
AWS
re:Invent

STG309

Deep dive on Amazon FSx for Windows File Server

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AWS

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Agenda

Introduction

Customer use cases

Deep dive on Amazon FSx for Windows File Server



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Introduction



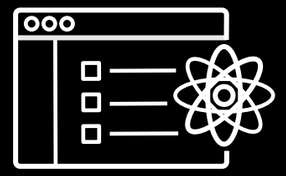
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What is Amazon FSx?

Feature-rich and highly-performant file systems fully managed by AWS

Amazon FSx for Windows File Server

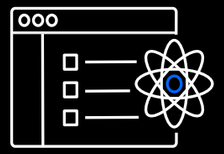


Fully managed file storage
built on Windows Server



Deeply integrated
with AWS

Why move your file storage to Amazon FSx?



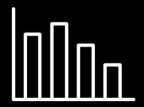
Feature and performance parity



Simple and seamless migration



Agility, scalability, and automation



Flexibility of price/performance

Fully featured, secure, reliable, and scalable

Accessibility
✓ Full SMB protocol support
✓ Windows Server 2008+, Windows 7+, Linux, and MacOS
✓ EC2, WorkSpaces and AppStream 2.0
✓ VMware Cloud on AWS
✓ ECS and EKS containers
✓ Cross-VPC/Account/Region access
✓ On-premises access (DirectConnect/VPN)

Administration
✓ Active directory integration
✓ Managing file shares
✓ Monitoring user sessions and open files
✓ Restoring locked files
✓ User storage quotas
✓ Monitoring actions via CloudTrail

Availability and durability
✓ High availability: automatic recovery
✓ High durability: automatic replication
✓ Multi-AZ deployment option
✓ SMB continuous availability (CA)

Performance and scale
✓ Consistent, sub-millisecond latencies
✓ PB-scale storage scalability
✓ Tens of GB/s throughput scalability
✓ Millions of IOPS scalability
✓ Select throughput and storage independently
✓ Server-side and client-side caching
✓ SMB Multichannel
✓ Perf. monitoring via CloudWatch
✓ Live scaling of throughput capacity

Cost optimization
✓ Storage type flex. (SSD/HDD)
✓ Deployment type flex. (single-AZ/multi-AZ)
✓ Live scaling of storage capacity
✓ Data deduplication and compression

Data protection
✓ Snapshots (with end-user file restore)
✓ Backups

Security and compliances
✓ Encryption at rest and in transit
✓ Kerberos authentication
✓ Access controls via NTFS ACLs, share ACLs, VPC, and IAM
✓ PCI DSS, ISO, SOC, GDPR, IRAP, and HIPAA compliances

