KLAS RESEARCH | Performance Insights

Segment Insights

Snowflake in Healthcare 2023

Streamlining Data Management & Improving Operations in the Cloud

Performance Report | **November 2023**

Table of Contents

Executive Insights

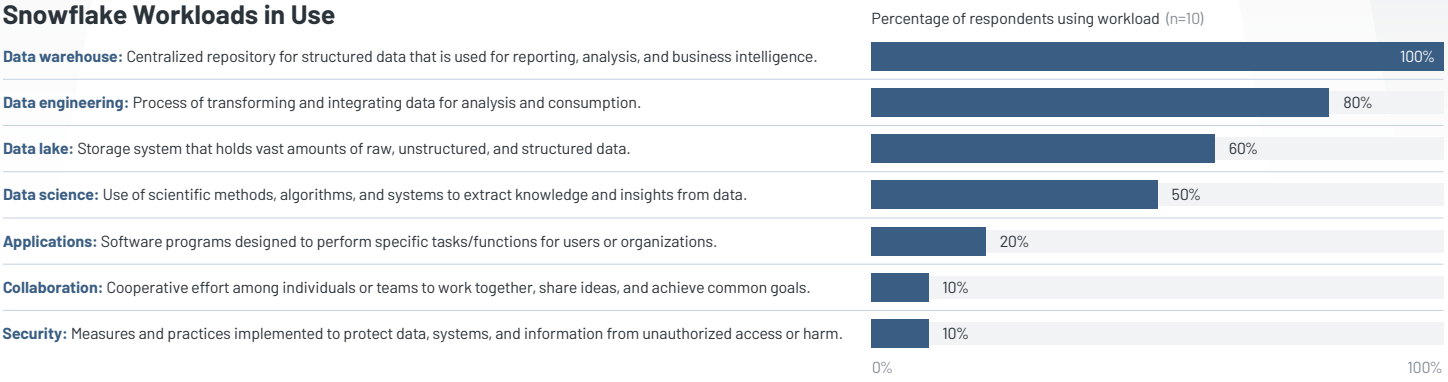
Snowflake in Healthcare 2023

Streamlining Data Management & Improving Operations in the Cloud

Healthcare organizations need to be able to access the right data to maintain efficient operations and provide high-quality patient care. However, gathering, integrating, and effectively using data from various sources can be complex and time consuming. To address this challenge, many organizations are turning to cloud solutions that streamline data management. Based on insights from 10 US healthcare provider organizations interviewed by KLAS between May 2023 and September 2023, this report examines the customer experience with Snowflake, including the workloads customers are using, achieved outcomes, and vendor performance.

Note: For more information on KLAS' data collection process and report sample size, see the About This Report section.

Snowflake Workloads in Use

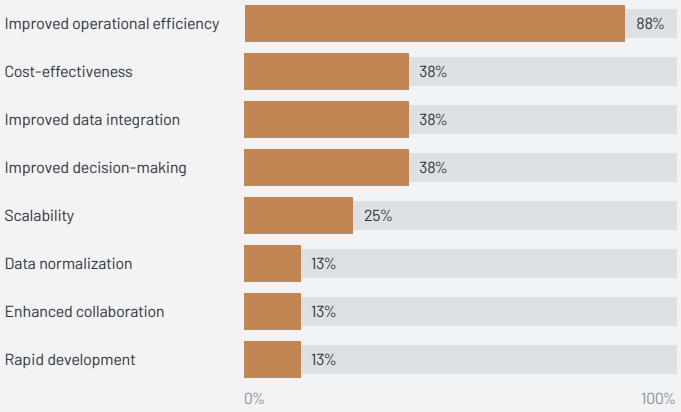


Improved Operational Efficiency Is Top Outcome; Customers Also Commonly Report Improved Data Integration, Decision-Making & Cost-Effectiveness

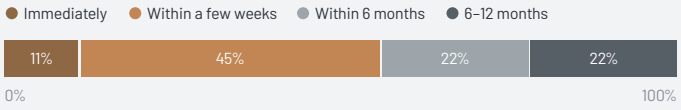
Most interviewed customers report improved operational efficiency after implementing the Snowflake Data Cloud, citing the consolidated data sources, simple maintenance and data management, and easy data loading and access. Additionally, almost 40% of respondents see improved data integration from using the Snowflake Data Cloud as their centralized data platform. Other commonly reported benefits include cost savings, scalability, and the ability to quickly analyze and gain insights into market share, profitability, and cost utilization. 56% of respondents report seeing outcomes either immediately or within a few weeks.

> *"Running the data in the Snowflake Data Cloud and normalizing it into all of our downstream platforms takes a couple of hours. If we want the same data in Microsoft's SQL Server product, that process will probably take several days."* —Director

Top Outcomes & Benefits from Using Snowflake (n=8)



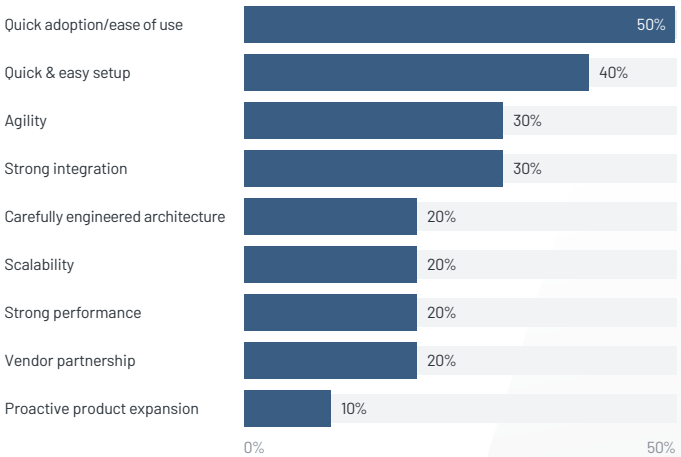
Time to See Outcomes (n=9)



Main Highlights of Customer Experience Are Quick Adoption & Easy Setup

Snowflake customers most frequently highlight how quickly the solution can be adopted as well as its simplicity and user-friendliness, both of which contribute to high customer satisfaction. Users are often enthusiastic to learn how to use the platform as it offers new capabilities without requiring extensive training. Respondents also say that the solution's similarity with Microsoft SQL Server facilitates quick adoption and streamlined, comprehensive data sharing. Implementations are noted for being easy and efficient, enabling some customers to be operational within minutes of going live. The solution's agility and broad integration capabilities are also seen as highlights.

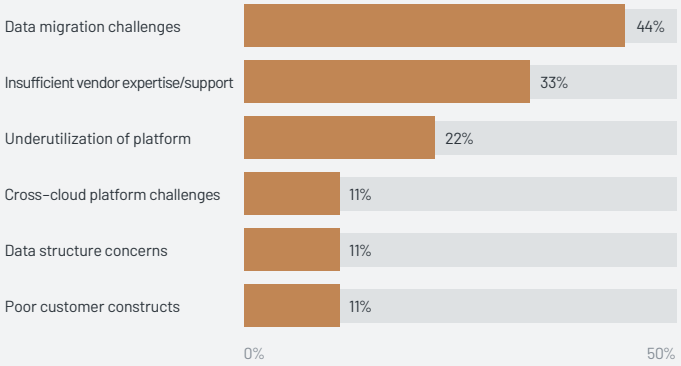
Main Highlights of Using Snowflake (n=10)



Data Migration Is the Biggest Obstacle for Healthcare Customers

Data migration is a common challenge for clients using the Snowflake Data Cloud. Healthcare organizations often use multiple third-party vendors and various data sources, and they need a consolidated tool set that supports data ingestion. While Snowflake excels in data transformation, data extraction is not their primary focus, which can make migrating databases to the Snowflake Data Cloud time consuming and difficult. Customers may potentially need to use separate extraction tools. Additionally, achieving integration with Active Directory for single sign-on can be challenging, so customers have to provide a comprehensive guide to enable users to navigate the intricacies of integration with other systems. The lack of internal expertise and guidance from Snowflake is another obstacle that some interviewed customers encounter, leading to underutilization of the platform. Customers want improved engagement and education from Snowflake to leverage the platform's benefits fully.

