

Service Name

AWS Direct Connect

Service Overview

AWS Direct Connect is a network service that establishes dedicated network connections from on-premises environments to AWS, bypassing the public internet. It enables organizations to create private, direct connections to AWS services using standard Ethernet fiber-optic cables connected to AWS Direct Connect locations. The service provides consistent network performance, reduced latency, increased bandwidth, and enhanced security for hybrid cloud architectures. Direct Connect supports multiple connection types including dedicated connections (1-400 Gbps) and hosted connections (50 Mbps-10 Gbps) through AWS partners, with virtual interfaces enabling access to public AWS services, Amazon VPC, and AWS Transit Gateway across multiple regions.

Key Use Cases

- Enterprise hybrid cloud connectivity: Connecting on-premises data centers to AWS for seamless hybrid architectures with consistent network performance
- High-bandwidth data transfer: Large-scale data migration, backup, and synchronization requiring reliable throughput and reduced data transfer costs
- Low-latency applications: Real-time applications, financial trading systems, and media streaming requiring predictable network performance
- Regulated industries: Organizations requiring private connections due to compliance, security policies, or restrictions on public internet usage
- Multi-region architecture: Global enterprises connecting multiple locations through AWS backbone using SiteLink for site-to-site connectivity
- Disaster recovery: Establishing reliable network paths for backup and disaster recovery solutions with AWS Elastic Disaster Recovery

Features

- **Multiple Connection Types:** Dedicated connections (1-400 Gbps) and hosted connections (50 Mbps-10 Gbps) through AWS partners
- **Virtual Interfaces (VIFs):** Private, public, and transit VIFs for accessing VPCs, public AWS services, and Transit Gateways
- **Direct Connect Gateway:** Globally available resource enabling connections to multiple VPCs and Transit Gateways across regions
- **SiteLink:** Private site-to-site connectivity between Direct Connect locations using AWS global backbone
- **Encryption Options:** MACsec encryption for dedicated connections and IPsec VPN support for additional security

- **Link Aggregation Groups (LAG):** Aggregating multiple connections for increased bandwidth and redundancy
- **BGP Routing:** Dynamic routing with BGP and BGP MD5 authentication for reliable path selection
- **Global Availability:** Available at numerous locations worldwide with speeds up to 400 Gbps

Value Proposition

AWS Direct Connect offers significant advantages over internet-based connections including reduced network costs through dedicated bandwidth and lower data transfer charges, enhanced security via private connections that bypass the public internet, improved performance with consistent low latency and higher throughput, and greater reliability with predictable network behavior. Organizations benefit from seamless integration with AWS services, global reach through AWS backbone infrastructure, and flexible deployment options. Direct Connect is particularly valuable for enterprises requiring hybrid cloud architectures, regulated industries with strict security requirements, applications needing consistent performance, and organizations with high-bandwidth data transfer needs where internet connectivity proves inadequate or cost-prohibitive.

Service Integration

AWS Direct Connect integrates deeply with core AWS networking and compute services. It connects directly to Amazon VPC through private virtual interfaces, enabling secure access to EC2 instances, RDS databases, and other VPC resources:

- Integration with AWS Transit Gateway enables scalable multi-VPC connectivity across regions and accounts
- Public virtual interfaces provide access to all AWS public services including S3, CloudFront, and API Gateway
- Direct Connect works with AWS Site-to-Site VPN for encrypted connections, AWS Cloud WAN for unified network management, and AWS Outposts for hybrid edge infrastructure
- It supports AWS Backup for data protection, integrates with Route 53 for DNS resolution, and enhances AWS Elastic Disaster Recovery deployments with reliable private connectivity for mission-critical workloads

Onboarding and Offboarding

Customers begin by assessing network requirements and selecting an appropriate AWS Direct Connect location near their premises or through an AWS Direct Connect Partner. The process involves ordering a connection through the AWS Management Console using the Connection wizard, selecting bandwidth requirements (50 Mbps to 400 Gbps), and choosing resiliency levels (Development/Test, High Resiliency, or Maximum Resiliency):

- After connection approval, customers download the Letter of Authorization and Connecting Facility Assignment (LOA-CFA), coordinate with their network provider or colocation facility for cross-connect installation, configure virtual interfaces for accessing AWS services, and establish BGP sessions
- AWS provides comprehensive documentation, tutorials, and support throughout the setup process to ensure successful deployment

Getting Started Guide:

<https://docs.aws.amazon.com/directconnect/latest/UserGuide/Welcome.html>

Data Removal

Direct Connect offboarding involves deleting virtual interfaces, terminating BGP sessions, and removing physical cross-connects at Direct Connect locations. Customers must coordinate with network providers to disconnect physical cables and return any leased equipment. Data removal is handled through standard AWS service deletion processes for connected resources like VPCs and S3 buckets. The physical Direct Connect connection itself contains no customer data, as it only provides network connectivity. Organizations should follow their internal data governance procedures for any connected AWS services before terminating Direct Connect connections.