Deeply integrated with AWS

Security



Amazon VPC



Amazon IAM



Amazon KMS



AWS Directory Service

Monitoring and automation



Amazon CloudWatch



AWS CloudTrail



AWS CloudFormation

Compute instances



Amazon EC2



VMware Cloud on AWS



Amazon AppStream 2.0



Amazon WorkSpaces



Amazon ECS

New

Data management



AWS DataSync



AWS Backup

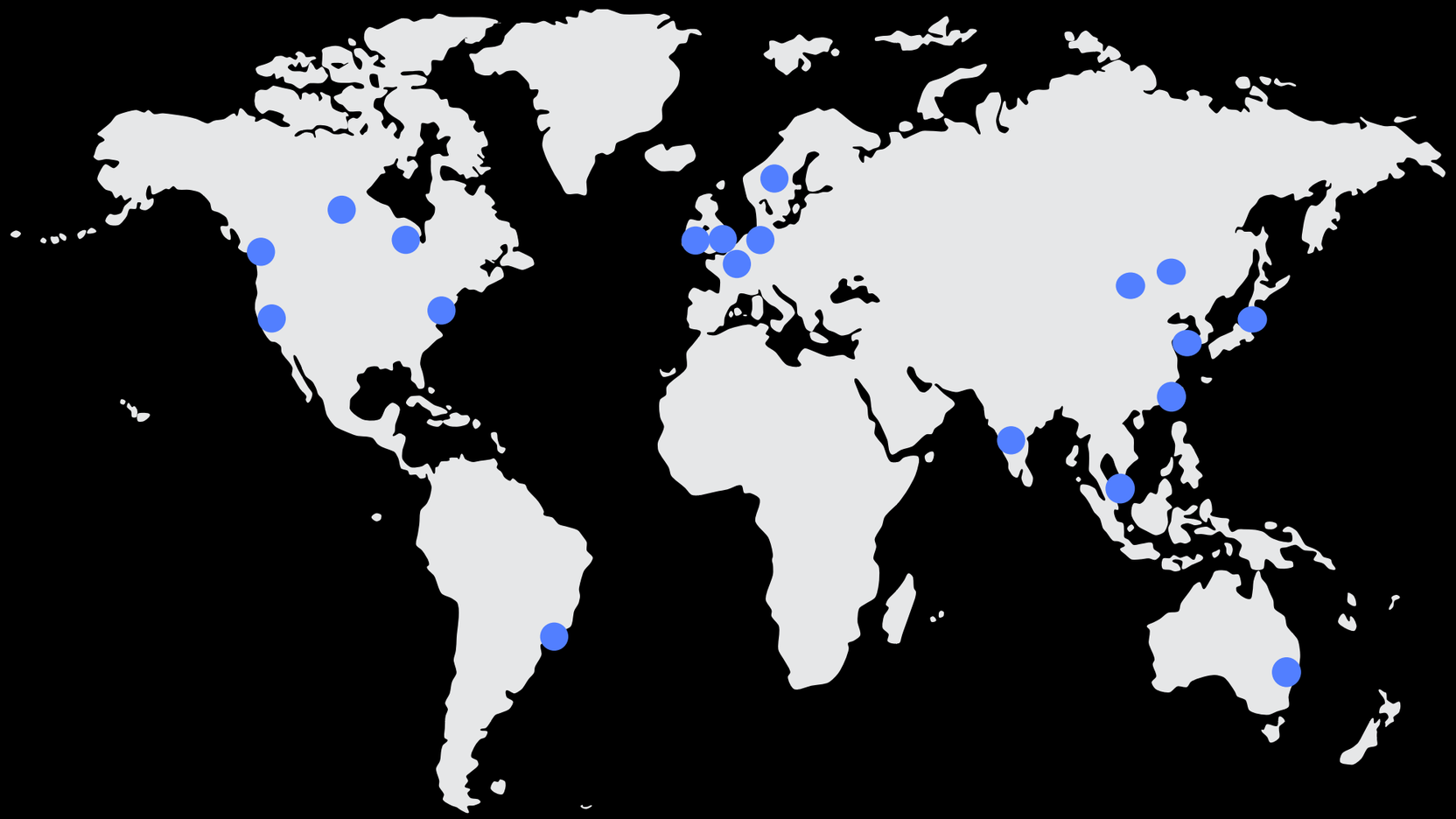
New

Amazon FSx | Globally available

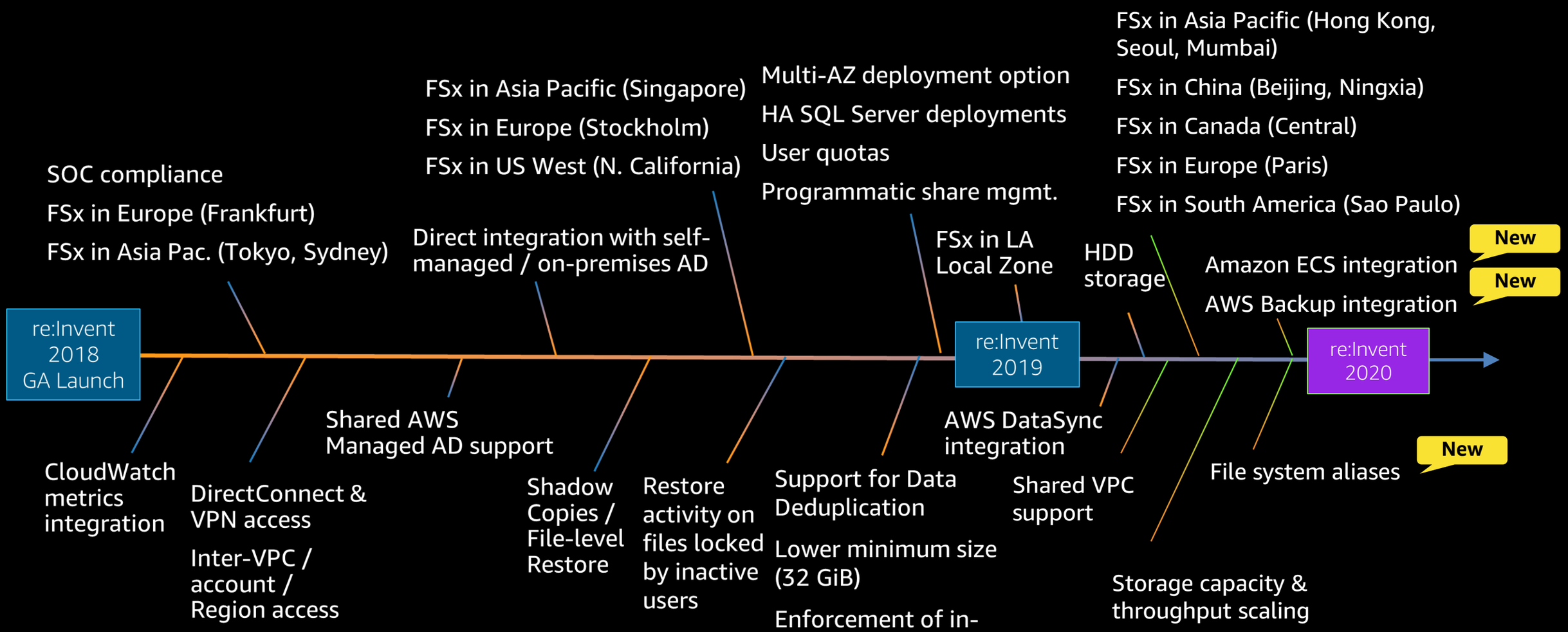
AMER
US West (Oregon)
US West (N. California)
US East (N. Virginia)
US East (Ohio)
Canada (Central)
AWS South America (Sao Paulo)

