



MODERNIZING GOVERNMENT FOR THE 21ST CENTURY **WITH SNOWFLAKE**

Seven Reasons to Switch from Oracle to the only Cloud Data Platform



CHAMPION
GUIDES

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IT IS TIME TO MOVE TO THE CLOUD

The President's Management Agenda lays out a long-term vision for modernizing the federal government. Some of the key challenges listed in this initiative are:

- **Structural issues.** Silos across federal agencies and offices can hurt cross-agency collaboration, resulting in fragmented citizen services or excessive cost.
- **Decision-making and processes.** Efficient and effective decision-making is fact-based and transparent. However, government agencies do not consistently apply data-driven decision-making practices. To orient decisions and accountability around service and results, agencies need to make smarter use of data and evidence.
- **Capabilities and competencies.** Antiquated, unsecured technology can leave the public frustrated and vulnerable. Too many federal employees perform outdated duties that rely on outdated skill sets, and the government often also struggles to award effective, timely contracts.

The Agenda clearly articulates how the government should accomplish the identified objectives, for example:

- Modern information technology must function as the backbone of how the government serves the public in the digital age. Meeting customer expectations; keeping sensitive data and systems secure; and ensuring responsive, multichannel access to services are all critical parts of the vision for modern government.
- Data, accountability, and transparency initiatives must provide the tools to deliver visibly better results to the public, while improving accountability to taxpayers for sound fiscal stewardship and results. Investments in policy, people, processes, and platforms are key elements of this transformation and require cross-agency cooperation to ensure an integrated data strategy that encompasses all relevant governance, standards, infrastructure, and commercialization challenges of operating in a data-driven world.

In addition, the Open Government Data Act of 2018 mandates expanding the government's use and administration of data to facilitate transparency, effective governance, and innovation.



A CLOUD DATA PLATFORM IS A FUNDAMENTAL REQUIREMENT

Moving an on-premises, legacy infrastructure to the cloud can be a nerve-racking prospect, and agencies often struggle with how to get started with cloud initiatives. However, there is good news: The well-known benefits of the cloud—including infinite elasticity, exponential cost savings, and superior data security—are easy to attain when you take the first step by modernizing your data platform.

Since you last licensed products from Oracle, things have changed. Today, it's possible to chart a new direction for your data platform while continuing to use Oracle's transactional platforms. This migration guide demonstrates how you can make more efficient use of your investments, address the challenges you've grappled with for years, and reap the benefits of a cloud data platform—all without putting your current infrastructure at risk.

STOP DRAINING PRECIOUS BUDGET DOLLARS IN EXPENSIVE ORACLE LICENSING

Many agencies have made huge investments in Oracle's engineered systems, and few of those multimillion dollar solutions are likely to have amortized fully. Some leaders may adopt the mindset that it's best to stick with their current infrastructure in order to realize a return on that investment. However, Oracle is now focusing on cloud-first initiatives, which means its support for on-premises environments is diminishing.

This perfect storm of Oracle's shifting priorities and your past investments is brewing. This is the perfect opportunity to remove excessive licensing costs that were otherwise unavoidable on premises. Whatever you spent on Oracle systems in the past is a sunk cost. Rather than doubling down, consider your future spending and select a cost-effective data platform that responds to today's data-driven decision-making needs.

It may surprise you to learn Oracle does not have a cloud-built data warehouse. Historically, Oracle has architected its relational databases to support data warehousing, but this makeshift solution works well only with Oracle-to-Oracle products. Although Oracle announced its autonomous data warehouse less than a year ago, that product is a cloud-washed product, not a cloud-built solution.

As an alternative, we'd like to introduce you to the only cloud data platform.

SNOWFLAKE: A SECURE AND EFFORTLESS APPROACH FOR FULL SPEED AND AGILITY

Meet Snowflake, the first and only cloud data platform. Snowflake changes the way data is stored, integrated, and analyzed, enabling your decision-makers, data analysts, and users to get all available insights.

Although Oracle products handle business transactions, how do you drive business intelligence, analytics, data science, visualization, and smart decision-making so you know exactly how your

business is performing? Using Snowflake, you can take all the information from your transactional systems, regardless of data type, and perform the heavy data lifting within Snowflake, where performance, security, scalability, and concurrency are built in.