Main Obstacles with Snowflake (n=9)

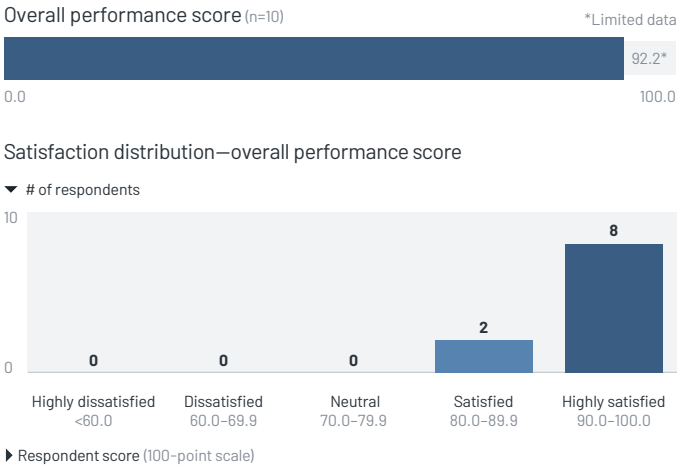


Most Respondents Are Highly Satisfied; All Would Buy Snowflake Again

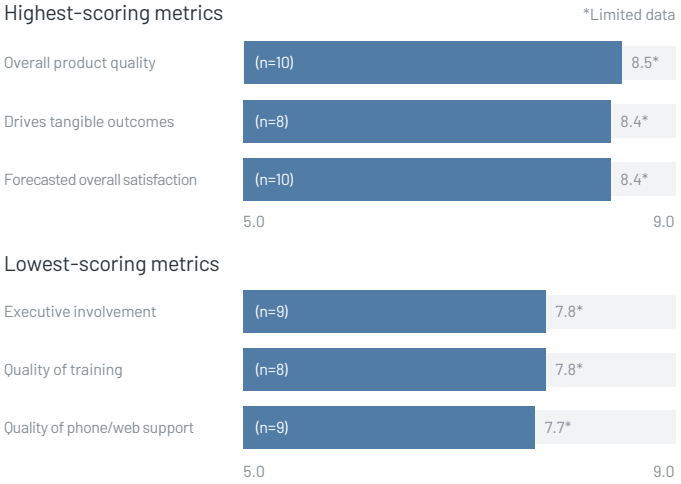
All interviewed customers using the Snowflake Data Cloud are either satisfied or highly satisfied. Respondents who rate Snowflake's product highest cite outcomes such as data visibility, cost savings, and improved efficiency. Quality of phone/web support is the vendor's lowest-rated metric; one respondent reports struggling with the support and feels Snowflake doesn't provide any guidance or education. Other customers also report that the training quality can vary widely. Despite these challenges, customers appreciate the vendor's commitment to keeping promises and providing fair pricing. All respondents consider Snowflake to be part of their long-term plans and anticipate expanding their use of the solution.

Overall Performance Score—Snowflake

(100-point scale)



Snowflake: Highest- and Lowest-Scoring Metrics (1–9 scale)



Snowflake—Standard Yes/No Indicators

Percentage of respondents who answered yes

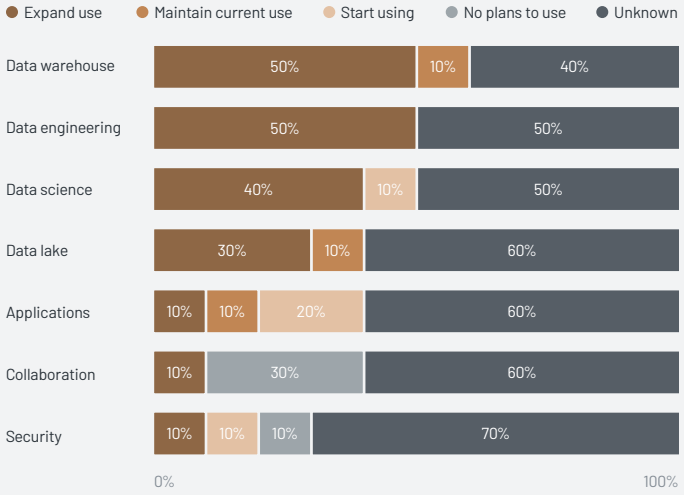
Customers' Future Plans Center on Applications, Data Engineering & Data Science

Applications: *"When the use cases warrant it, we will start looking at buying or subscribing to already built applications. . . . Snowflake's relatively recent release of Snowpark and its data environment will definitely extend our use of the Snowflake Data Cloud so that we either use existing applications or potentially build some small, niche applications."* —Manager

Data engineering: *"Our future plans with Snowflake are to continue to use their system and to grow and expand it across our organization. As we merge with additional entities and bring in their data sets, our environment is going to continue to grow. We are going to have new data sets, data models, and data sources all flowing into the Snowflake Data Cloud. The Snowflake Data Cloud is going to be the single source of truth for all of our downstream applications."* —Director

Data science: *"The data science workload in the Snowflake Data Cloud is definitely very interesting to us and is something that we are looking into. Data science capabilities are way too easy with the product, so we don't need a lot of other tools or products. We can do most of what we need to do within the platform."* —Manager

Future Plans with Snowflake Workloads (n=10)

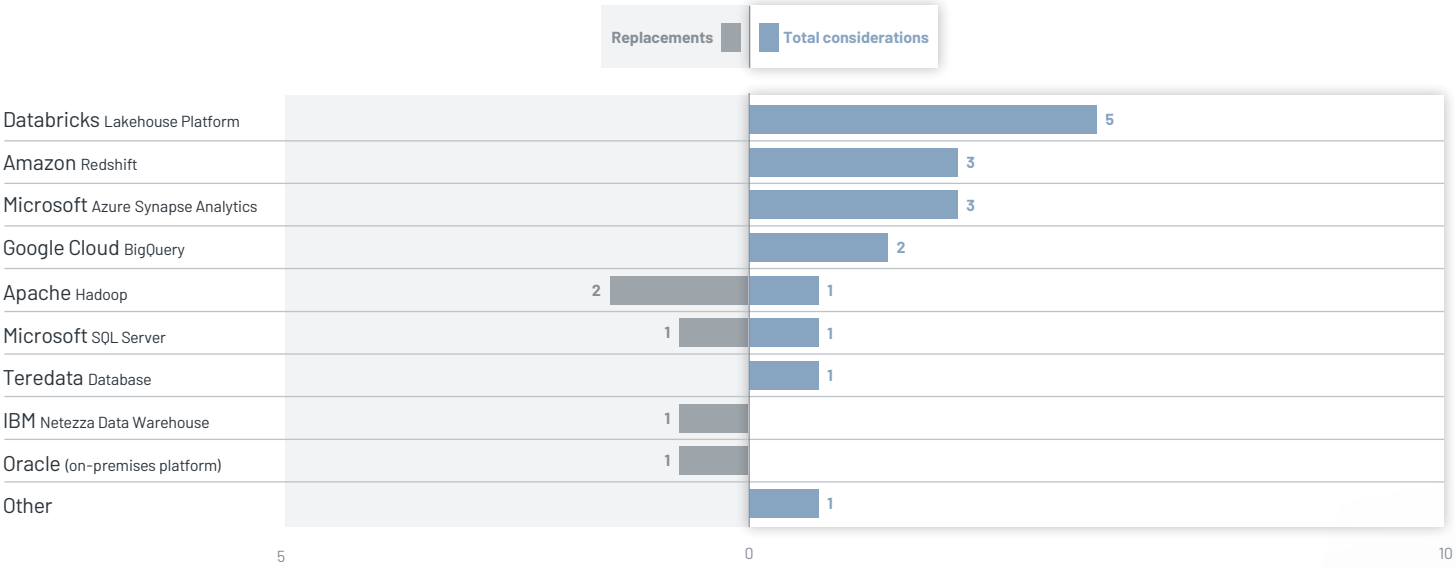


Decision Insights

The 10 Snowflake customers interviewed for this report considered several other vendors while making their purchasing decision. Databricks Lakehouse Platform was the most commonly considered alternative to Snowflake, closely followed by Amazon Redshift and Microsoft Azure Synapse Analytics. The reasons customers ultimately selected Snowflake include the technology's scalability and usability, the vendor's focus on the data platform, and better back-end technology. Respondents report that the Snowflake Data Cloud has effectively replaced older on-premises solutions such as Microsoft SQL Server, Apache Hadoop, IBM Netezza Data Warehouse, and Oracle.

Snowflake Customers' Considerations & Replacements

Vendors ordered by number of total considerations



Note: Data represents considerations and replacements of the 10 Snowflake customers interviewed for this report. These customers selected Snowflake within the past five years. Data was collected by KLAS between May 2023 and September 2023.

Note: The other considered vendor was not specified by the respondent.

Vendor-Provided Information: Snowflake

Target customer
Any organization looking to eliminate data silos (e.g., large IDNs, academic medical centers, small/midsize health systems, etc.)

Healthcare market
Global

Number of employees focused on healthcare
200+

Estimated healthcare revenue
$250M+ ARR

AI
Snowflake accelerates AI/ML workflows by providing one place to gain scalable, real-time access to all data (structured, semi-structured, unstructured) as well as third-party data via the Snowflake Marketplace. Additionally, Snowflake allows for models to be trained and productionized using the language of your choice via Snowpark and Snowpark Container Services. Our flexible compute architecture allows for simple, predictable scaling depending on cost/performance requirements. Snowflake provides a single platform to unify developers, ML operations engineers, and end-consumers with integrated notebooks, Snowpark ML Modeling, Snowflake Feature Store, and Model Registry.

Snowflake Healthcare Executive Interview

Jesse Cugliotta,
Global Industry Lead for Healthcare & Life Sciences

What is your background?
I have over 20 years of experience working in data and analytics, with a specific focus on clients in the healthcare and life sciences industries. I lead a global team of sub-industry-focused subject matter experts who drive the strategy for healthcare and life sciences at Snowflake.

What should healthcare organizations know about Snowflake's investment in and commitment to healthcare?
Our mission is to break down data silos and enable secure data collaboration across healthcare and life sciences organizations and the essential partners and technologies that support them. Snowflake's Healthcare & Life Sciences Data Cloud is an open, interoperable ecosystem that helps provider, payer, and life sciences organizations overcome fragmented data to improve health outcomes and reduce costs—all while maintaining the highest standards of data governance and privacy.

What are Snowflake's biggest differentiators?
With Snowflake's Healthcare & Life Sciences Data Cloud, healthcare organizations have a single, integrated, and cross-cloud data platform that eliminates technical and institutional data silos. This will enable organizations to securely centralize, integrate, and exchange critical and sensitive data at scale. Snowflake ensures high levels of data security and governance, and our built-in capabilities and extended partner network allow organizations to better meet compliance requirements and satisfy industry regulations.