EU
Europe (Ireland)
Europe (Frankfurt)
Europe (London)
Europe (Paris)
Europe (Stockholm)

APAC
Asia Pacific (Hong Kong)
Asia Pacific (Mumbai)
Asia Pacific (Seoul)
Asia Pacific (Sydney)
Asia Pacific (Singapore)
Asia Pacific (Tokyo)
AWS China (Beijing), operated by Sinnet
AWS China (Ningxia), operated by NWCD



Amazon FSx | Pace of Innovation



A glimpse of our customers...































































Use cases

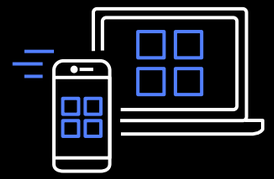


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Designed for a wide spectrum of use cases



General-purpose NAS migration



Line-of-business applications



Content management



Persistent storage for virtual desktops and application streaming



Backup and disaster recovery



Highly available SQL Server deployments



General-purpose
NAS migration

VENERABLE

Venerable migrated from their datacenter to AWS 6 months earlier than expected using Amazon FSx

“We didn’t want to have to setup and manage our own infrastructure. AWS made it easy to migrate, but Amazon FSx and WorkSpaces made it even easier. Now we don’t have to worry about software, patches, updates, or any of the trappings of managing this ourselves.”