This synergistic approach uses the investment you've already made in Oracle transactional databases by coupling it with the only cloud data platform solution that specifically addresses data analysis. And, because Snowflake was architected specifically for the cloud, you receive all the benefits of modern and secure data platform technology at drastically lower costs.

Snowflake customers include Capital One, Nike, Nielsen, Blackboard, PDX, and the University of Notre Dame. Will you be next? Before you decide, let us explain with seven reasons why Snowflake is your ideal cloud data platform.

**SEVEN REASONS SNOWFLAKE
WILL TAKE YOU SAFELY TO THE CLOUD**

REASON #1: SNOWFLAKE HELPS YOU REPURPOSE FUNDS PREVIOUSLY TRAPPED IN UNAVOIDABLE INFRASTRUCTURE COSTS

Everyone knows Oracle products are expensive and Oracle licensing is confusing. In fact, entire businesses exist to help Oracle customers understand licensing. Adding insult to injury, the complexity of Oracle applications can make it challenging to decipher which Oracle components you can replace with best-of-breed solutions without risking the sanctity of your entire infrastructure.

This situation might make you feel trapped in Oracle's plethora of solutions without a means to change direction or pick what's best for you. Because a move to the cloud is inevitable for federal organizations, what better time is there than now to take control and move to the best solution for your data warehousing needs? Set your sights on smart diversification to make your ecosystem faster and easier to use and a more efficient use of your investment dollars.

CONSUMPTION-BASED, PER-SECOND PRICING

Snowflake provides transparency around cost and usage. In fact, you pay only for what you use with Snowflake. Cost adjusts dynamically and on

a per-second consumption basis, so you can rest assured that what you put in financially is equivalent to what you get out.

Snowflake also enables you to avoid purchasing expensive equipment or dealing with recurring annual costs that eat into your budget. As a cloud data platform, Snowflake builds elasticity into its out-of-the-box, secure data environment. When usage spikes, you can dial computing power up, on the fly or automatically, to gain nearly an infinite amount of computing power. Snowflake never stands between you and data-driven insights. Consider it instant elasticity in computing power and financial output.

Snowflake leverages existing agency investments in data analytics tools, enabling you to remove Oracle costs and make BI tools more performant. Resulting in happy end users, better quality data insights, and increased mission success.



REASON #2: WITH SNOWFLAKE, YOU CAN FOCUS ON DELIVERING DATA ANALYTICS TO THE MISSION, NOT DATABASE ADMINISTRATION

Has your team ever struggled with the complexity of your Oracle applications and then lacked the customer support needed to fix the problems? Learning how to use Oracle

on-premises databases and accompanying applications can be a huge challenge for many organizations. The built-in intricacies of Oracle products take a long time to master.

