

Service Name

Amazon FSx for NetApp ONTAP

Service Overview

Amazon FSx for NetApp ONTAP is a fully managed file storage service that provides high-performance, scalable, and feature-rich shared file storage using NetApp's ONTAP file system. It supports petabyte-scale datasets and up to tens of GBps of throughput per file system. The service offers multi-protocol access through NFS, SMB, iSCSI, and NVMe protocols, automatic data-tiering between SSD and capacity pool storage, and advanced data management features including compression, deduplication, and compaction. It delivers sub-millisecond latencies for SSD storage and provides enterprise-grade capabilities with the agility, scalability, and simplicity of a fully managed AWS service.

Key Use Cases

- Enterprise file shares requiring high performance and multi-protocol access for Linux, Windows, and macOS clients
- Database workloads including Microsoft SQL Server, Oracle, SAP, and other high-performance database applications requiring block storage via iSCSI and NVMe-over-TCP
- Hybrid cloud deployments with on-premises NetApp systems requiring seamless data replication, backup, and disaster recovery using SnapMirror and FlexCache

Features

- **Multi-Protocol Access:** Supports NFS, SMB, iSCSI, and NVMe-over-TCP protocols for broad compatibility
- **Elastic Capacity Pool Tiering:** Automatic data tiering between high-performance SSD and cost-optimized capacity pool storage
- **Storage Efficiency:** Block-level compression, deduplication, and compaction achieving up to 65% storage savings
- **High Availability:** Multi-AZ and Single-AZ deployment options with automatic failover capabilities
- **NetApp Integration:** Native support for SnapMirror replication, FlexCache caching, and NetApp management tools
- **Enterprise Security:** Encryption at rest and in transit, Active Directory integration, antivirus scanning, and access auditing

Value Proposition

Amazon FSx for NetApp ONTAP provides the familiar NetApp ONTAP functionality customers know and trust, delivered as a fully managed AWS service without the

operational overhead of managing on-premises infrastructure. It eliminates the need for upfront capital expenditure on hardware while providing enterprise-grade features like snapshots, clones, and replication:

- The service offers superior cost optimization through elastic capacity pool tiering and storage efficiency features that can reduce storage costs by up to 65%
- Its multi-protocol support ensures compatibility with existing applications across Linux, Windows, and macOS environments
- The seamless integration with existing NetApp environments through SnapMirror and FlexCache enables gradual cloud migration and hybrid architectures without disrupting existing workflows

Service Integration

Amazon FSx for NetApp ONTAP integrates deeply with core AWS compute services including Amazon EC2, Amazon ECS, and Amazon EKS for direct file system mounting. It works seamlessly with AWS Backup for centralized backup management and automated retention policies:

- The service integrates with Amazon CloudWatch for monitoring and alerting, AWS CloudTrail for audit logging, and AWS IAM for access control
- For hybrid scenarios, it connects with AWS Direct Connect and AWS Site-to-Site VPN for secure on-premises connectivity
- It also integrates with Amazon S3 for long-term archival and supports AWS Storage Gateway for hybrid storage workflows
- The service works with AWS DataSync for data migration and Amazon Elastic VMware Service for VMware workloads

Onboarding and Offboarding

Customers start by creating an AWS account and setting up administrative access through AWS IAM Identity Center. The initial file system creation uses the Quick Create option in the Amazon FSx console, which provisions a Multi-AZ or Single-AZ file system with default settings suitable for NFS access from Linux instances:

- For Windows environments, customers can create additional Storage Virtual Machines (SVMs) joined to Microsoft Active Directory for SMB access
- The service provides step-by-step guidance for mounting file systems from Amazon EC2 instances using standard NFS or SMB protocols
- Advanced configurations including throughput capacity, SSD IOPS provisioning, and capacity pool tiering policies can be configured during or after initial creation

Getting Started Guide: <https://docs.aws.amazon.com/fsx/latest/ONTAPGuide/getting-started.html>

Data Removal

Customers can delete FSx for ONTAP file systems through the AWS console, CLI, or API after ensuring all data is backed up or migrated. The offboarding process involves deleting volumes, storage virtual machines, and finally the file system itself. All automatic backups are retained according to the configured retention period, while user-initiated backups persist until manually deleted. During deletion, customers receive warnings about data loss and must confirm the deletion. The service provides detailed cleanup procedures to remove all associated resources including security groups and endpoints.