Justin Keefer
VP of Technology Services



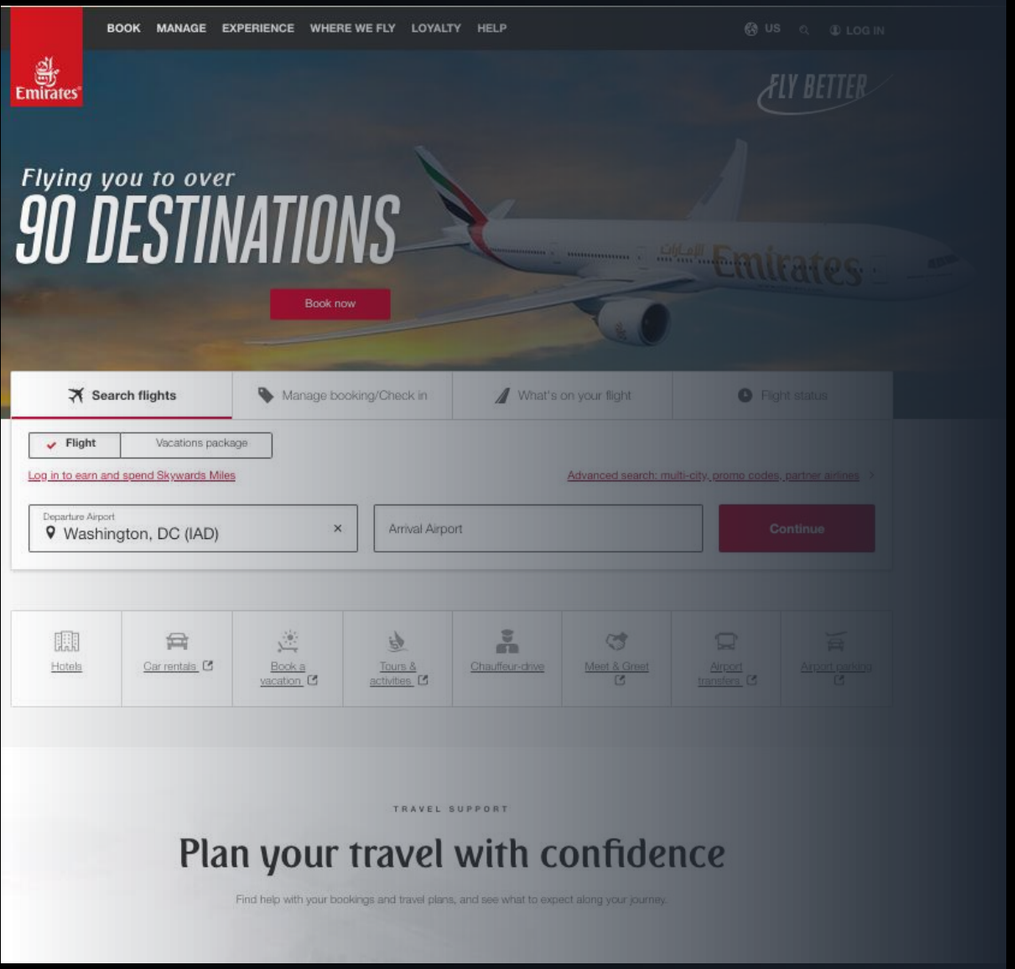
Line-of-business applications

epiq

Epiq reduced its eDiscovery platform storage costs by 30% using Amazon FSx with data deduplication

“Amazon FSx really helped us achieve some lofty cost optimization goals. We no longer have to worry about managing file storage; it was a drop-in replacement and just works. We get the performance we need but with higher availability than we can achieve on our own.”

Tina Kennedy
Director, Engineering Operations



Content management

Emirates

Emirates Airlines runs its core booking platform on AWS using Amazon FSx for hosting CMS storage

“Amazon FSx for Windows File Server made it easy to migrate our core booking platform from our datacenters to AWS. With FSx, we saw a 37% increase in performance and improved reliability for our content management system (CMS) platform compared to our existing storage solution.”

Anoop Kumar C
Principal Engineer



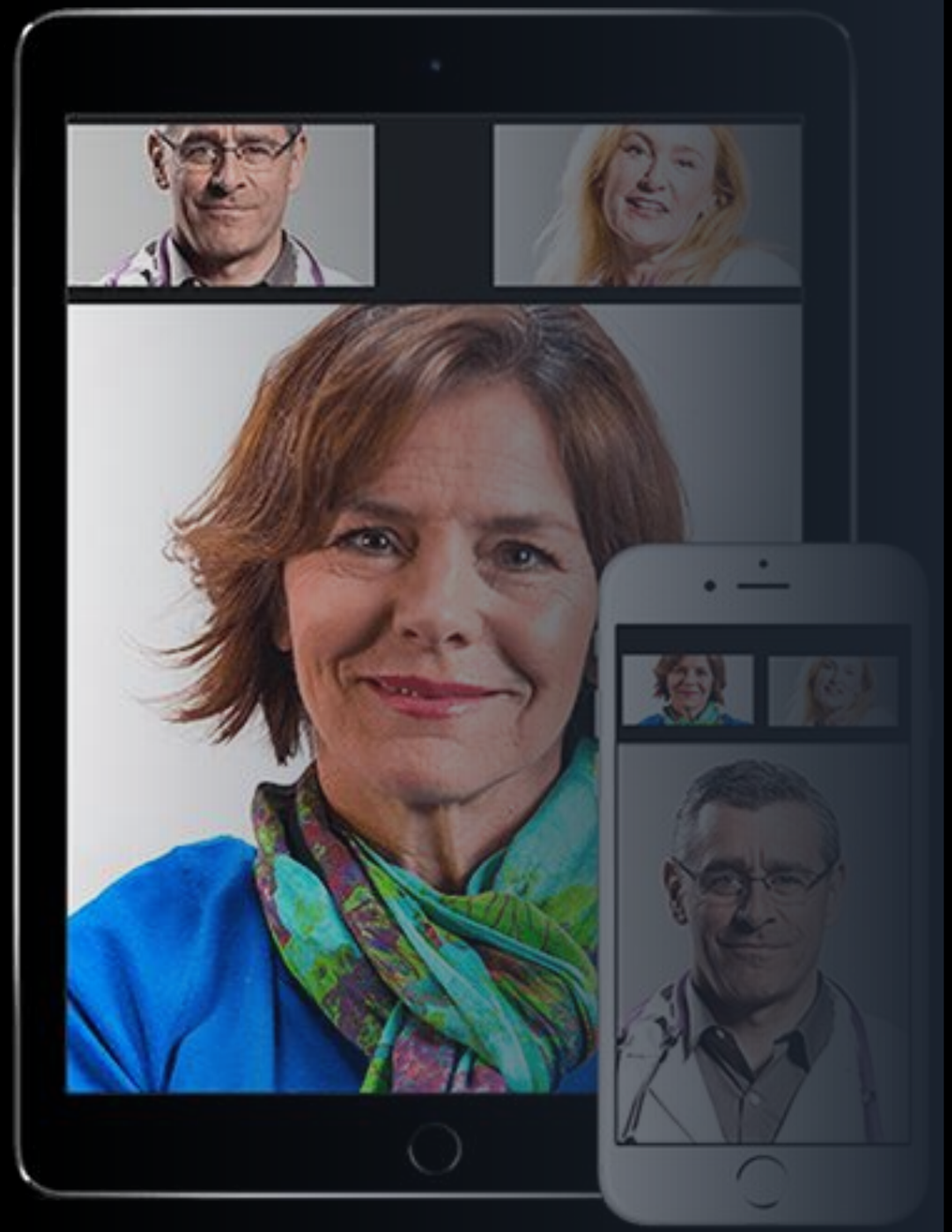
Persistent storage for WorkSpaces and AppStream 2.0

