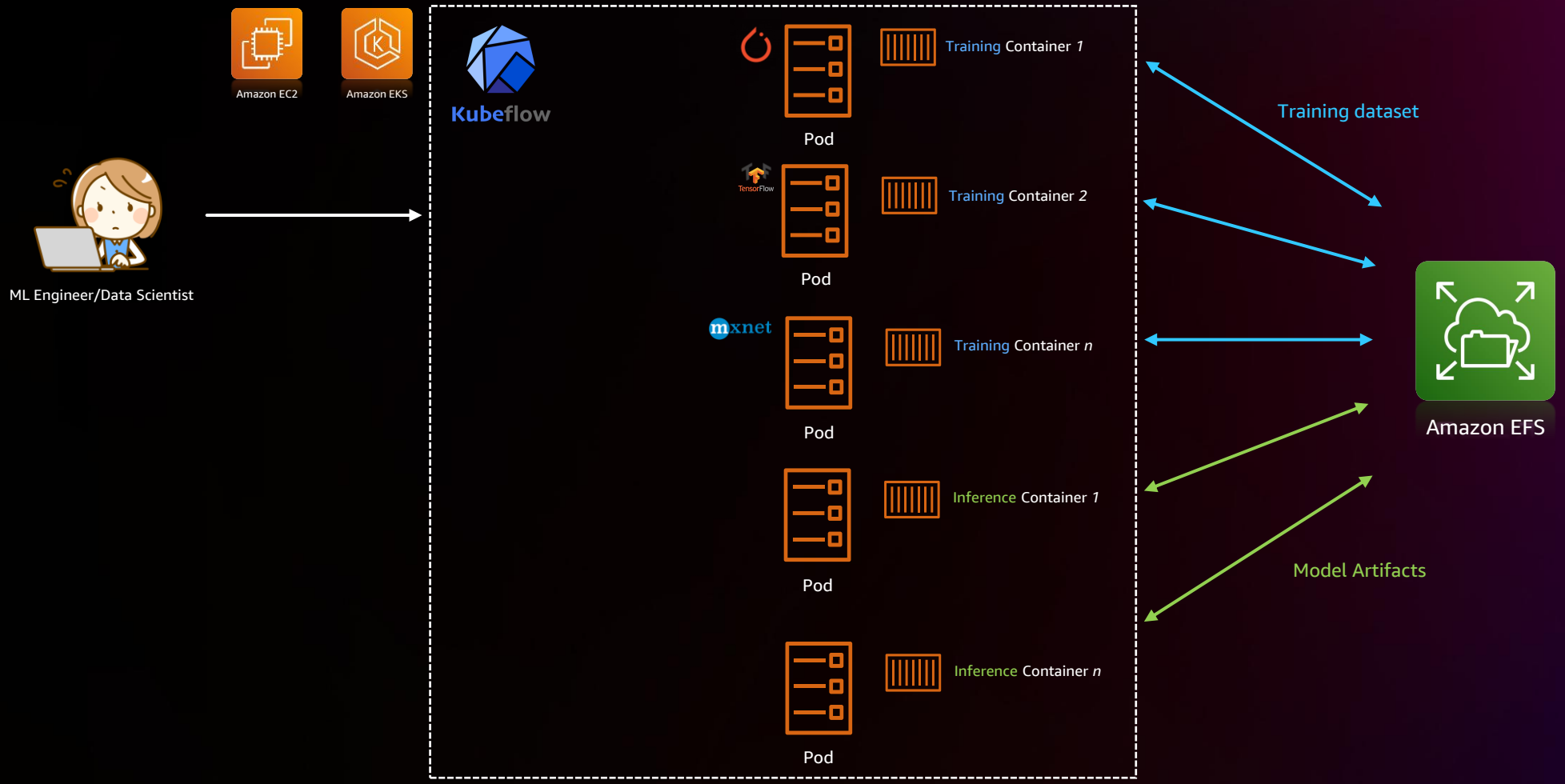

**Configuration-free**

**Accessible from anywhere**

**Fully elastic, no provisioning**

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# Machine learning at scale on Amazon EFS