Backup/Restore and Disaster Recovery

Amazon FSx for NetApp ONTAP provides comprehensive backup and disaster recovery capabilities through automatic daily backups, user-initiated backups, and native ONTAP features. Automatic backups occur during configurable backup windows with retention periods up to 90 days. The service integrates with AWS Backup for centralized management across multiple AWS services. Native ONTAP features include instantaneous snapshots for point-in-time recovery, SnapMirror for cross-region replication, and FlexCache for distributed caching. All backups are incremental and stored across multiple Availability Zones for durability.

Backup Capabilities

The service includes automatic daily backups enabled by default with configurable retention periods from 0-90 days. User-initiated backups can be created on-demand and are retained indefinitely:

- FSx for ONTAP integrates natively with AWS Backup for centralized backup policies and cross-service management
- The service supports both crash-consistent backups and application-consistent snapshots through native ONTAP snapshot capabilities with up to 1,023 snapshots per volume

Disaster Recovery

Amazon FSx for NetApp ONTAP supports comprehensive disaster recovery through Multi-AZ deployments for high availability within a region and cross-region replication using NetApp SnapMirror technology. The service automatically replicates data across multiple Availability Zones and provides automatic failover capabilities. While it doesn't directly integrate with AWS Elastic Disaster Recovery, it provides native ONTAP disaster recovery features including SnapMirror relationships for automated replication to secondary sites.

Recovery Objectives

FSx for ONTAP helps customers achieve aggressive RPO and RTO objectives through multiple recovery mechanisms. Instantaneous snapshots provide near-zero RPO for point-

in-time recovery, while automatic daily backups ensure RPOs within 24 hours. Multi-AZ deployments provide RTOs in minutes through automatic failover, and cross-region SnapMirror replication enables disaster recovery with RPOs measured in minutes depending on replication frequency. The service's high availability architecture minimizes planned and unplanned downtime.

Service Constraints

Service Quotas: <https://docs.aws.amazon.com/fsx/latest/ONTAPGuide/limits.html>

FAQ: <https://docs.aws.amazon.com/prescriptive-guidance/latest/fsx-ontap-enterprise-deployment/faq.html>

Technical Requirements

Service Documentation: <https://docs.aws.amazon.com/fsx/latest/ONTAPGuide/what-is-fsx-ontap.html>

User Guide: <https://docs.aws.amazon.com/fsx/latest/ONTAPGuide/>

API Reference: <https://docs.aws.amazon.com/fsx/latest/APIReference/>

Pricing Overview

Please see the AWS UK G Cloud 15 Pricing Document accompanying this service in the Digital Marketplace.

Public Pricing: <https://aws.amazon.com/fsx/netapp-ontap/pricing/>

Cost Optimization

Amazon FSx for NetApp ONTAP offers several unique cost optimization features that set it apart from other storage solutions. The elastic capacity pool tiering automatically moves infrequently accessed data to lower-cost storage while maintaining fast access when needed:

- ONTAP's storage efficiency features including compression, deduplication, and compaction typically achieve 65% storage savings for general-purpose workloads
- The pay-as-you-go pricing model with no upfront costs or licensing fees ensures customers only pay for actual usage
- Thin provisioning allows over-provisioning of volumes without consuming actual storage until data is written
- The service's flexible throughput and IOPS provisioning enables right-sizing for specific performance requirements without over-provisioning

Savings Considerations

Primary cost savings come from eliminating capital expenditure on NetApp hardware and reducing operational overhead through fully managed service delivery. The elastic capacity pool provides significant savings by automatically tiering cold data to cost-optimized storage at a fraction of SSD costs:

- Storage efficiency features can reduce total storage consumption by up to 65% across SSD, capacity pool, and backup storage
- The service eliminates traditional NetApp licensing costs while providing the same enterprise features
- Multi-AZ deployments reduce the need for separate disaster recovery infrastructure
- The ability to scale storage and performance independently allows customers to optimize costs by provisioning only the performance needed for their workloads while leveraging unlimited elastic capacity for data growth