eLaw

eLaw improves productivity of remote legal professionals with Amazon WorkSpaces and FSx

"As we pivoted to remote working, using Amazon FSx with WorkSpaces provided a smooth transition from on-premises to AWS with fast, secure shared storage to thousands of legal professionals. We saw increased reliability and scalability with no disruption to our applications. We no longer worry about protecting file data on individual laptops."

Vic Kanwar
CIO



Backup and disaster recovery

AdvancedMD

AdvancedMD reduces time spent managing SQL Server database backups by 85% using Amazon FSx

“Our business world changed. We saw a 400% spike in demand for our telemedicine application during COVID-19. In supporting telemedicine, without Amazon FSx, we would have spent hours every day on a SQL backup as opposed to actually helping our business grow.”

Steve Coombs
Senior Site Reliability Engineer



HA SQL Server databases

Avio Aero
A GE Aviation Business

GE Avio Aero reduced SQL Server costs for running their SharePoint site by 60% with Amazon FSx

"Using Amazon FSx for our SQL Server deployments allowed us to run a highly available SharePoint site, while at the same time reduce our SQL license costs by more than 60% by moving from SQL Enterprise licenses to SQL Standard."

Ivano Di Conca
Senior Manager, Digital Operations

Deep dive



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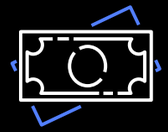
Six areas we will dive deep into today



Availability and durability



Performance and scale



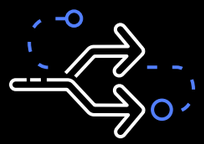
Cost effectiveness



Data protection



Security



Migration

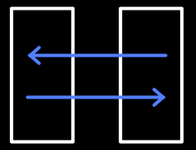
Availability and durability

File system deployment options

Single-AZ



Continually monitors and addresses hardware failures

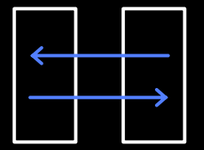


Replicates data within Availability Zone

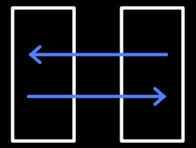
Multi-AZ



Continually monitors and addresses hardware failures



Replicates data within Availability Zone



Replicates data across Availability Zones



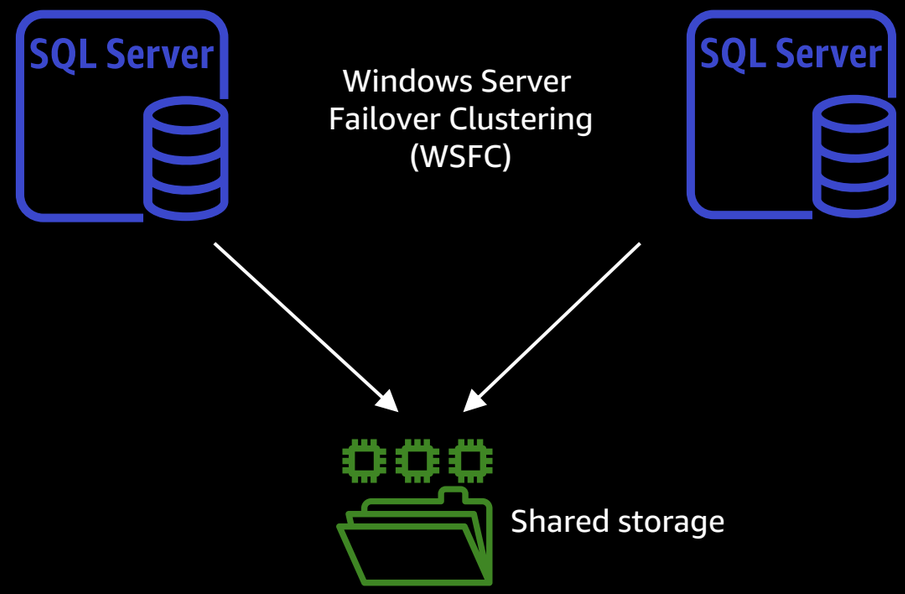
Automatically fails over across Availability Zones