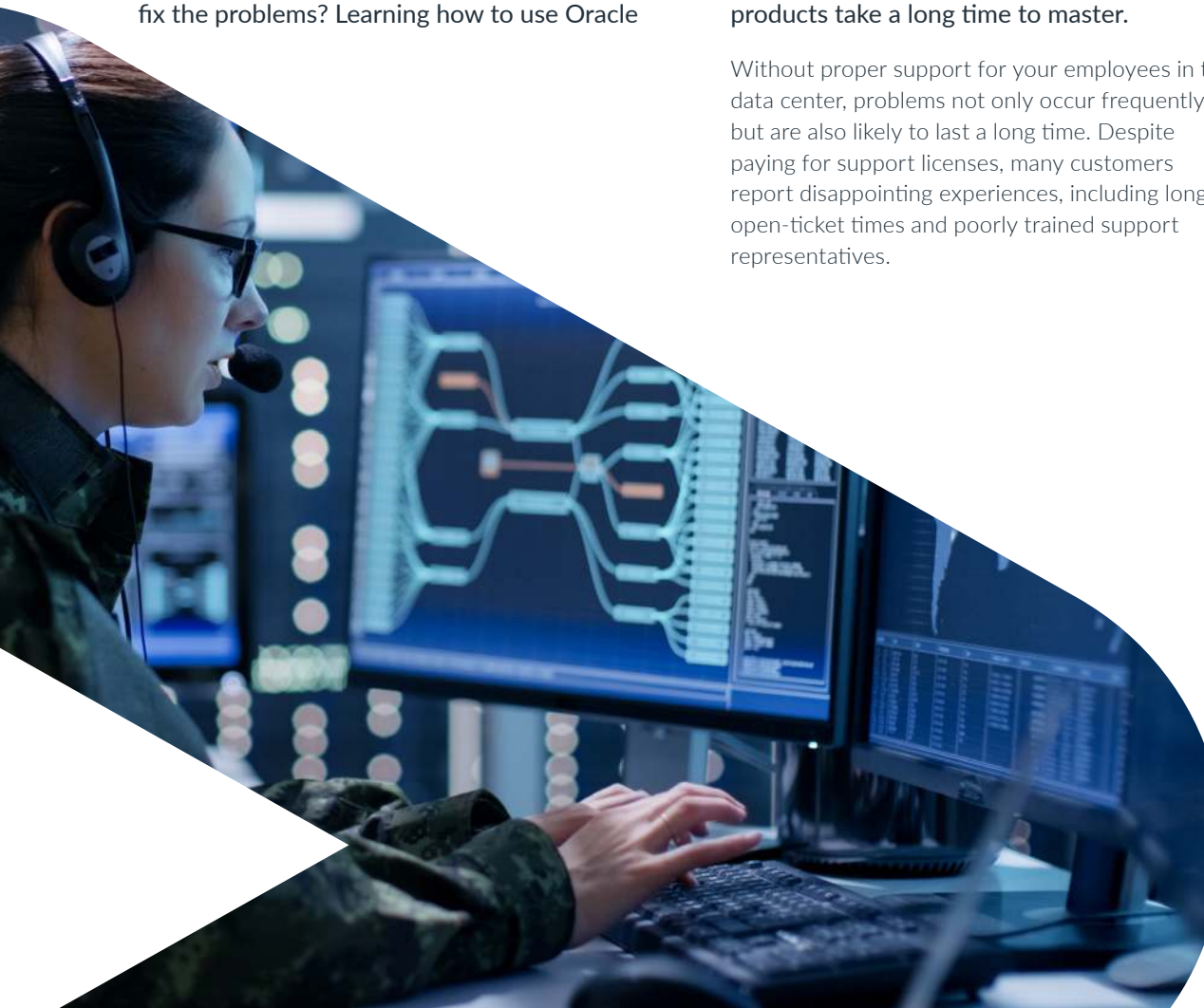
Without proper support for your employees in the data center, problems not only occur frequently but are also likely to last a long time. Despite paying for support licenses, many customers report disappointing experiences, including long open-ticket times and poorly trained support representatives.

SMOOTH CUSTOMER SUPPORT AT ALL TIMES

Snowflake is an enterprise-class cloud data platform which means you never need to worry about deploying hardware, configuring software, or optimizing the performance or security of your cloud data platform. Snowflake takes care of everything for you so your team can focus on using data, not managing the system.

For those moments when you need to speak to someone at Snowflake, you'll discover excellent service awaits, both live and digitally. Putting customers first is our number-one company value, because we believe it's vital to our customers and our business. And our customers have taken note: In the [2019 Analytical Data Infrastructure Market Study](#), Snowflake achieved the highest or second highest marks across all customer metrics in both customer experience and vendor credibility, and 100 percent of Snowflake customer respondents said they would recommend Snowflake to others.

Utilize Snowflake's managed services, eliminate administrative challenges and gain great support for your application users.



REASON #3: SNOWFLAKE BREAKS DOWN YOUR DATA SILOS

Perhaps the most important reason to invest in a cloud data platform is to ensure that users can access all of your data in one place. However, a common challenge today is that most legacy data platform don't support unstructured data in its various forms. Typically, teams need to invest time and effort to convert and load semi-structured data.

Although Oracle supports JSON, there are many other semi-structured data types (for example, Avro, Parquet, and XML) that you might need to benefit from the full breadth and depth of your data. Anytime you need multiple data repositories, data marts, or data lakes due to capacity limits, design limitations, or exorbitant costs, you're not maximizing data analysis capabilities. Fragmented data silos do not support fast and informed decision-making, which should be the goal of a data platform.

COMPREHENSIVE DATA-DRIVEN ANALYSIS

Snowflake accepts data exactly as it is. All of your semi-structured data (JSON, Avro, Parquet, and XML) is loaded and integrated alongside structured data in an easy and secure fashion. No additional work is required, so you can finally say goodbye to fragmented data silos.