What core outcomes should healthcare customers expect from Snowflake's solution?
Snowflake healthcare and life sciences customers realize benefits across the value chain. Common use cases include patient 360, SDOH/population health analytics, staff attrition predictions, supply chain optimization, trusted research environments, DICOM analytics, LLM-powered applications, and many others.

What is Snowflake's revenue model?
With Snowflake, customers can turn compute resources on and off and only pay for what they use. Customers can also take advantage of cost-effective compression in Snowflake to store near unlimited amounts of data and grow their analytics infrastructure with linear cost scalability.

Platform Technology Specifications

Cloud environment
AWS, Microsoft Azure, GCP

Development platform
SQL, Python, Java, Javascript, Scala, Snowpark Container Services

Database environment
Columnar OLAB SQL

Mobile application environment
Browser based

Security platform
NIST 800-171, SOC 1 Type 2, SOC 2 Type 2, ISO 27001

Confidentiality
HIPAA, BAAs

Data encryption
AES-256 (at rest); TLS (in-transit)

Integration approach
HL7 2.x, FHIR, APIs

HITRUST certification
Yes

Report Information

Share your experience with peers.
Take a short survey about your healthcare technology.

About This Report

Each year, KLAS interviews thousands of healthcare professionals about the IT solutions and services their organizations use. For this report, interviews were conducted between May 2023 and September 2023 using KLAS' **standard quantitative evaluation** for healthcare software, which is composed of 16 numeric ratings questions and 4 yes/no questions, all weighted equally. Combined, the ratings for these questions make up the overall performance score, which is measured on a 100-point scale. The questions are organized into six customer experience pillars—culture, loyalty, operations, product, relationship, and value.

Customer Experience Pillars

Category	Culture	Loyalty	Operations	Product	Relationship	Value
Standard software evaluation metrics	Proactive service Keeps all promises Product works as promoted	Would you buy again Part of long-term plans Forecasted satisfaction Overall satisfaction Likely to recommend	Quality of training Quality of implementation Ease of use	Overall product quality Product has needed functionality Supports integration goals Delivery of new technology	Quality of phone/ web support Executive involvement	Money's worth Avoids charging for every little thing Drives tangible outcomes

To supplement the customer satisfaction data gathered with the standard evaluation, KLAS also created a **supplemental evaluation** to delve deeper into several questions specific to Snowflake Data Cloud. This evaluation asked respondents the following questions:

1. What workloads are you using from Snowflake?
2. What are the use cases you are using Snowflake for?
3. What outcomes have you realized?
4. From go-live, how long did it take you to see clinical, financial, and/or operational outcomes?
5. What are the highlights of your experience with Snowflake?
6. What obstacles have you encountered with Snowflake?
7. How satisfied are you with Snowflake's consumption model?
8. Why did you select Snowflake? What other vendors did you replace/consider?
9. What are your future plans with Snowflake?

Sample Sizes

Sample sizes displayed throughout this report (e.g., n=16) represent the total number of *unique customer organizations* interviewed for a given vendor or solution. However, it should be noted that to allow for the representation of differing perspectives within any one customer organization, samples may include surveys from different individuals at the same organization. The table below shows the total number of unique organizations interviewed for each vendor or solution as well as the total number of individual respondents.

Some respondents choose not to answer particular questions, meaning the sample size for any given vendor or solution can change from question to question. When the number of *unique organization* responses for a particular question is less than 15, the score for that question is marked with an asterisk (*) or otherwise designated as "limited data." If the sample size is less than 6, no score is shown. Where textual content relies on limited data, the vendor name is marked with an asterisk. Note that when a vendor has a low number of reporting sites, the possibility exists for KLAS scores to change significantly as new surveys are collected.

	Standard Evaluations		Supplemental Evaluations		Estimated Health System Customer Base
	# of unique organizations	# of individual respondents	# of unique organizations	# of individual respondents	(# of unique organizations)
Snowflake	10	10	10	10	50–60

Reader Responsibility

KLAS data and reports are a compilation of research gathered from websites, healthcare industry reports, interviews with healthcare, payer, and employer organization executives and managers, and interviews with vendor and consultant organizations. Data gathered from these sources includes strong opinions (which should not be interpreted as actual facts) reflecting the emotion of exceptional success and, at times, failure. The information is intended solely as a catalyst for a more meaningful and effective investigation on your organization's part and is not intended, nor should it be used, to replace your organization's due diligence.

KLAS data and reports represent the combined candid opinions of actual people from healthcare, payer, and employer organizations regarding how their vendors, products, and/or services perform against their organization's objectives and expectations. The findings presented are not meant to be conclusive data for an entire client base. Significant variables—including a respondent's role within their organization as well as the organization's type (rural, teaching, specialty, etc.), size, objectives, depth/breadth of software use, software version, and system infrastructure/network—impact opinions and preclude an exact apples-to-apples comparison or a finely tuned statistical analysis.

KLAS makes significant effort to identify all organizations within a vendor's customer base so that KLAS scores are based on a representative random sample. However, since not all vendors share complete customer lists and some customers decline to participate, KLAS cannot claim a random representative sample for each solution. Therefore, while KLAS scores should be interpreted as KLAS' best effort to quantify the customer experience for each solution measured, they may contain both quantifiable and unidentifiable variation.

We encourage our clients, friends, and partners using KLAS research data to take into account these variables as they include KLAS data with their own due diligence. For frequently asked questions about KLAS methodology, please refer to klasresearch.com/faq.

Copyright Infringement Warning

Note

Performance scores may change significantly when additional organizations are interviewed, especially when the existing sample size is limited, as in an emerging market with a small number of live clients.

LEAD AUTHOR
Mike Smith
mike.smith@KLASresearch.com

CO-AUTHOR
Robbie Bullough
robbie.bullough@klasresearch.com

CO-AUTHOR
Sam Eaquinto
sam.eaquinot@KLASresearch.com

WRITER
Natalie Hopkins

DESIGNER
Jessica Bonnett

PROJECT MANAGER
Joel Sanchez

KLAS RESEARCH

Our Mission

Improving the world's healthcare through collaboration, insights, and transparency.

365 S. Garden Grove Lane, Suite 300
Pleasant Grove, UT 84062

Ph: (800) 920-4109

For more information about KLAS, please visit our website:
www.KLASresearch.com

Expanded Insights

Introduction

Healthcare organizations need to be able to access the right data to maintain efficient operations and provide high-quality patient care. However, gathering, integrating, and effectively using data from various sources can be complex and time consuming. To address this challenge, many organizations are turning to cloud solutions that streamline data integration and management. Based on insights from 10 US healthcare provider organizations interviewed by KLAS between May 2023 and September 2023, this report examines the customer experience with Snowflake, including the workloads customers are using, achieved outcomes, and vendor performance in areas such as technology delivery, value, and support. This Expanded Insights section provides a deeper look at Snowflake to help prospective customers determine whether the vendor is a viable option for their organizations.

Figure 1 **Respondent Job Level** (n=10)

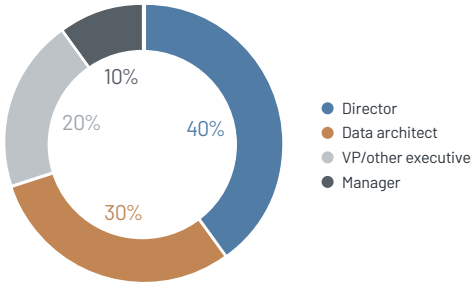
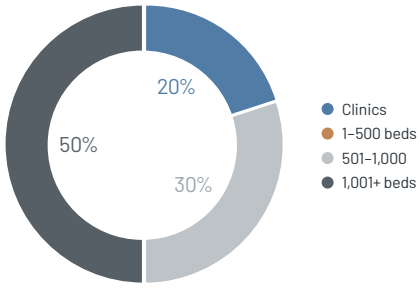


Figure 2 **Respondent Organization Size** (n=10)

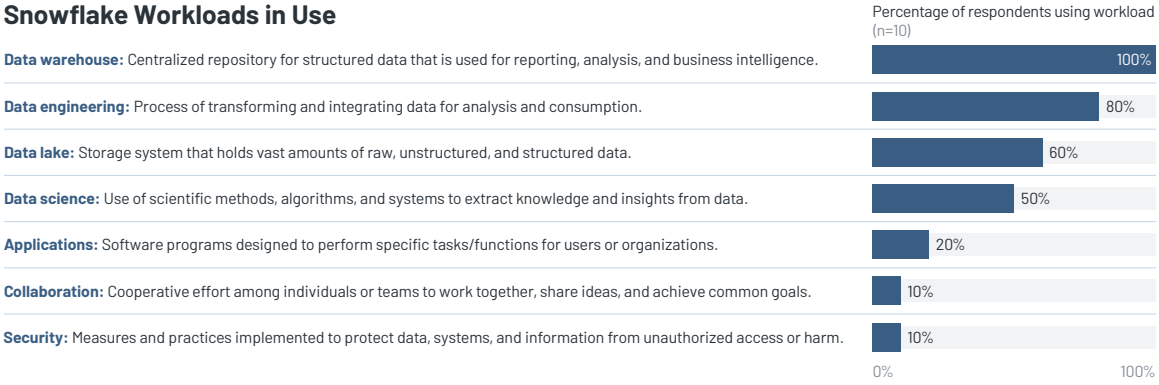


Snowflake Workloads & Outcomes

What Workloads Are Being Used?