Availability and durability

Support for SQL Server HA deployments

Microsoft SQL Server provides two Always On deployment options for business continuity





Always On availability groups (AG)

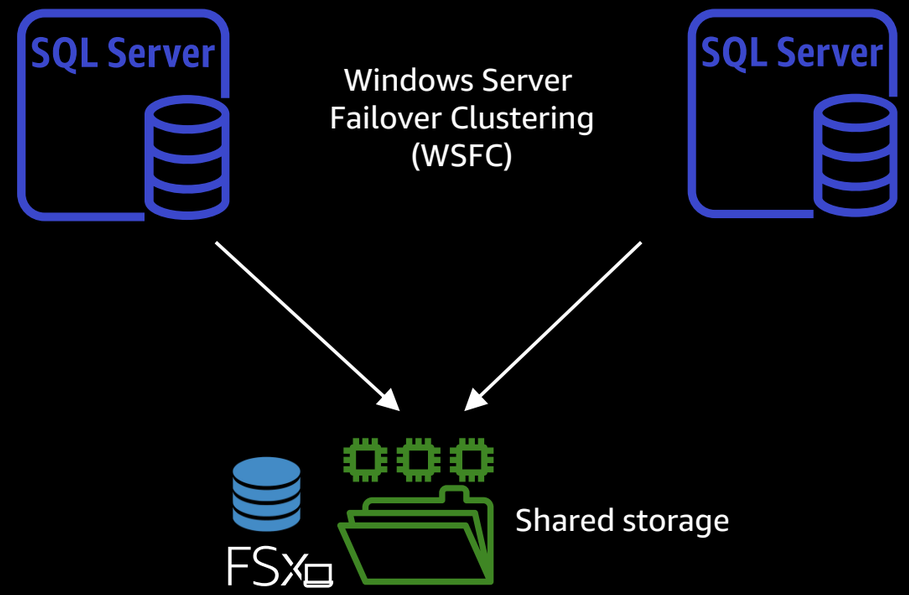
SQL Enterprise licensing*

Always On Failover Cluster (FCI)

SQL Standard or Enterprise licensing

Availability and durability

Easily deploy SQL Server FCI using Amazon FSx



Always On Failover Cluster (FCI)

SQL Standard or Enterprise licensing

No need to deploy, manage, and pay license fees
for storage replication software solutions

Availability and durability

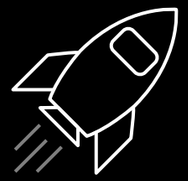
Why SQL failover clustering over availability groups?



Cost effective: SQL Standard licensing (vs. Enterprise), maximize number of databases, and right-size SQL EC2 instance



Familiar: Common scenario for running SQL on-premises



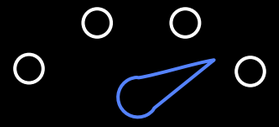
Faster: Storage handles replication (vs. compute), frees up CPU / memory on database server



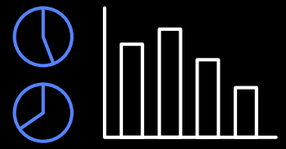
Simpler: Easier for database administrators to ensure HA

Performance and scale

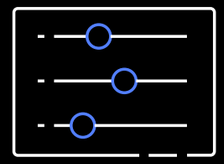
Fast and flexible performance



Multiple GB/s
throughput per fs



Hundreds of thousands
of IOPS per fs



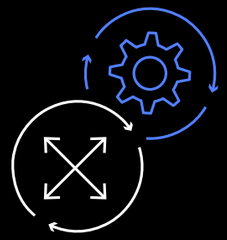
Scale storage and
throughput dynamically



Consistent
sub-ms latencies



SMB Multichannel



Select throughput
independently from storage

Performance and scale

Up to 13x better performance than SMB file service on another cloud provider

	Home directory	Content repository	Small file workload
Throughput	3.3x higher	3.5x higher	13.3x higher
Latency (Avg.)	80% lower	80% lower	90% lower
Latency consistency	2x higher	1x higher	7x higher

"Amazon FSx delivered better I/O rates at around the same costs in nearly every test we performed."

