

The Snowflake Data Cloud

Snowflake is a single, integrated platform that enables every organization to mobilize their data with a near-unlimited scale, concurrency, and performance.

Built from the ground up for the cloud, Snowflake delivers a data platform that powers the AI Data Cloud with:

- › **Single Platform:** Unified data warehousing, data lakes, data engineering, data science, and data applications
- › **Multi-Cloud:** Run anywhere - AWS, Azure, Google Cloud
- › **Near-Zero Maintenance:** No infrastructure to manage, automatic scaling, and optimization
- › **Instant Elasticity:** Scale compute and storage independently in seconds
- › **Secure Data Sharing:** Share live data instantly without copying or moving

Snowflake separates compute from storage, enabling unlimited concurrency and linear scalability at any scale.



Data Warehousing

Industry-leading cloud data warehouse with unlimited scale, performance, and concurrency for all your analytics workloads.

- › **Virtual Warehouses:** Independent compute clusters with automatic scaling and suspend/resume capabilities
- › **Multi-Cluster Warehouses:** Automatic scaling to handle unlimited concurrent users without performance degradation
- › **Zero-Copy Cloning:** Instant cloning of databases, schemas, and tables without duplicating storage
- › **Time Travel:** Query, restore, and clone data from any point in the past 90 days
- › **Result Caching:** Automatic caching of query results for instant response times
- › **Search Optimization:** Point lookup and selective filter queries up to 100x faster



Data Engineering

Complete data pipeline platform for ingestion, transformation, and orchestration of complex data workflows.

- › **Snowpipe:** Continuous, automated data ingestion as files arrive in cloud storage
- › **Snowpipe Streaming:** Low-latency streaming ingestion for real-time data (sub-second)
- › **Tasks & Streams:** Native CDC and workflow orchestration without external tools
- › **Dynamic Tables:** Declarative data pipelines that automatically refresh based on dependencies
- › **External Tables:** Query data in external storage without loading into Snowflake
- › **Data Loading:** Bulk loading from cloud storage, on-premises, and third-party sources



OpenFlow & PostgreSQL

Visual data pipeline builder and PostgreSQL compatibility for seamless migrations.

- › **OpenFlow:** Low-code/no-code visual interface for building data pipelines with drag-and-drop
- › **Pipeline Orchestration:** Visual DAG builder for complex workflows without code
- › **Snowflake PostgreSQL:** PostgreSQL-compatible interface for easy migration from Postgres databases
- › **Wire Protocol Support:** Connect PostgreSQL clients and tools directly to Snowflake
- › **SQL Dialect Compatibility:** Support for PostgreSQL syntax and functions
- › **Migration Tools:** Automated migration from PostgreSQL with minimal code changes

Industry-leading open catalog and governance solution for interoperable, multi-engine data access.

Polaris Catalog (Open Source)

- › **Open Apache Iceberg Catalog:** Fully open-source REST catalog donated to Apache Foundation
- › **Multi-Engine Support:** Use with Spark, Flink, Trino, Presto, Dremio, and more
- › **Vendor Neutral:** No lock-in - works with any compute engine
- › **ACID Transactions:** Full transactional consistency across engines

Apache Iceberg Tables & External Catalogs

- › **Iceberg Tables in Snowflake:** Native Iceberg support with full ACID, time travel, and schema evolution
- › **External Catalog Integration:** Connect to AWS Glue, Databricks Unity Catalog, and custom catalogs
- › **Open Table Formats:** Read and write Iceberg, Delta Lake (via Iceberg), and Hudi tables
- › **Catalog Federation:** Query across multiple catalogs seamlessly from Snowflake
- › **Zero ETL:** Access external Iceberg tables in S3, ADLS, and GCS without data movement

Horizon - Enterprise Catalog

- › **Universal Catalog:** Manage all data assets across clouds and engines
- › **Unified Governance:** Single control plane for access, security, and compliance
- › **Cross-Platform Discovery:** Search and discover data across all platforms
- › **Lineage Tracking:** End-to-end data lineage across systems

Data Lake & Lakehouses

Build open data lakehouses with support for Apache Iceberg, Parquet, and other open formats.

- › **Apache Iceberg Tables:** Full support for Iceberg with ACID transactions and time travel
- › **Iceberg REST Catalog:** Open catalog for multi-engine interoperability
- › **External Tables:** Query Parquet, JSON, Avro, ORC, and XML in cloud storage
- › **Unstructured Data:** Store and query PDFs, images, videos, and audio files
- › **Data Lake Export:** Unload Snowflake tables to open formats in cloud storage
- › **Hybrid Tables:** Row-based storage for operational workloads with OLTP performance

Snowpark

Developer framework for building data pipelines, ML models, and applications using Python, Java, and Scala.