You will save countless hours by loading semi-structured data directly into your cloud data platform, and everyone within your agency will

have access to one data source where they can run queries against any amount or type of data. With Snowflake, you treat your agency to instant and infinite up and down scalability.

DATA SHARING INTRA- AND INTER-AGENCY AND MORE

Fundamentally, traditional methods of data sharing address only one part of the challenge: moving data. Although traditional data warehouses and data lakes were designed to make data usable, they lack an architecture capable of enabling data sharing. Along with a lack of security and governance, among other things, their architectures cannot support concurrent access without cumbersome unloading and transferring in order to copy and move data from one agency to another agency or to other government and public-private data partners.

In contrast, Snowflake's patented multicloud, shared data architecture is the key to Snowflake Secure Data Sharing, which allows you to store, integrate, and analyze all your data, share data, and use shared data, all from a single solution.

With Snowflake Secure Data Sharing, data doesn't move, eliminating the cost, headache, and delays associated with legacy data sharing methods that deliver only slices of stale data. You can share read-only data and database objects without moving data, rebuilding schemas, or creating pipelines. Data is immediately available for use without delays.

No transformation, data movement, loading, or reconstruction is required. The result is a single source of truth where all the data across your agency resides and can be queried, without limits

Snowflake Secure Data Sharing enables secure, governed, and real-time data sharing across all of your agency's operational units and beyond, including with other agencies and governmental partners. Replicating or moving data becomes a challenge of the past, no matter who you share data with, so everyone can benefit from richer analytics. Snowflake Secure Data Sharing enables agencies to easily forge one-to-one, one-to-many, and many-to-many relationships to share data in new and imaginative ways.

REASON #4: SNOWFLAKE SUPPORTS CLOUD SMART, DATA-DRIVEN DECISION-MAKING AT GOVERNMENTAL SCALE

One huge frustration with transactional data warehouses is a lack of concurrency. Data-driven organizations want to provide access to all users and support multiple queries running at the same time. However, data warehouses often can't scale properly or handle compute clusters when contention occurs between workloads. As you reach capacity, queries either slow down or stop altogether. That means requesting additional resources, which requires time, money, and patience.

If users are querying data in one of Oracle's transactional data warehouses, they're likely impacting overall system performance and probably frustrating other users. Transactional data warehouses are not designed for multiple concurrent queries, nor do they provide results quickly. To resolve these issues, agencies should move data from transactional data warehouses to a data platform dedicated to analysis and visualization.