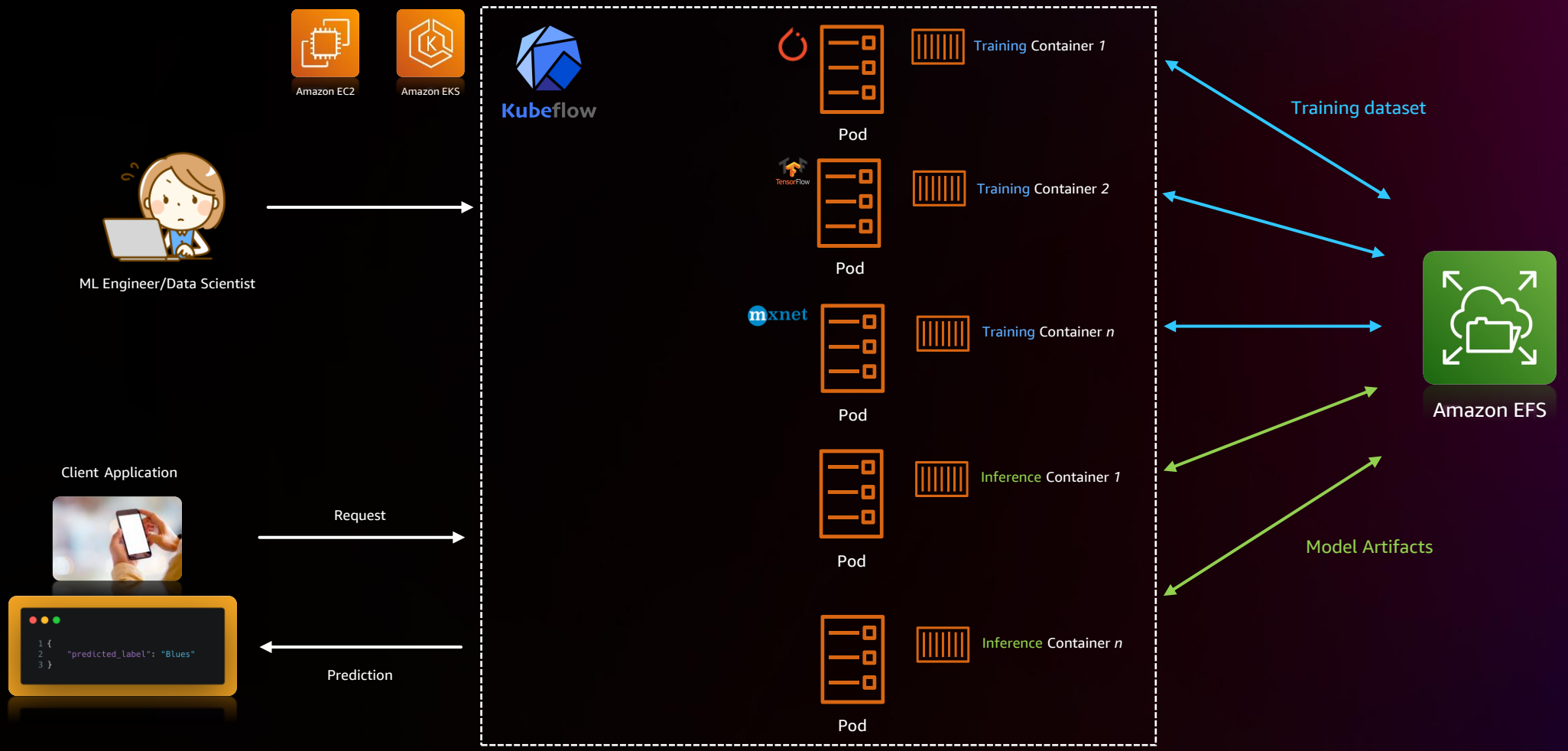

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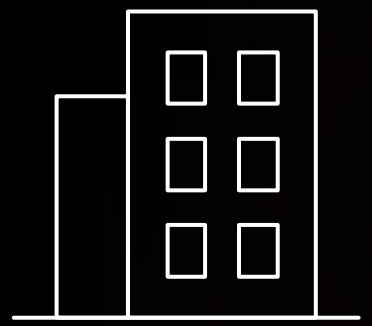