- › **Snowpark Python:** DataFrame API for Python with pandas-like syntax and lazy evaluation
- › **Snowpark Java/Scala:** Type-safe APIs for JVM-based data engineering
- › **User-Defined Functions:** Write custom functions in Python, Java, Scala, JavaScript, SQL
- › **Stored Procedures:** Execute complex business logic with full procedural capabilities
- › **Third-Party Packages:** Import and use popular libraries (pandas, numpy, scikit-learn, etc.)
- › **Snowpark Container Services:** Run containerized workloads and microservices on Snowflake infrastructure

Cortex AI & Machine Learning

Fully managed AI and ML capabilities with LLM functions, ML models, and vector search - no separate infrastructure needed.

- › **Cortex LLM Functions:** Use Mistral, Llama, Gemma, Reka models via SQL for summarization, translation, sentiment
- › **Cortex AI SQL:** Natural language to SQL with conversation history and semantic understanding
- › **Cortex Search:** Hybrid search combining semantic vector search with keyword search
- › **Cortex Analyst:** Text-to-SQL agent with semantic layer understanding
- › **Snowflake Intelligence:** AI-powered insights and recommendations across your data
- › **Snowflake ML:** End-to-end ML with feature engineering and model management
- › **Model Registry:** Centralized repository for models from any framework
- › **ML Functions:** Forecasting, anomaly detection, classification via SQL

Intelligence & Extensions

AI-powered capabilities and extensibility through MCP and knowledge extensions.

- › **Snowflake Intelligence:** AI agent that understands your data, suggests queries, and provides insights automatically
- › **Knowledge Extensions:** Connect external knowledge bases and APIs to enhance AI queries
- › **Managed MCP Server:** Model Context Protocol server for AI agents - secure, governed LLM access to your data
- › **Semantic Understanding:** AI learns your business terminology and metrics definitions
- › **Query Suggestions:** AI-powered query recommendations based on data patterns
- › **Data Profiling:** Automatic statistical analysis and data quality insights



Data Sharing & Marketplace

Securely share live data and access thousands of third-party datasets without ETL or data movement.

- › **Secure Data Sharing:** Share live data instantly without copying - consumers see real-time updates
- › **Data Marketplace:** Access 2000+ free and paid datasets from providers worldwide
- › **Data Exchange:** Private data exchanges for controlled sharing within your ecosystem
- › **Listings:** Publish data products, apps, and AI/ML models to consumers
- › **Cross-Cloud Sharing:** Share data across AWS, Azure, and Google Cloud regions
- › **Reader Accounts:** Share with non-Snowflake customers without them needing an account



Streamlit & Applications

Build and deploy data applications, dashboards, and AI apps directly in Snowflake with Python.

- › **Streamlit in Snowflake:** Native Python framework for building interactive data apps
- › **No DevOps Required:** Deploy apps directly in Snowflake with built-in security and governance
- › **Native Apps Framework:** Build and monetize data applications on Snowflake
- › **Snowflake Notebooks:** Collaborative notebooks with Python, SQL, and visualizations
- › **Custom Dashboards:** Build role-based dashboards with real-time data
- › **App Marketplace:** Discover and install pre-built applications from partners



Governance & Security

Enterprise-grade security, privacy, and compliance built into every layer of the platform.

- › **Role-Based Access Control:** Fine-grained access control with hierarchical roles
- › **Data Masking:** Dynamic and static masking policies for PII and sensitive data
- › **Row Access Policies:** Row-level security based on user context
- › **Tag-Based Policies:** Apply governance policies using object tags
- › **Data Classification:** Automatic identification and tagging of sensitive data
- › **Compliance:** SOC 2 Type II, PCI-DSS, HIPAA, HITRUST, ISO 27001, FedRAMP
- › **Encryption:** End-to-end encryption with automatic key management



Monitoring & Observability

Comprehensive monitoring, cost management, and optimization tools built into the platform.

- › **Account Usage Views:** Detailed usage metrics for queries, storage, compute, and data transfer
- › **Query Profile:** Visual execution plans and performance insights for every query
- › **Resource Monitors:** Set credit quotas and alerts to control costs
- › **Query History:** Complete audit trail with 365-day retention
- › **Performance Monitoring:** Real-time dashboards for warehouse utilization and query performance
- › **Cost Management:** Granular cost attribution by warehouse, user, and query



Collaboration & Development

Modern development tools and collaboration features for data teams.

- › **Snowsight:** Modern web UI with collaborative worksheets and dashboards
- › **Git Integration:** Native Git integration for version control of SQL and Python code
- › **Snowflake CLI:** Command-line tool for managing Snowflake resources
- › **VS Code Extension:** Develop and debug Snowflake code in Visual Studio Code
- › **Database Replication:** Replicate databases across regions and clouds for DR and performance
- › **Fail-safe:** 7-day disaster recovery for deleted or corrupted data



Business Intelligence & Viz

Native and partner BI tools for analytics, reporting, and data visualization.

- › **Snowsight Dashboards:** Built-in dashboards with SQL-based visualizations
- › **Partner Connect:** One-click integration with Tableau, Power BI, Looker, ThoughtSpot
- › **JDBC/ODBC Drivers:** Native connectors for all major BI and ETL tools
- › **Materialized Views:** Precomputed query results for fast dashboard performance
- › **Snowflake Connector:** Optimized connectors for Spark, Kafka, Python, Node.js
- › **REST API:** Comprehensive REST API for custom integrations

Multi-Cloud & Global

Run Snowflake on any cloud, in any region, with seamless data sharing across clouds.