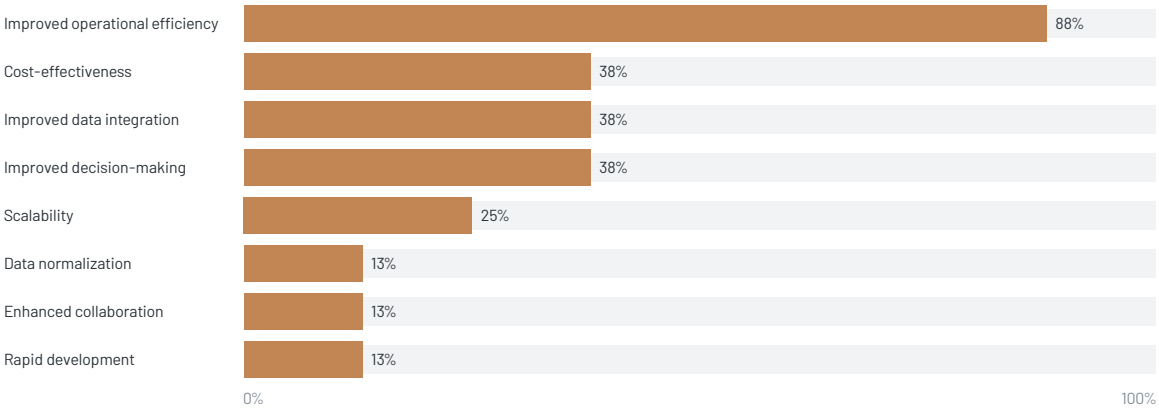
Healthcare customers of Snowflake report using a wide range of workloads, with data warehouse and data engineering being the most used. The data lake and data science workloads are also frequently used, while applications, collaboration, and security workloads are used less often.

Figure 3 **Snowflake Workloads in Use**



What Outcomes & Benefits Are Being Achieved?

Figure 4 **Top Outcomes & Benefits from Using Snowflake** (n=8)



Improved Operational Efficiency

Most interviewed customers report improved operational efficiency after implementing the Snowflake Data Cloud due to the platform's ability to consolidate data from multiple sources into a single data lake or warehouse. This consolidation enables easier data manipulation and querying, making previously time-consuming and complex tasks much faster and simpler. Data retrieval is also a quick process, thereby improving downstream application performance. Several clients also report achieving faster application and process development thanks to straightforward data maintenance/management and the ability to store large amounts of data. One manager shared, *"We have seen significantly improved efficiencies. We no longer need ETL developers. All we have to do is import data into the Snowflake Data Cloud, and from there, we can seamlessly work with it. Instead of transferring data between servers, everything resides in the Snowflake Data Cloud."*

Cost-Effectiveness & Scalability

Several interviewed respondents mention cost savings and scalability as benefits of using the Snowflake Data Cloud. They note that by harnessing the platform's scalable infrastructure and cost-effective storage options, they are able to efficiently store all their data (even in semi- or unstructured formats), leading to substantial cost savings from not needing expensive storage solutions. One respondent stated that the integration of Snowflake's storage with their existing enterprise data warehouse eliminates the need to transfer data, which further amplifies their cost savings.

Improved Data Integration

Nearly 40% of respondents report improved data integration as a key outcome. One customer highlighted that using the Snowflake Data Cloud as their organization's centralized data platform greatly enhances their integration capabilities. Another respondent emphasized that the seamless integration between the Snowflake Data Cloud and other components in their ecosystem enables them to effortlessly upload third-party data sets.

Improved Decision-Making

Some customers indicate that using the Snowflake Data Cloud enables their executives to more quickly analyze data on market share, profitability, and cost utilization. Previously, these customers had to use disparate solutions for analysis, which made it difficult to understand different factors and make well-educated decisions. These customers appreciate that they now have concrete answers and can leverage data science for analysis and product development.

Data Normalization, Enhanced Collaboration & Rapid Development

While less frequently mentioned, a few respondents cite data normalization, enhanced collaboration, and rapid development as benefits of using the Snowflake Data Cloud. One respondent emphasized how efficiently the platform handles large volumes of patient data, noting that the process of normalizing and integrating billions of data rows into downstream platforms takes only a few hours (compared to several days with Microsoft SQL Server). Another customer highlighted that the platform fosters collaboration across different departments. A third respondent praised how the platform enables rapid development without the burden of traditional database maintenance.

Snowflake Customer Experience

How Quickly Are Outcomes & Benefits Being Achieved?

Figure 5 **Time to See Outcomes** (n=9)

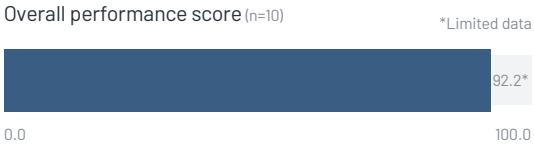
56% of respondents report experiencing clinical, financial, or operational improvements either immediately or within a few weeks. One customer stated that they were able to extract insights from the platform the very next day. Another client shared that they achieved quick wins in the system, particularly in their finance department, which had previously struggled with data visibility and processing due to outdated technology; the department immediately recognized the value of the system and capitalized on new data sets to identify opportunities.

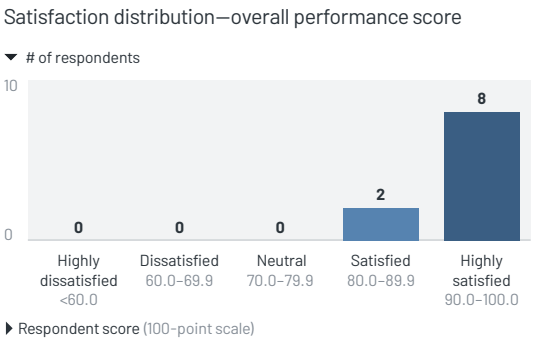
While some clients saw results within a short time frame, it took several months for others to see outcomes. One respondent acknowledged that the longer time to outcomes was likely due to internal challenges. Additionally, certain use cases may simply require more time to demonstrate value. For example, one customer organization that integrated data from their EHR and other applications into the Snowflake Data Cloud waited over six months before seeing benefits. However, they emphasized that they received continuous value as they scaled, citing that a significant amount of data was being shared with them frequently and quickly.

All Respondents Are Satisfied with Vendor

All interviewed customers using the Snowflake Data Cloud are either satisfied or highly satisfied. Highly satisfied customers appreciate the product's design, performance, and scalability as well as its positive impact on decision-making and operations. They also highlight Snowflake's proactive communication. One less-satisfied respondent views the Snowflake Data Cloud as a premier data platform, but they also note that the platform is more costly than expected, that the post-sales support is not as helpful as the pre-sales support, and that the frequent turnover among engineers is frustrating.

Figure 6 **Overall Performance Score—Snowflake**
(100-point scale)





Snowflake Is Part of Customers' Long-Term Plans; Post-Sales Support & Training Are Lacking

All respondents consider Snowflake to be part of their long-term plans and express no buyer's remorse; several even anticipate expanding their use of the solution. Satisfied customers view the platform as their single source of truth, describing it as a significant improvement over traditional database management systems. These customers cite immediate outcomes related to data visibility, cost savings, and improved efficiencies. They also speak highly of the vendor experience with Snowflake.

In terms of improvement opportunities, Snowflake is rated lowest for quality of phone/web support. While the salespeople and pre-sales engineers are noted as being engaged, some respondents struggle with the post-sales support from Snowflake due to lack of guidance or education. Other customers explain that the quality of the vendor's training can vary widely.

Figure 7 **Snowflake—Standard Ratings** (1–9 scale)