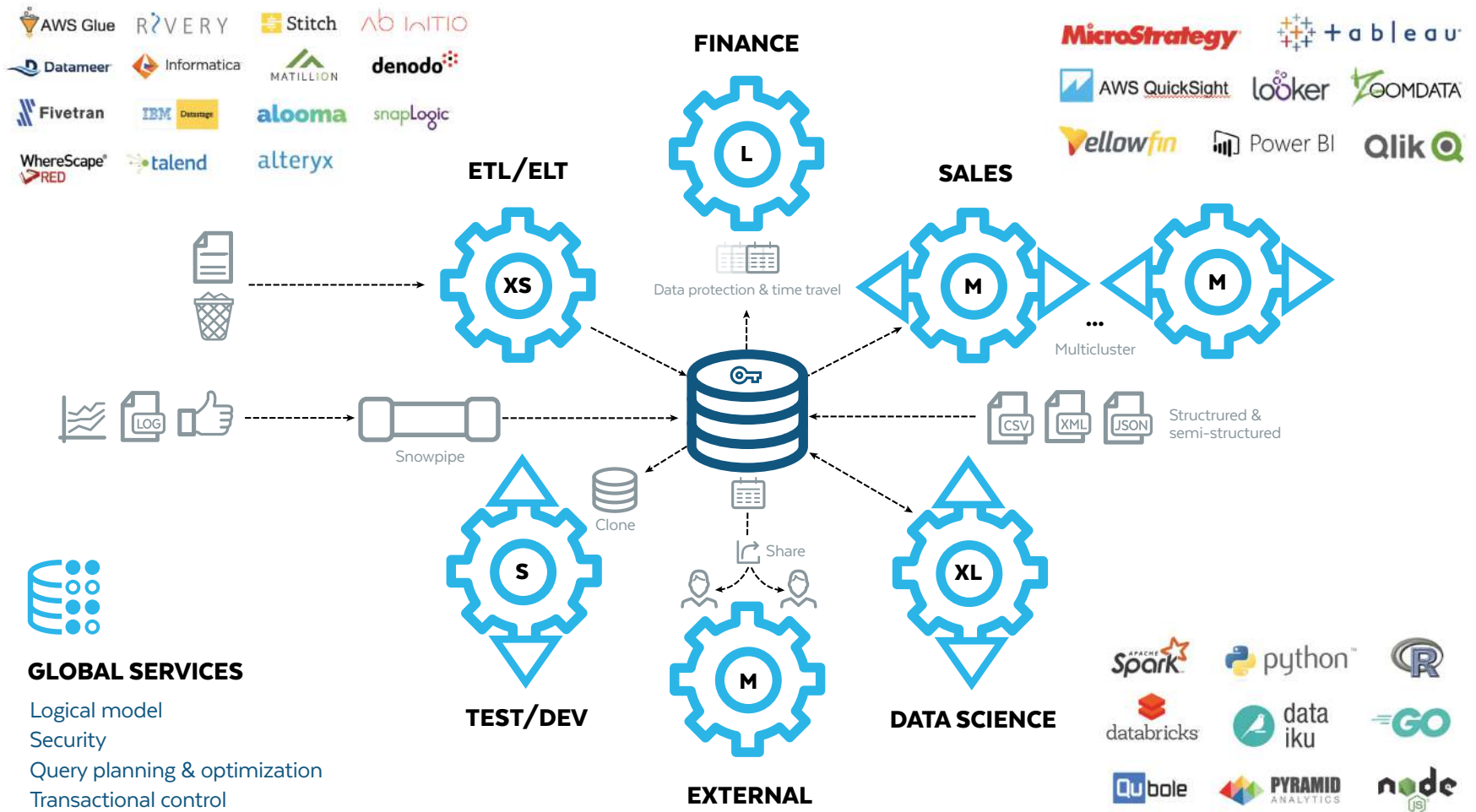
UNINTERRUPTED PERFORMANCE WITH UNLIMITED SCALABILITY

Do you want to allow any number of users to query a single copy of all of your data at the same time without performance degradation? Snowflake enables this capability with its patented, multicloud shared data architecture. In essence, multiple compute resources share the same data

while eliminating contention between workloads. With instant and near-infinite elasticity, computing power can automatically scale and users never feel a slowdown or disruption of their queries when concurrency surges occur. Snowflake provides an unlimited amount of cloud resources at all times.

Snowflake works with existing tooling and investments and makes them all highly performant and scalable! Users of one tool accessing snowflake data cannot affect other technology users performance. As a result, multiple users can work on the same data, using a variety of tools and the overall performance across workloads is maintained.

REASON #5: SNOWFLAKE SUPPORTS & LEVERAGES CURRENT AND FUTURE TECHNOLOGY INVESTMENTS



REASON #6: SNOWFLAKE HELPS YOU MEET THE FIVE ESSENTIAL CHARACTERISTICS NEEDED FOR NIST 800-145

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

This cloud model is composed of five essential characteristics, three service models, and four deployment models.

ESSENTIAL CHARACTERISTICS

On-demand self-service

Snowflake users can create a new data analytics warehouse for a specific mission/agency within minutes. A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

Broad network access

Snowflake can access data sources on premises or in the cloud. Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).

Resource pooling

Leverage Snowflake Secure Data Sharing to securely share data & resources across clouds effortlessly. The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.

Rapid elasticity

Snowflake users can spin resources up or down to meet performance, data scale or volatile concurrency demands within seconds. Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can

be appropriated in any quantity at any time.

Measured service

Snowflake bills consumption by the second. Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

REASON #7: SNOWFLAKE PROVIDES DATA SECURITY, COMPLIANCE, AND ANTI-FRAUD CAPABILITIES

Data breaches are a top threat for organizations, and they put everyone at risk. While keeping data within your four walls might feel safer, control does not equate to security. Contrary to popular belief, the majority of data breaches occur on premises, not in the cloud. If you operate an older system or lack full encryption across your data warehouse, you might be exposing your data to bad players.

Oracle offers security features, but do you know if the configuration, assembly, and management of those features have been properly handled? That responsibility often falls on your shoulders. Without regular testing, your ability to resist attacks is lowered, and you might be at high risk for security breaches.