 AWS

 Azure

 Google Cloud

- › **35+ Cloud Regions:** Available in major regions worldwide
- › **Cross-Cloud Sharing:** Share data between AWS, Azure, and GCP
- › **Cross-Region Replication:** Automatic replication for DR and data locality
- › **Private Connectivity:** AWS PrivateLink, Azure Private Link, GCP Private Service Connect
- › **Tri-Secret Secure:** Customer-managed encryption keys with your KMS
- › **Business Critical Edition:** Enhanced security with dedicated metadata store

Data Integration & Connectors

Extensive ecosystem of connectors and integrations for seamless data movement.

- › **Partner Connect:** 200+ pre-built integrations with data tools and platforms
- › **Snowflake Connector:** Native connectors for Spark, Kafka, Python, .NET, Node.js, Go
- › **Change Data Capture:** Native CDC with Streams for real-time data pipelines
- › **Data Lake Integration:** Direct access to data in S3, Azure Blob, GCS
- › **Database Replication:** Continuous replication from operational databases
- › **API Integration:** REST and SQL APIs for custom integrations

Developer Experience

Modern developer tools and SDKs for building on Snowflake with your preferred languages.

- › **Snowflake Python API:** Pythonic API for managing Snowflake resources programmatically
- › **Snowflake CLI:** Command-line interface for CI/CD and automation
- › **Terraform Provider:** Infrastructure-as-code with HashiCorp Terraform
- › **dbt Support:** Native support for dbt with optimized performance
- › **OpenAPI Spec:** REST API with OpenAPI 3.0 specification
- › **Developer Docs:** Comprehensive documentation, tutorials, and quickstarts

Performance & Scale

Industry-leading performance with automatic optimization and unlimited scale.

- › **Automatic Clustering:** Automatic micro-partition clustering for optimal performance
- › **Query Acceleration:** Offload portions of queries to serverless compute for faster results
- › **Materialized Views:** Automatically maintained views for sub-second query performance
- › **Columnar Storage:** Optimized columnar format with automatic compression
- › **Pruning:** Automatic partition pruning eliminates scanning unnecessary data
- › **Unlimited Concurrency:** Multi-cluster warehouses scale to support unlimited users
- › **Directed Joins:** Enforced join order for query optimization (Oct 2025)

What's New in 2025

Latest innovations and features released in 2025 - cutting-edge capabilities at the forefront of data cloud technology.

AI & ML Innovations (Oct 2025)

- › **AI_EXTRACT AISQL Function:** Extract structured data from unstructured sources using AI (GA)
- › **Cortex Search Component Scores:** Detailed scoring for hybrid search results (Preview)
- › **CORTEX_EMBED_USER Role:** Fine-grained access control for embeddings (Oct 13)
- › **Named Scoring Profiles:** Customizable search relevance for Cortex Search (GA Oct 3)
- › **Cortex Agents for Teams:** Microsoft Teams & Copilot integration (Preview Sep 30)

Developer Experience (2025)

- › **dbt Projects on Snowflake:** Native dbt integration with improved debugging (Preview)
- › **Snowflake Scripting UDFs:** User-defined functions in Snowflake Scripting (GA)
- › **CONTINUE Handlers:** Advanced error handling in Snowflake Scripting

Security & Governance (2025)

- › **Tri-Secret Secure w/ Private Connectivity:** Customer-managed keys with PrivateLink (Oct 6)
- › **Hybrid Tables on Azure:** OLTP performance now available on Microsoft Azure (GA Oct 6)
- › **Hybrid Table Tri-Secret Support:** Enhanced encryption for operational data (Sep 29)
- › **Organization User Groups:** Cross-account user management with organizational listings (Preview Oct 9)
- › **OBJECT_VISIBILITY Property:** Control object visibility across accounts (Preview Oct 1)
- › **Declarative Sharing:** Infrastructure-as-code for data sharing (Preview Sep 30)
- › **Data Clean Rooms Updates:** Enhanced privacy-preserving data collaboration (Oct 2025)

Data & Analytics (Oct 2025)

- › **Verified Query Suggestions:** AI-powered query recommendations with validation (Preview Oct 9)
- › **Query Insights in Snowsight:** Advanced query performance analysis (GA Oct 7)
- › **Semantic Views:** Business-friendly data views in Snowsight (GA Oct 2)
- › **SQL Object Descriptions:** Cortex-powered automatic documentation (GA Sep 29)
- › **Lineage for Tasks & Procedures:** Track data flow dependencies (GA Oct 3)
- › **MERGE ALL BY NAME:** Simplified merge operations with column name matching

Open Catalog & Iceberg (2025)

- › **External OAuth for Open Catalog:** Enhanced security for catalog integrations (GA Sep 29)
- › **Iceberg Table Optimization:** Automatic compaction & optimization (GA)
- › **Auto-Refresh Catalog Links:** Automatic sync for Iceberg table creation

Source: [Snowflake Release Notes 2025](#) - Updated October 2025