Russ Fellows, Sr Partner & Analyst
The Evaluator Group

Benchmarking analysis conducted using vdbench by Evaluator Group, October 2020; Full results available on EvaluatorGroup.com.

Cost effectiveness

Pricing

	Single-AZ (per GB-month)	Multi-AZ (per GB-month)
 SSD	13 cents	23 cents
 HDD	1.3 cents	2.5 cents

LOWEST COST
file storage
in the cloud

Typical savings from deduplication
for general file shares is an additional 50-60%

Note: Based on Amazon FSx for Windows File Server pricing in US East (N. Virginia)

Cost effectiveness

Effective pricing with data deduplication

LOWEST COST
file storage
in the cloud

	Single-AZ (per GB-month)	Multi-AZ (per GB-month)
 SSD	6.5 cents	11.5 cents
 HDD	0.65 cents	1.25 cents

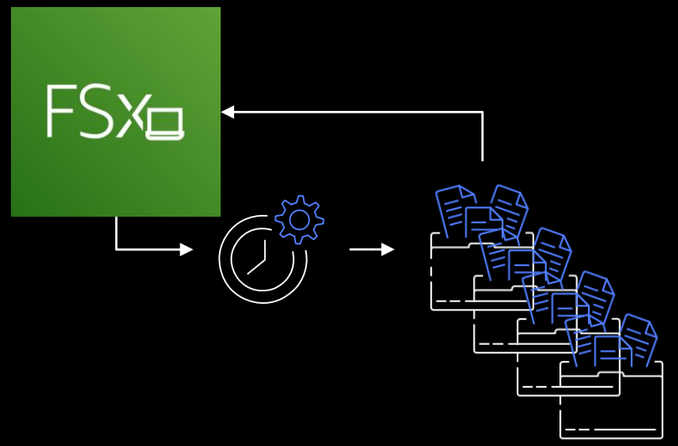
Typical savings from deduplication for general file shares is ~50%.

Note: Based on Amazon FSx for Windows File Server pricing in US East (N. Virginia)

Data protection

Shadow copies for file and folder recovery

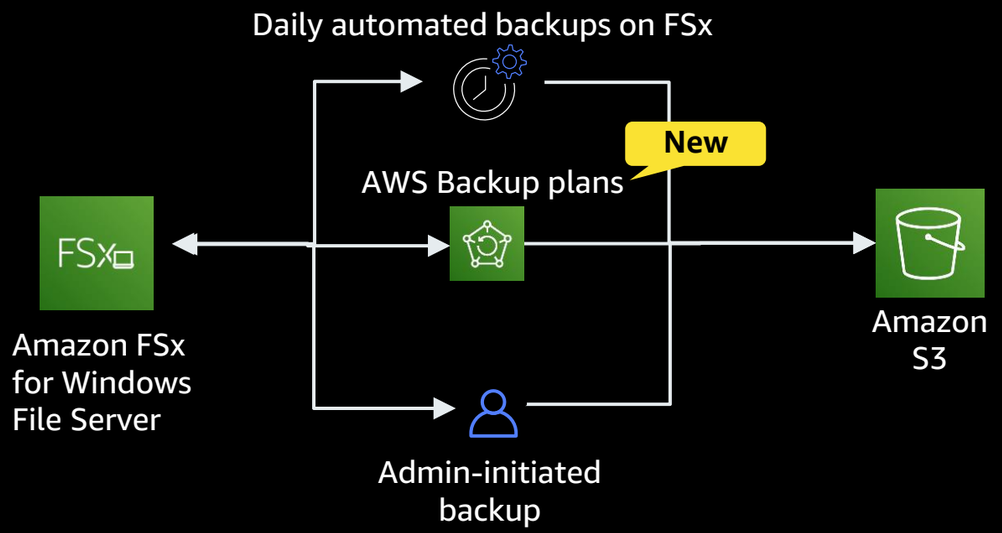
- Consistent: Point-in-time file system snapshot
- Inline: Stored inline within the file system
- Incremental: Only changes since last snapshot stored
- Convenient: End users can self-service file restores
- Automatic: Customizable schedules



Data protection

Backups for compliance and file system recovery

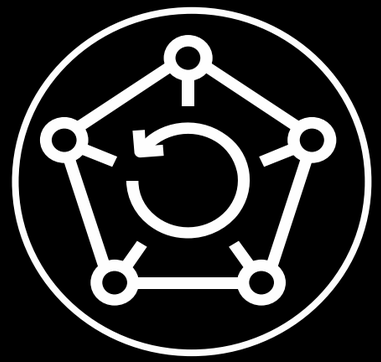
- Consistent: Point-in-time view of the file system
- Durable: Stored in Amazon S3
- Incremental: Only changes since last backup stored
- Automatic: Automatic backups with retention policy, and backup plan automation with AWS Backup