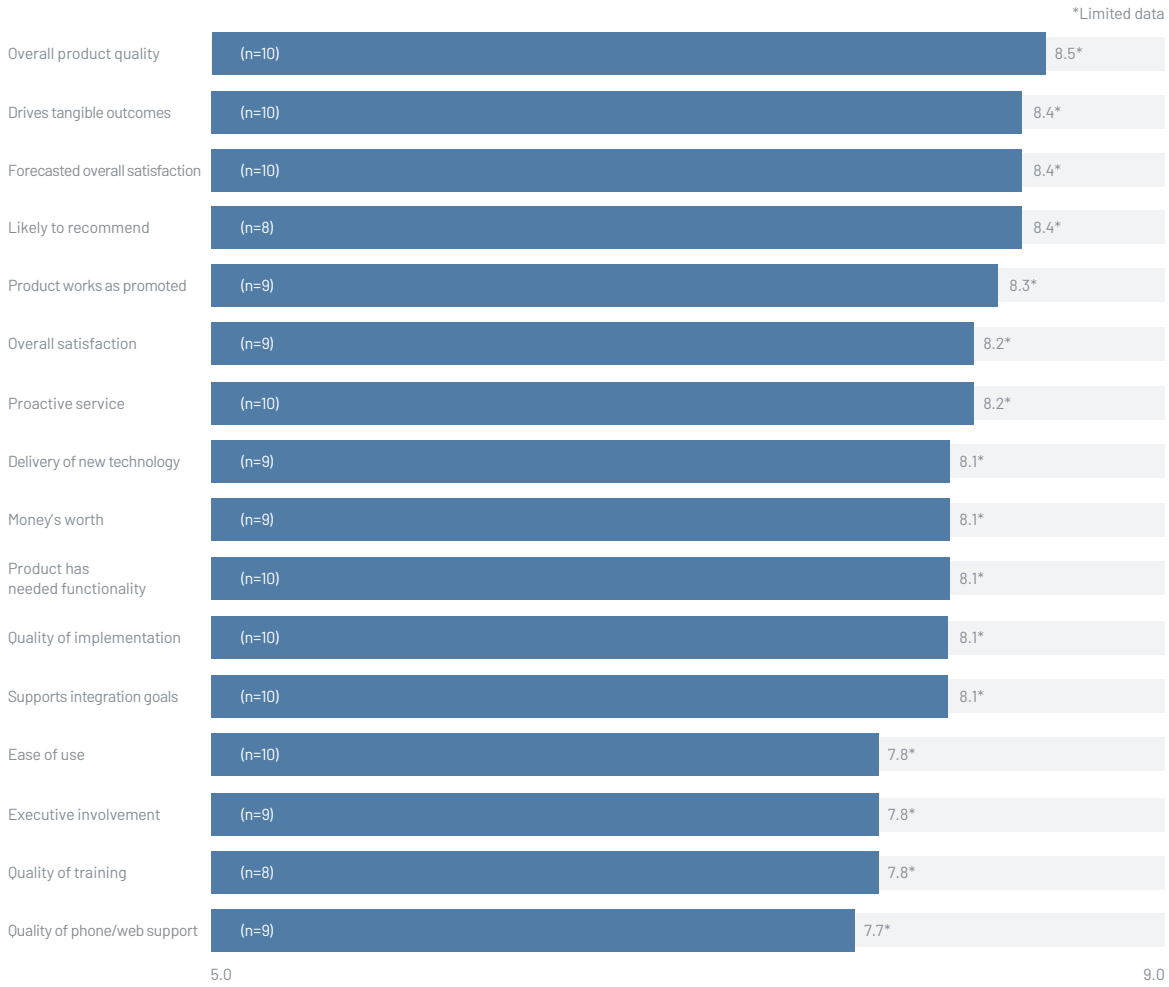
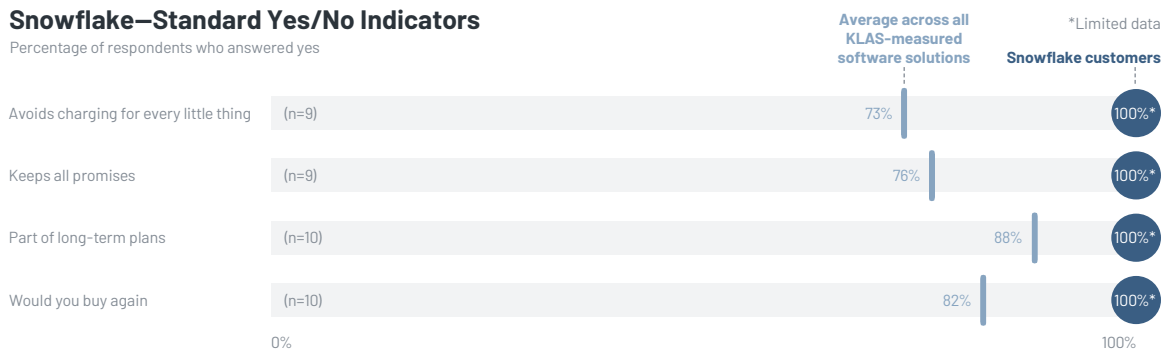


Figure 8 **Snowflake—Standard Yes/No Indicators**

Percentage of respondents who answered yes



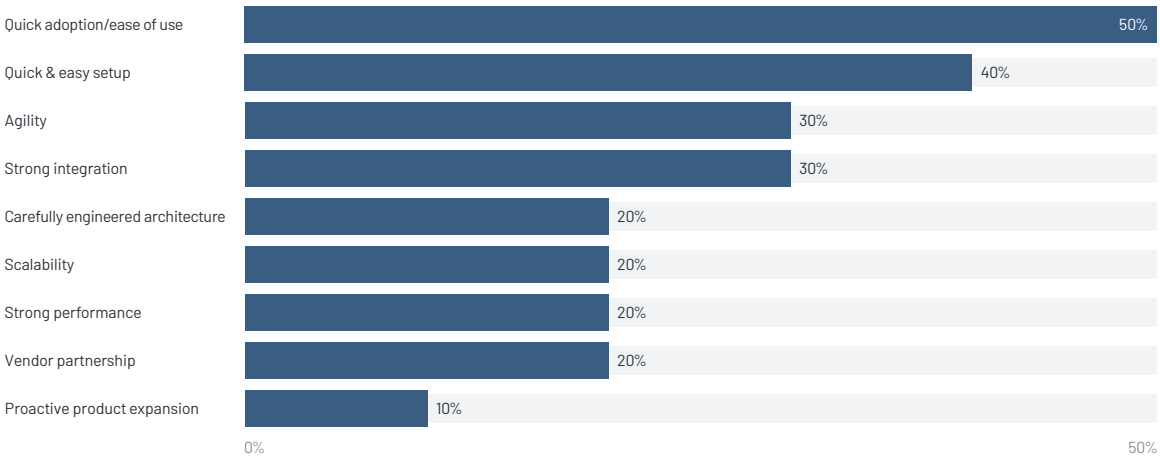
Main Highlights of Customer Experience Are Quick Adoption & Easy Setup

Snowflake customers most frequently highlight how quickly the solution can be adopted as well as its simplicity and user-friendliness. Users are often enthusiastic to learn how to use the Snowflake Data Cloud as it offers new capabilities without requiring extensive training. One interviewed customer noted that data users readily embrace the system due to satisfaction with the platform's performance and capabilities, and another respondent added that the platform's similarity with Microsoft SQL Server helps facilitate quick adoption. Customers also report that the easy data sharing enables them to create new data frameworks with the click of a button and that the seamless access to data makes the development process effortless.

The implementation process is noted for being easy and efficient, enabling some customers to be operational within minutes of go-live. One customer expressed appreciation for the absence of patching or installation requirements, explaining that data integrity is ensured through zero-copy cloning. Another respondent shared that the process of converting procedures and functions is relatively straightforward, making the transition to Snowflake simpler and shorter than anticipated.

Customers praise Snowflake's agility and flexibility and how those contribute to a positive user experience; one respondent cited that they can swiftly import terabytes of data within seconds. Additionally, Snowflake offers a range of options for integrating the platform with other data-exploration tools, ETL delivery tools, and API connectors. An interviewed customer stated that the open integration allows them to effortlessly incorporate analytics into their system—something that was previously unattainable for the organization. Another respondent emphasized Snowflake's comprehensive data-sharing capabilities that enable them to seamlessly import data and also share it with partners. Other reported highlights include the solution's scalability, performance, and architecture as well as strong partnerships with Snowflake.

Figure 9 **Main Highlights of Using Snowflake** (n=10)

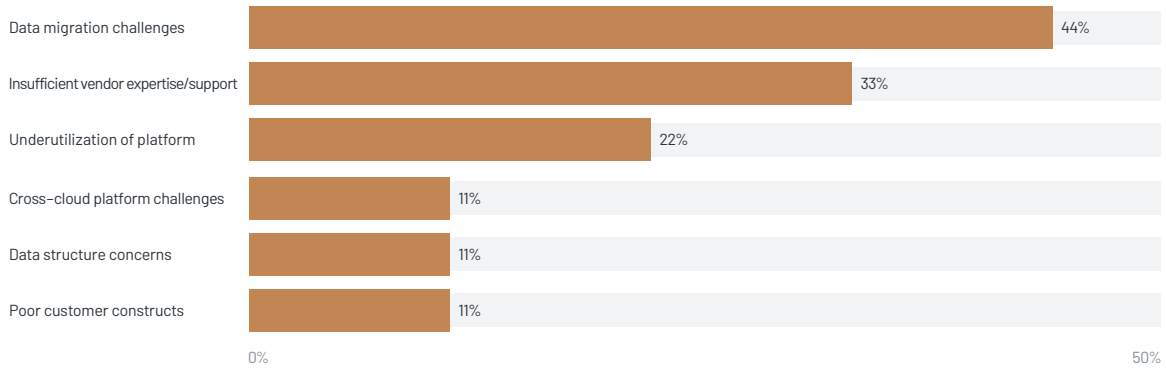


Data Migration & Lack of Expertise/Guidance Are the Biggest Obstacles for Healthcare Customers

Data migration is a common challenge for clients using the Snowflake Data Cloud. Healthcare organizations often use multiple third-party vendors and various data sources, and they need a consolidated tool set that supports data ingestion. Snowflake excels in data transformation, but data extraction is not their primary focus, which can make migrating existing databases to the Snowflake Data Cloud time consuming and difficult. Customers may potentially need to use separate extraction tools to ingest data. Additionally, achieving integration with Active Directory for single sign-on can be challenging, so customers have to provide a comprehensive guide to enable users to navigate the intricacies of integration with other systems.

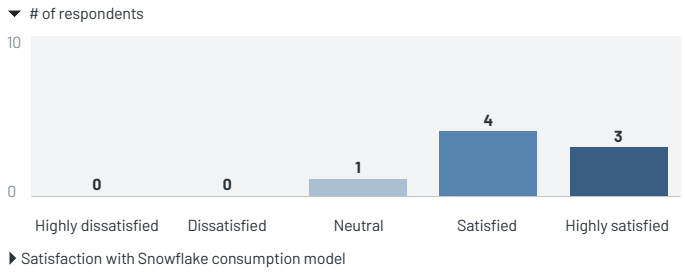
The lack of internal expertise and guidance from Snowflake is another obstacle that some interviewed customers encounter, leading to underutilization of the platform. Healthcare organizations are busy and need improved active engagement and education from Snowflake to leverage the platform's features and benefits fully. A couple of respondents noted that incorrectly using the platform can lead to costly computing mistakes, and another mentioned that the lack of long-term education causes some functionality to be overlooked. Some customers report that using the Snowflake Data Cloud requires assembling the right core team that can think strategically about scaling and development.