Backup/Restore and Disaster Recovery

Direct Connect enhances disaster recovery capabilities by providing reliable, private network connectivity for backup and recovery operations. It integrates with AWS Elastic Disaster Recovery to establish secure replication channels between on-premises and AWS environments. The service supports high-bandwidth data transfers for backup operations to services like S3 and AWS Backup. Direct Connect enables consistent network performance for disaster recovery scenarios, reducing recovery time objectives (RTO) through predictable connectivity. However, Direct Connect itself does not provide backup capabilities - it serves as the reliable network foundation enabling other AWS backup and disaster recovery services.

Backup Capabilities

Direct Connect does not provide native backup capabilities as it is a network connectivity service. It does not integrate directly with AWS Backup service since there is no data to back up - Direct Connect only provides network transport:

- However, it significantly enhances backup operations by providing dedicated, high-bandwidth connections for data transfer to AWS storage services
- Organizations use Direct Connect to reliably transfer backup data to S3, EBS snapshots, and other AWS storage services with consistent performance and reduced costs compared to internet-based transfers

Disaster Recovery

Direct Connect supports disaster recovery strategies but does not directly integrate with AWS Elastic Disaster Recovery as a protected resource. Instead, it serves as critical network infrastructure enabling reliable disaster recovery implementations:

- Direct Connect provides the stable, high-bandwidth connections necessary for continuous data replication, failover operations, and recovery procedures
- Organizations implement disaster recovery over Direct Connect by establishing redundant connections across multiple locations, using multiple virtual interfaces for different recovery scenarios, and combining Direct Connect with VPN connections for encrypted backup paths when required

Recovery Objectives

Direct Connect helps customers meet Recovery Point Objective (RPO) and Recovery Time Objective (RTO) requirements by providing consistent, high-bandwidth network connectivity that reduces data replication lag and accelerates recovery operations. The reliable network performance enables more frequent backup windows and faster data synchronization, improving RPO. During disaster events, Direct Connect's predictable connectivity reduces network-related delays in failover procedures, helping achieve better RTO. Multiple connection options and redundancy features minimize single points of failure, ensuring disaster recovery systems remain accessible when needed most.

Service Constraints

Service Quotas:

<https://docs.aws.amazon.com/directconnect/latest/UserGuide/limits.html>

FAQ: <https://aws.amazon.com/directconnect/faqs/>

Technical Requirements

Service Documentation:

<https://docs.aws.amazon.com/directconnect/latest/UserGuide/index.html>

User Guide:

<https://docs.aws.amazon.com/directconnect/latest/UserGuide/Welcome.html>

API Reference:

<https://docs.aws.amazon.com/directconnect/latest/APIReference/index.html>

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/directconnect/pricing/>

Cost Optimization

Direct Connect offers several cost optimization strategies including right-sizing connections based on actual bandwidth utilization patterns, using hosted connections for lower bandwidth requirements to reduce port hour costs, implementing data transfer optimization by routing traffic through Direct Connect instead of internet gateways to reduce data transfer charges, and leveraging SiteLink for site-to-site connectivity to eliminate multiple internet circuits. Organizations can optimize costs by consolidating multiple connections through Link Aggregation Groups (LAG), using Direct Connect Gateway to share connections across multiple VPCs and accounts, and implementing traffic engineering to maximize utilization of existing connections before adding capacity.

Savings Considerations

Primary cost savings come from reduced data transfer charges compared to internet-based transfers, elimination of multiple internet circuits through consolidated Direct Connect connectivity, and predictable monthly costs through port hour pricing models. Organizations achieve significant savings on high-volume data transfers, reduced telecommunications costs by replacing multiple internet connections with consolidated Direct Connect access, and operational cost reductions through simplified network management:

- Additional savings include reduced need for VPN licensing and management overhead, lower latency enabling more efficient application performance, and the ability to negotiate better rates with telecommunications providers for dedicated circuits
- Enterprise customers often see 20-50% reduction in overall network costs when properly implementing Direct Connect for hybrid architectures