SECURITY THAT'S STANDARD, NOT AN OPTION

Snowflake has security built into its DNA. Since inception, complete data security has been a crucial and core component of Snowflake. With an always-on secure data environment, you benefit from minimal administration and built-in performance without any knobs to turn or infrastructure to tweak.

To keep customer data safe, Snowflake employs the following security measures:

- **Safe data transmission:** Benefit from best-in-class encryption, which encrypts all data flowing into or out of Snowflake, both at rest and in transit.
- **Comprehensive protection:** Multifactor authentication, role-based access control, IP address whitelisting, federated authentication, and annual rekeying of encrypted data protects data.
- **Private network connection:** For stronger security and management, transmit data between your own virtual private network and Snowflake without accessing the internet.
- **Security validations:** Snowflake is accredited for SOC 2 Type 2 and PCI DSS compliance with support for HIPAA compliance. Snowflake is also FedRAMP Authorized (Moderate).
- **SOC1 Type 2, SOC2 Type 2 and ISO 27001:** Snowflake has completed attestation and audit.
- **HIPAA:** Snowflake is HIPAA compliant and is eligible to enter into a business associate agreement (BAA) with a covered entity.
- **PCI:** Snowflake is certified as PCI DSS compliant.
- **Snowflake protects customer data from unauthorized access or disclosure by maintaining technical and procedural measures in a manner consistent with NIST 800-53.**
- **Snowflake products hosted on AWS US East and Azure Government are FedRAMP Authorized for up to moderate risk impact levels.**

Snowflake removes the need for any customer configuration or ongoing management, so your teams can focus on what's most important: analyzing your data.

ACHIEVING AND MAINTAINING REGULATORY COMPLIANCE









Snowflake is a multi-tenant service that implements isolation at multiple levels. It runs inside a VPC, a logically isolated network section within the Amazon Web Services (AWS) cloud. The VPC enables Snowflake to isolate and limit access to its internal components. Snowflake works with certified third-party auditors to validate and maintain compliance needs:

Snowflake also engages third parties to perform annual penetration testing against its environment and platform.



CONCLUSION: TAKE ADVANTAGE OF THE CLOUD DATA PLATFORM NOW

Now is the perfect time to make the move to a cloud data platform. Through easy integration with Oracle systems and similar legacy architectures; instant elasticity to scale up, down, and out (concurrency); zero administrative headaches; intrinsic security and compliance; and better performance at a fraction of the cost, Snowflake allows you to embrace all the benefits a cloud data platform offers without disrupting your current operations:

	Task	 Ordinary DW On-premises	 Ordinary DW Cloud	 Modern Data Platform
 Infrastructure	Hardware	You	Cloud vendor	Built-in
	Software	Distribution	Cloud vendor	Built-in
	Hardware cluster setup	You	You	Built-in
	Software provisioning	Tools	Tools	Built-in
 Data & service protection	Data protection & retention	Platform or Add-on	Platform or Add-on	 Cloud Data Platform
	Node failure protection/recovery	You	You	
	Disaster recovery	You	You	
	Service monitoring & alerting	You	You	
 Security	Physical security	You	Cloud vendor	
	Deployment security	You	You	
	Security monitoring	You	You	
 Database management & tuning	Compute scaling	You	You	
	Index management	You	You	
	Data partitioning	You	You	
	Metadata & statistics management	You	You	
	Query optimization	You	You	

If your goal is to transform your agency into a truly data-driven business, you'll want to get started with Snowflake today.

- Affordability and transparency with per-second pricing
- Near-infinite scalability and multiclustering for modern data sharing
- Built-in security, compliance, management, and performance
- A single source of truth with full support for semi-structured data
- A fully-managed cloud data platform with first-class customer support



ABOUT SNOWFLAKE

Snowflake shatters barriers that prevent organizations from unleashing the true value from their data. Thousands of customers around the world mobilize their data in ways previously unimaginable with Snowflake's cloud data platform—a solution for data warehousing, data lakes, data engineering, data science, data application development, and data exchange. Snowflake provides the near-unlimited scale, concurrency, and performance our customers in a variety of industries want, while delivering a single data experience that spans multiple clouds and geographies. Our cloud data platform is also the engine that drives the Data Cloud—the global ecosystem where thousands of organizations have seamless and governed access to explore, share, and unlock the potential of data. Learn how you can mobilize your data at snowflake.com/federal.

Snowflake is FedRAMP Authorized