Figure 10 **Main Obstacles with Snowflake** (n=9)



Customer Satisfaction with Consumption Model

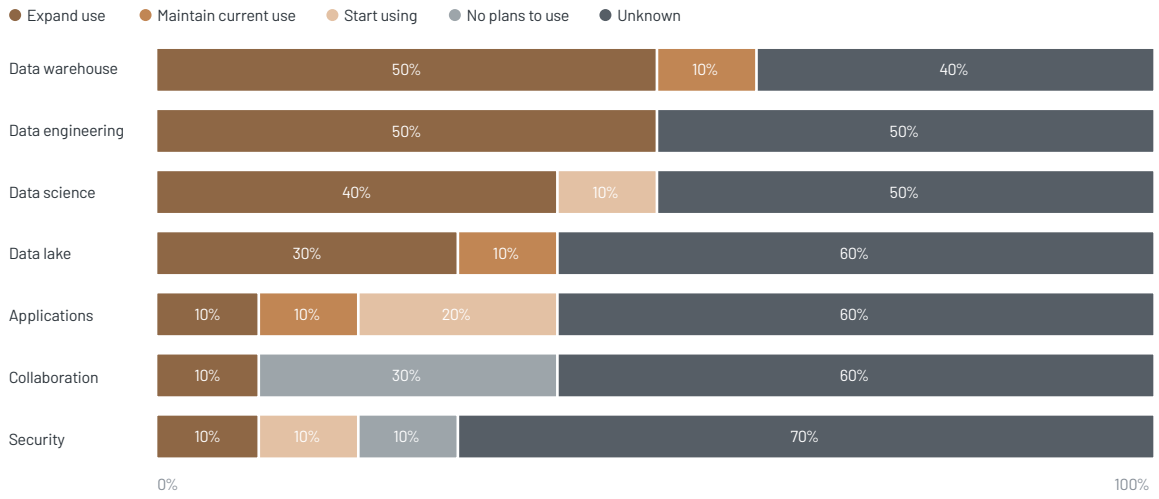
Figure 11 **Customer Satisfaction with Snowflake Consumption Model**
(n=8)



Most interviewed Snowflake customers are either satisfied or highly satisfied with the vendor's consumption model. Highly satisfied customers report being under budget, noting that they expected to spend a lot more on the platform. Satisfied respondents feel Snowflake is transparent but still wish the solution were less expensive. The one respondent who feels neutral about the consumption model wants the vendor to better articulate how to optimize the cloud platform.

Customers' Future Plans Center on Applications, Data Engineering & Data Science

Figure 12 **Future Plans with Snowflake Workloads** (n=10)



All respondents who provided insights about their future plans intend to expand their use of the Snowflake Data Cloud. One director emphasized, *"Our future plans with Snowflake are to continue to use their system and to grow and expand it across our organization. As we merge with additional entities and bring in their data sets, our environment is going to continue to grow. We are going to have new data sets, data models, and data sources all flowing into the Snowflake Data Cloud. The Snowflake Data Cloud is going to be the single source of truth for all of our downstream applications."* A manager shared, *"In the future, I see us being able to allow more of the hospital departments to come into the Snowflake Data Cloud and see the data that we have basically curated for them, and Snowflake's role-based access controls will be fantastic for that."* The most popular workloads that customers plan to expand utilization of are data engineering and data warehousing, closely followed by data science and data lakes.

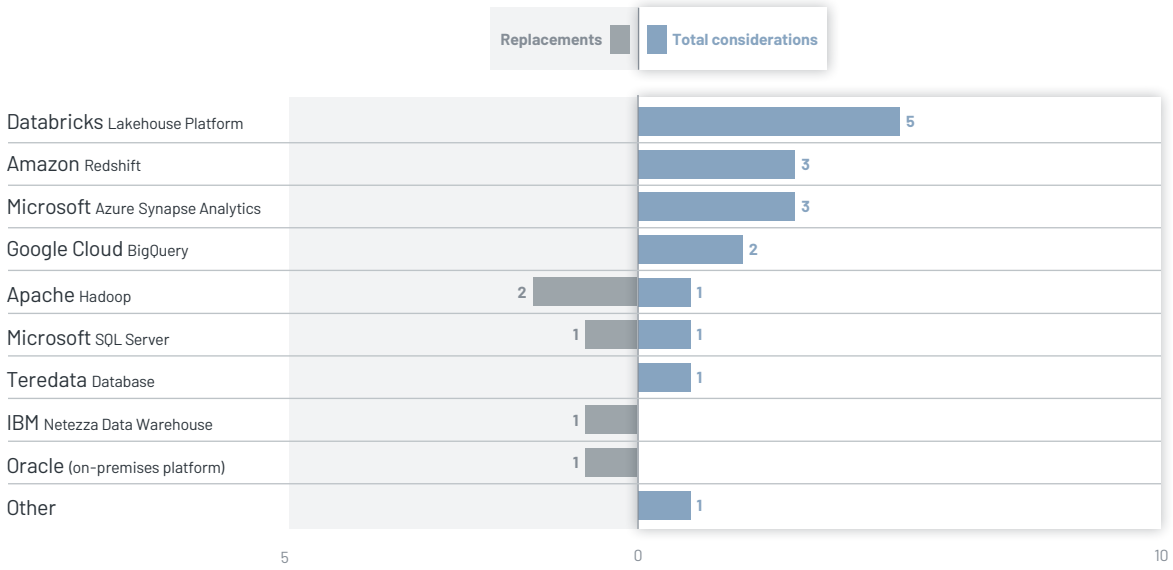
While only two respondents currently use the applications workload, two others have plans to start using it. One manager looking to use the applications workload shared that *"when the use cases warrant it, we will start looking at buying or subscribing to already built applications. . . . Snowflake's relatively recent release of Snowpark and its data environment will definitely extend our use of the Snowflake Data Cloud so that we either use existing applications or potentially build some small, niche applications."* Another manager who plans to start using the data science workload noted, *"The data science workload in the Snowflake Data Cloud is definitely very interesting to us and is something that we are looking into. Data science capabilities are way too easy with the product, so we don't need a lot of other tools or products. We can do most of what we need to do within the platform."* Collaboration is the workload with the least energy among the customers interviewed for this research.

Snowflake Decision Insights

Half of the 10 interviewed Snowflake customers have been using the Snowflake Data Cloud for three to five years, while the remaining respondents have adopted the platform more recently. In terms of other cloud platforms these customers considered, Databricks Lakehouse Platform was the most commonly considered alternative to Snowflake, closely followed by Amazon Redshift and Microsoft Azure Synapse Analytics (interestingly, this option was considered by 60% of respondents who selected Snowflake within the past two years). Respondents report that the Snowflake Data Cloud has effectively replaced older on-premises solutions such as Microsoft SQL Server, Apache Hadoop, IBM Netezza Data Warehouse, and Oracle.

Figure 13 **Snowflake Customers' Considerations & Replacements**

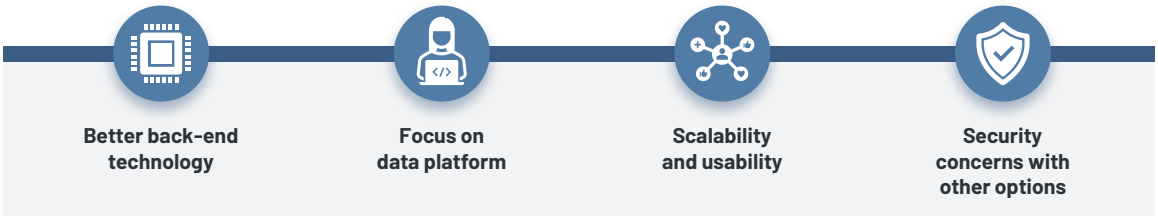
Vendors ordered by number of total considerations



Note: Data represents considerations and replacements of the 10 Snowflake customers interviewed for this report. These customers selected Snowflake within the past five years. Data was collected by KLAS between May 2023 and September 2023.

Note: The other considered vendor was not specified by the respondent.

Figure 14 **Reasons for Selection**



Customer Interview Details

Questions Asked in Supplemental Evaluation

What are the use cases you are using Snowflake for?

What outcomes have you realized?

From go-live, how long did it take you to see clinical, financial, and/or operational outcomes?

What are the highlights of your experience with Snowflake?

What obstacles have you encountered with Snowflake?

How satisfied are you with Snowflake's consumption model?

Why did you select Snowflake?

What are your future plans with Snowflake?

What are the use cases you are using Snowflake for?

We are working with Snowflake to manage the cost and utilization of our overall practice and practice management. The vendor is helping us understand what is and isn't profitable. All those metrics come out of the Snowflake data warehouse and population health analytics.

We are using the product to keep our data in one place.

We primarily use the product as our data lake; that is probably unorthodox. We probably pull 30–40 different data sources into our platform through the Snowflake Data Cloud from a variety of different sources. We made the decision early on that we did not want to manage the rigor of maintaining a data lake out in one of the cloud environments. We have the system hold plenty of raw data-lake data. We transform all of the data for given use cases inside the Snowflake Data Cloud.