# What is the sentiment across all of our customer service calls?

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asurion

# What is the sentiment across all of our customer service calls?



Asurion Call Center




Serverless ML-powered insight




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# File storage for builders

**Configuration-free**
Highly available, durable, and secure, without any knobs

**Fully elastic, no provisioning**
Fully elastic storage with no need to provision capacity



## Amazon EFS

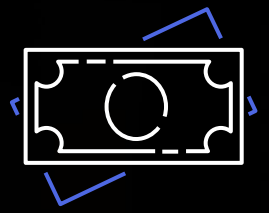
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**Cost-optimized without any effort**
Pay-as-you-go storage with cost-optimized features

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# Builders don’t want to waste time and energy optimizing their storage costs



**Pay for what you use**

Fully elastic storage and performance, meaning you only pay for what you use



**Automatic tiering**

Data automatically and transparently cost-optimized to fit your access patterns, using EFS-Infrequent Access

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# Builders automatically reduce costs with EFS Infrequent Access



**EFS** Standard



**EFS** Standard Infrequent Access (IA)



**Lifecycle Management**

Move cold data to lower cost IA storage after N days from last access (as low as 7 days)



**Intelligent Tiering**

Move back to faster Standard storage when data is accessed again

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# Builders automatically reduce costs with EFS Infrequent Access



**EFS** Standard



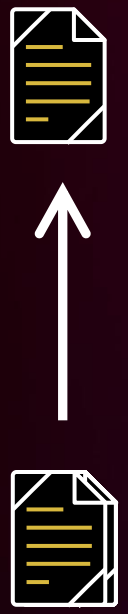
**EFS** Standard Infrequent Access (IA)



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NEW



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# Data science at scale with Amazon EFS




Data scientists need access to data from different sources for genomics, R&D, and drug discovery to perform advanced analytics.

**Greg Rusin**, IT Manager, Johnson & Johnson

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**Configuration-free**
Quickly and easily migrate from their existing solution




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**Fully elastic, no provisioning**
Scale up to petabytes of data on-demand

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**Accessible from anywhere**
Power a modern containerized architecture on Amazon EKS

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**Cost-optimized without any effort**
Lower costs by 37% in just a few clicks

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Lower costs by 37% in just a few clicks

Data scientists need access to data from different sources for genomics, R&D, and drug discovery to perform advanced analytics. **With Amazon EFS, we were able to share data on a massive scale, increase innovation by accelerating analytics, and save 37% in costs.**

**Greg Rusin**, IT Manager, Johnson & Johnson

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# Recap: File storage for builders

**Configuration-free**
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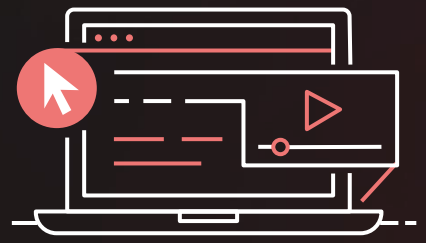
# Continue your AWS storage learning

## Build a learning plan



Set your AWS storage learning plans via **AWS Skill Builder**

## Increase your knowledge



Use our **Ramp-Up Guides** to build your storage knowledge

## Earn AWS Storage Badges




Demonstrate your knowledge by achieving **digital badges**

**https://aws.training/storage**

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# More EFS at re:Invent

**STG216: Monday at 1:45**
File storage for builders and data scientists on Amazon EFS

**STG311: Monday at 4:45**
Building serverless modern applications using Amazon S3 or Amazon EFS

**STG002: Tuesday at 4:30**
Enhance throughput benefits with Amazon EFS (demo)

**Happy Hour: Tuesday at 6:00**

AWS Storage – Rhumbar Tropical Ultra Lounge at the Mirage

**STG303: Wednesday at 2:30**
AWS storage for containers and serverless applications

**STG403: Wednesday at 5:30**
Take your Amazon EFS container deployments to the next level

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# Thank you!



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