Data protection

AWS Backup integration

New



AWS Backup

A fully managed, policy-based backup service that makes it easy to centrally manage and automate backup of data across AWS services



Amazon RDS



Amazon EBS



Amazon EFS



Amazon EC2



AWS Storage Gateway



Amazon DynamoDB

New



Amazon FSx for Lustre

New



Amazon FSx for Windows File Server



Amazon Aurora

Security and compliances



Data encrypted
at rest and in transit

Option to enforce
encryption in transit



Integrates with
your organization's
AD and supports
Windows ACLs



Network traffic access
control using Amazon
VPC security groups



Admin API
access control
using AWS IAM



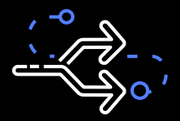
Monitor and log
API calls using
AWS CloudTrail



PCI-DSS, ISO, SOC, GDPR,
and IRAP compliant, and
HIPAA eligible

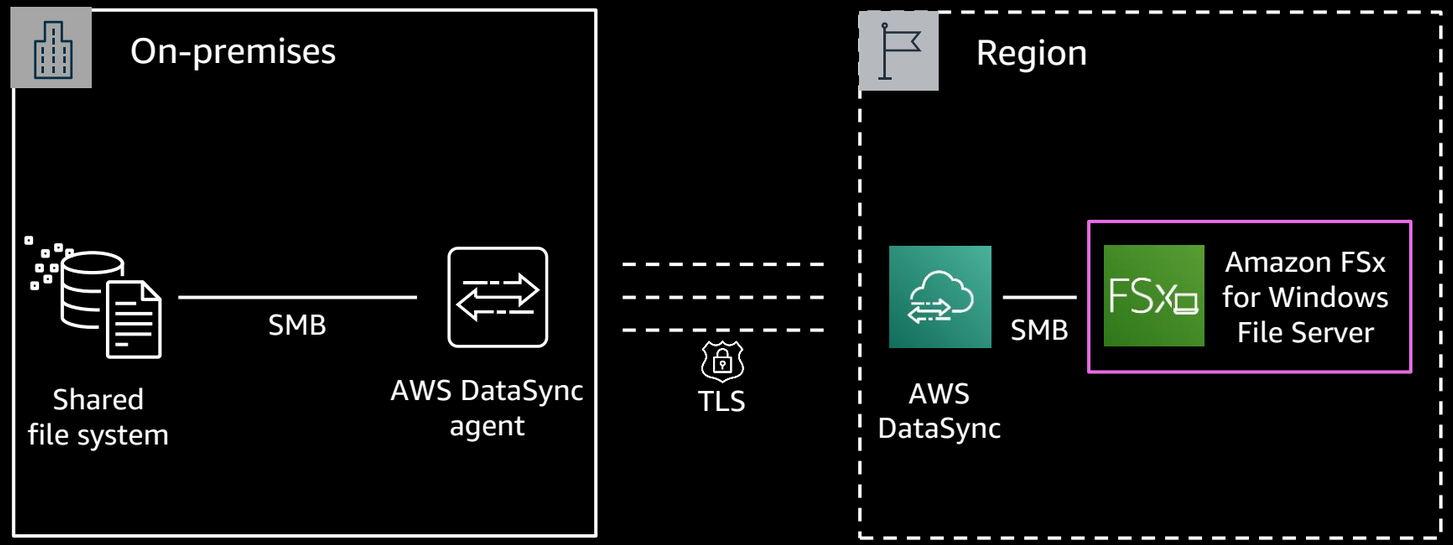
Simple and seamless migration

Things you won’t need to change when moving to AWS



- Active Directory
- Permissions / Access Control Lists (ACLs)
- DNS names New
- DFS namespace names
- File share configuration
- Shadow copies settings
- Storage quotas settings

Simple and seamless migration
AWS DataSync integration



SMB to SMB, same protocol as on-premises
No need to re-factor or re-architect

Related sessions

AWS Storage Leadership Session
What's new with AWS Storage

STG 202
Now is the time: Move your workloads to AWS storage

STG 211
Extend Amazon S3 to on-premises environments with AWS Outposts

STG 215
Migrate your data to AWS quickly and securely using AWS DataSync

STG 210
Move to managed file storage with Amazon FSx for Windows File Server

STG 216
Choosing the right storage for your on-premises file-based workloads

Thank you!



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