One use case is using the product as a storage mechanism for other tools in our repository. The Snowflake Data Cloud integrates very well with a lot of systems. So if we have a correct API set up, we can usually use the Snowflake Data Cloud as storage to populate systems instead of paying extra for storage. Snowflake's storage is extremely cheap.

We are basically ingesting everything into the data-lake concept where everything is plowed in. From there, we data engineer things to enable data science and old-school BI things. We look at data science things differently than BI things. Old-school BI includes our reporting dashboards and things for KPI generations.

Our main use case is that we have a pipeline. We have now refactored it, and it is harvesting vital signs and waveform data from bedside monitors. We are pumping that data into the Snowflake Data Cloud. We create data extracts for particular cohorts of patients, and we send them to a partner so that they can do research. The hope is that we will be able to do that same research on-premises. I don't know how far we have gotten with that. Our partner wants a lot more data. We are working on some use cases where we write data to an internal stage attached to a data-sharing product and send terabytes of data.

We are using an extension of the Snowflake Data Cloud for care management and care outreach.

We transform all of the ELT data with Snowflake's platform and not with ETL tools.

We are going to move toward integrating the system with some of our other tools so that we can get an entire picture of all the tools together in one data repository.

Snowflake recently introduced two major enhancements: Streamlit and some native AI and ML capabilities with NVIDIA GPU warehouses inside the system.

One of our use cases is the ability to go historically and see things, such as the heart rate of a patient about to go into surgery. That way, we can see what everything looks like right before surgery and what everything looks like right after surgery. That is very granular data.

Distributed development footprint for analytics and data extraction

Data sharing is a huge use case. We have a tool that we are working with, and we share our data after it has been aggregated for people to populate dashboards. Snowflake is a market leader in processing, and their data marketplace is incredible.

We were contemplating standing up an entirely separate environment for AI and ML capabilities.

What outcomes have you realized?

Our executives are more quickly able to uncover where we are losing and gaining market share and what portions of the business are profitable and not profitable. That may not seem like a very big deal, but it is very important to our organization. Prior to implementing the Snowflake Data Cloud, understanding cost and utilization was really challenging because we had a lot of disparate solutions. In fact, there were some areas where we were just making educated guesses. Now we know the answers.

The data lake in Snowflake's solution is far better than putting our data lake in the Microsoft environment. We did some testing, and that wasn't going to work.

The Snowflake Data Cloud scales, and its storage is affordable, so we can afford to dump everything into the system. There is so much data everywhere, so getting everything together so that we can massage and query the data becomes 100 times easier. We tried to have a single data warehouse with our previous vendor, but the cost of the storage and the pain of getting the data into the system were very difficult to handle. The Snowflake Data Cloud also works really well with other pieces in our ecosystem.

We got into merger and acquisition activity. There is a lot of merger activity that is going on, and because of that, there are a lot of legacy systems that have to be archived and stored away for future use purposes for whatever the need is, so we are using the Snowflake Data Cloud for storage.

Having the Snowflake Data Cloud allows us to more rapidly develop things and not have to maintain typical tables, columns, indexes, and old-school databases. The Snowflake Data Cloud's maintenance and management are easy, and the speed at which we can develop things is very good because we can store a lot of data. We store raw data in the product in semi- or unstructured formats because storage is reasonably cheap. It is a pretty big deal to not have to transform the data before it gets dropped into the platform.

The outcome is massive cost savings. And our storage for the tool is already inside our EDW, so we don't have to pipe data back down to the tool.

The data science information goes to the analytics that show large data marts that are available for data teams when it comes to starting to do exploratory analyses, looking for insights, and figuring out how to turn the insights into products.

The data management tool provides an easy environment for us to share schemata, views, and tables. It allows for collaboration between departments.

Looking at our EMR data right now, we have billions of rows of patient data across various data concepts. Running the data in the Snowflake Data Cloud and normalizing it into all of our downstream platforms takes a couple of hours. If we want the same data in Microsoft SQL Server product, that process will probably take several days. That is the most recent example, at least in our cases. The system is very fast and scalable. It really improves the performance of all of our downstream applications because we can get the data so fast.

We haven't been seeing outcomes yet but we anticipate that our ability to more quickly reach out to a patient that has been discharged will be a huge advantage. We were not doing that in a reasonable time frame previously.

Our consolidated data platform could basically consolidate all our data sources into a single data lake or data warehouse.

The Snowflake Data Cloud is our enterprise data warehouse and our single source of truth.

The Snowflake Data Cloud is one of our primary platforms that manages our information and brings in our EMR data sets along with claims data sets. It allows us to upload third-party data sets as well.

We are going to land the data in a table and put the information into Streamlit. Somebody will go and manage that data and have indirect access to make corrections in the warehouses. We can propagate the corrections in real time instead of just doing batches of corrections.

We have many people working on our platform. The platform is for corporate analytics, so most of the use cases we work on internally are for analytics. We are not driving outcomes just yet, but we will be very soon.

We have seen massively improved efficiencies. There is a lack of ETL developers. All we have to do is get the data into the Snowflake Data Cloud, and from there, we can just go everywhere with it. Instead of moving data from one server to another server, everything will just be on the Snowflake Data Cloud.

Having seen what is possible inside of the product and what the vendor's mindset is for the AI or ML trajectory, we are seriously considering putting the data lake inside of the Snowflake Data Cloud and having the AI and ML things sit on top of the data lake natively.

The Snowflake Data Cloud takes a less formal part in our data governance. It gives us an environment to operate within.

From go-live, how long did it take you to see clinical, financial, and/or operational clinical benefits?

We implemented the Snowflake Data Cloud, and the next day, we were getting insights out of the platform.

We had some issues with our networking build, but those had nothing to do with Snowflake. We loaded the data lake and began an extraction within a couple of months. We will have made major progress within six months, and we will have everything 100% converted and decommissioned within 6–12 months.

We are still in a transition mode, and we are fairly early in our journey. It was probably several months before we really started to see anything.

We saw outcomes, especially from Snowflake's archiving piece, within the first 6–12 months, but we are waiting for outcomes for the other things; we just started the data platform piece.

It took us three to six months to start seeing value from the Snowflake Data Cloud, but that was probably not Snowflake's fault.

As soon as we were able to kill the contract with our previous vendor, there was a huge upside to having the Snowflake Data Cloud. There were definitely cost savings with Snowflake because we needed a lot of tools with our previous vendor. With Snowflake, we got hardware savings, we got licensing savings, and we got improved efficiencies from processing data.

We achieved small wins in the system within a short time. Our finance department was having trouble getting visibility of data that was previously lost and that couldn't be processed because of the old technology. That department saw the value in the system right away. We were able to immediately capture opportunities from new data sets. We are a value-based company, and most things are driven by membership. We have to run a portfolio of members. In a short amount of time, we have turned around the entire legacy process, and we have started moving data to a new processing channel that will enable us to crisply identify who is eligible with which payer and on which contract at certain points in time. We are doing things simultaneously with the funded data, so we get revenue data from our payers. Historically, that hasn't been possible for our organization with any degree of accuracy or certainty.

With our EMR, when we get the data, it comes through a nightly refresh and basically appears in our instance of the product. There is no additional work required. All of that data is just there every night proliferating from our EMR into our environment with the Snowflake Data Cloud. Other solutions have similar setups where all of the data gets replicated into the environment on a daily basis, getting us all of the data but not in real time. A huge amount of data gets shared with us very frequently and quickly. There is still some ongoing effort to migrate more things to the Snowflake Data Cloud, but the bulk of our downstream applications are currently using the system. We continue to see the value as we scale up.

If organizations implementing Snowflake have management support and somebody up the chain who can provide direction, I think the benefits would come in a very short period of time. For us, only operational things were in the pipeline. We were pumping data from the bedside monitors into the Snowflake Data Cloud. The migration was done in a couple of weeks, and then we were able to get rid of our old vendor's product, so that was a big chunk of change. The Snowflake Data Cloud is considerably less expensive.

What are the highlights of your experience with Snowflake?

Some of the highlights of using the Snowflake Data Cloud have been better reliability, better consistency, and better performance. Previously, all of those areas were challenging.

Snowflake gave us open integration almost immediately. We could integrate analytics directly into the system. No integration was possible previously.

I am not always the biggest fan of some of the vendors we work with. With Snowflake, we have had two different account managers. I have never had a better vendor experience than I have with Snowflake. They are aligned to be a partner in our success, and they do whatever they can. Our experience with Snowflake has been much different from experiences I have had in the past with other vendors that are primarily interested in their bottom line. Snowflake is interested in their bottom line because they have to be, but that is not the approach they take.

Snowflake's technology has been better than I expected in a lot of ways. As I transition team members to the Snowflake Data Cloud, I consistently get feedback that Snowflake's system seems broken because it is too fast. Its performance has really blown people away. Our effort in the transition has been far lower than we expected. Converting procedures and functions has been relatively simple. As we start to onboard some distributed development areas in our teams, we look at our deadlines with a lot of anxiety. But at this point, all signs are pointing to the transition being simpler and shorter than we ever expected.

One of the highlights of using the Snowflake Data Cloud is that all of the people that use big data have embraced the system quickly not because they are being forced to but because they like the product's performance and capabilities. The Snowflake Data Cloud has some unique capabilities, such as zero-copy cloning. The system does everything we needed our old system to do, but the Snowflake Data Cloud adds some nice capabilities that our people really love once they learn them. The transition has been a highlight. We haven't had to beat people over the head to get them to use something different; we have been pulling rather than pushing. We really haven't had internal resistance. Everybody seems to be eager to learn the Snowflake Data Cloud, and there really isn't much to learn except for the new capabilities.

The Snowflake Data Cloud is pretty good. It is scalable, and it provides a lot of data-sharing capabilities, like getting data into our environment and sharing data with our partners. The highlights are the scalability in computing and the data-sharing capabilities; I think those are probably the two biggest ones that I can think of.

The highlight of our experience is that we are working with a bleeding-edge platform. One thing that impresses me with the Snowflake Data Cloud is that the product starts as a typical data warehouse platform with tables, columns, and rows, but there are also some neat features available right out of the gate. The product's architecture with the separation of computing and storage is top notch. Snowflake is rapidly expanding the product to an enterprise data platform with great features that are really applicable to healthcare organizations. That is what Snowflake wants the product to be. One of the features is data masking, and the data-security architecture is very well thought out. The Snowflake Data Cloud is getting a lot of built-in governance capabilities. The most exciting part is that Snowflake is continuing to expand the platform to meet future needs. The vendor is releasing the features we want before we even get around to asking for them. Snowflake is very active in their expansion of the product.

Snowflake has come a long way with integration. The system integrations have been fantastic. There are so many tools that work with the Snowflake Data Cloud, whether they be data exploration tools, ETL delivery tools, or API connectors. And the similarity to SQL has been helpful in getting people up to speed with how to use the Snowflake Data Cloud.

The highlights of the Snowflake Data Cloud are its agility and flexibility. Snowflake's enablement helps us understand how the platform works and walks us through which designs and solutions may or may not fly in the platform. As weird as it sounds, Snowflake makes implementations for complicated solutions easy. We are used to doing complex things and then breaking those things down into simple pieces, but we still find those simple pieces are broken down in a way that prevents them from connecting with each other. But in the Snowflake Data Cloud, if we start with a complex process and break it down into more simple processes, we can implement those simple processes and still maintain the connectivity. We are not sacrificing capabilities or quality in the Snowflake Data Cloud. Basically, the system allows us to maintain high-level quality data and simplicity in a complicated environment.

Snowflake is responsive and communicative. There is a lot to be said about having a vendor that is responsive and communicative because we have several who are not. It is always helpful when we know who to contact and when the vendor is able to help ASAP even if we ask a question they have been asked 100 other times. The ease of use of data sharing is also pretty incredible. We can push a button and get a whole new data framework. Snowflake has been so helpful.

The main highlight with the Snowflake Data Cloud is the ease of getting it up and running. I am talking about minutes. I can log in and start using it. That is a highlight. The platform is super simple. Snowflake has built a better mousetrap than another vendor. Snowflake has a couple of features that are just awesome. There is no maintenance on our side. All we have to do is use the product. There is no patching and no installation. Snowflake has the zero-copy clone, which is the way they separate their computing and their storage so that we don't trample on anybody else going after the same data. Development is just so simple because I can get a fresh copy of the data in a few seconds. I can get terabytes and terabytes of data down into my development area and be developing against production data in seconds. That aspect of the Snowflake Data Cloud is just head and shoulders above what any other traditional RDBMS could ever do.

The Snowflake Data Cloud is pretty flexible, and I haven't run into any performance issues. It is a nice, stable environment for us to operate within. However, I don't see a dramatic difference between the Snowflake Data Cloud and our previous solution.

What obstacles have you encountered with Snowflake?

If a customer's constructs are poor to begin with, Snowflake isn't going to fix them. The customer can't take a poor design and think Snowflake will make it better. The customer needs to take time to ensure the design is good.

There was a point at which enforcement of referential integrity was a challenge, but we are past that. We didn't really run into a problem, but my data architects were pretty concerned. They have referential integrity defined, but now they are concerned about whether or not we can provide metadata through views. We have not proven whether we can.

Some of the obstacles with the Snowflake Data Cloud are more around getting people to use its full capabilities. If people don't use the Snowflake Data Cloud intelligently or how it is intended to be used, they can run into issues with computing costs and cannot get the full benefits of the product. The obstacle is that we really need to have people with expertise that can guide us on how best to use the Snowflake Data Cloud, and that expertise is either expensive or hard to find. We have to compete for talent, and we can't use the Snowflake Data Cloud without talent. If we do things on our own, we pay the price later on.

When it comes to ingesting data, we found it a little difficult to find a consolidated tool set that could support all kinds of data and ingestions, and we need that because we have many different data sources. We have a few third-party vendors, as well as flat files. But we could not find a single tool set that could help us move data into the Snowflake Data Cloud with ease. We had to rely on multiple tools depending on the source of data. That is a concern, and I am trying to fix that right now.

Very early on, the salesperson and the presales engineer we worked with for the duration of and after the presales engagement gave us great support; those individuals were very engaged, helped guide us, and taught us to use the platform. There was only so much we could learn in the first few months of using the Snowflake Data Cloud, so the salesperson and engineer really took some initiative and helped our organization grow our usage of the Snowflake Data Cloud. However, those individuals have left; now, one of the large obstacles is that Snowflake is not really moving the bar from long-term education and support perspectives. If Snowflake doesn't work with their customers or teach them new features, then some of the functionality in the Snowflake Data Cloud is going to fall by the wayside because frankly, some organizations need a little more guidance. Our organization is in that boat because of how busy we are. Snowflake has fallen flat on and has been struggling with their front-end support; their help-desk team is not providing any value by educating us or guiding us on how to do things correctly in the product.

Snowflake doesn't have an extraction tool, so it is advisable to purchase another program to do extractions into the Snowflake Data Cloud from any other data source. Once data gets to the Snowflake Data Cloud, we can use it to transform the data. But I don't think that data extraction is Snowflake's bread and butter, so I wouldn't fault them for that. One thing that is both a benefit and probably an obstacle is that the Snowflake Data Cloud is on cloud platforms from all three cloud providers: Microsoft, AWS, and Google. Sharing across different platforms can be hard because we have to replicate the data into that cloud provider's platform before we share it.

We had mostly human-related obstacles in the system, so we had to start thinking differently. We couldn't look at the product like any other data warehouse and think that it was going to be the solution. Otherwise, we were going to get taken to the cleaners on computing costs for writing inefficient code or bringing patterns that didn't work. The biggest obstacle was getting people to think about their work differently. That was especially challenging for people who came from traditional career paths and hadn't done application development. It was hard for those people to really think about transactions versus analytics and about the way data would sit clustered. Complicated data processes are simple in the product but only if the problems have been experienced before. The system requires users to think outside the box to find the right people to staff in the system. That is the biggest thing I would convey to any organization starting fresh on the system. The tool is great, but customers have to find a core team that will think for a while about the scaling and development process. Otherwise, people will be discouraged with the system right out of the gate.

The migration to the Snowflake Data Cloud is hard because people are usually moving their existing database to the new environment. It takes time, effort, and, in all likelihood, new tools in order to get the data into that ecosystem. That is probably the biggest ongoing challenge for us.

Getting the Active Directory integration for single sign-on has been tricky. If we could have one big concise white paper that shows all the gotchas in one place, that would be very helpful. There are a lot of little nuances that aren't necessarily the vendor's fault because we are trying to integrate with other things.

How satisfied are you with Snowflake's consumption model?

I expected our spending for the amount of work done to be quite a lot higher.

We haven't had buyer's remorse with the Snowflake Data Cloud, and we haven't seen ridiculous computing charges. We are still under budget in terms of what we planned to spend on the product, so we are very satisfied.

Snowflake's consumption model is fairly transparent, and that is all I can really ask for. The model is written in stone. We have a good understanding of what we are charged for and why. The Snowflake Data Cloud is expensive, so it would be better if the vendor could help us keep the cost down or give us some guidance on cost management. The vendor hasn't really kept the cost down. However, we are satisfied with Snowflake.

The consumption model leaves something to be desired because I think the vendor could do a better job of articulating how to optimize the cloud. That being said, they are still optimizing things on the back end and are making things more efficient with Microsoft Azure and AWS, and they are passing that efficiency directly on to us. If Snowflake gets efficiencies of 20% on AWS, then their customers are automatically operating 20% more efficiently at no cost.

The biggest hurdle with Snowflake was the leap of faith from making changes. The first time we looked at the consumption model and how things were done, we had to think through our typical workloads for hosting in-house warehouses. We started to make decisions because we were paying for the utilization of the platform to enable us to develop solutions that would give us a substantial amount of returns on investment with our initial investments. The system is not a one-and-done thing; it is a platform that enables us to evolve as the platform and the business evolve. The business gets more savvy, and we can build more savvy solutions while keeping the computing low. The whole paradigm is that as long as we keep the development costs within a certain fold relative to the number of stakeholders we are supporting, we will return to justify the Snowflake Data Cloud because of its agility from all of its capabilities.

Snowflake's consumption model makes sense; the model is how the cloud business runs. It is easy to track things. If the system were cheaper, it would be better, but other than that, the product works the same way as other cloud environments do, so it is hard to complain too much.

For us, Snowflake's consumption model has been great. We haven't been using the compute that much because their storage is so cheap.

Why did you select Snowflake?

Our research showed that the Snowflake Data Cloud would be better than another product.

It was very evident that Snowflake was looking to build a data platform and not a set of cloud-aware services based on the current feature set and the amount of attention being paid to it. We chose Snowflake over another vendor because Snowflake is focused on the data-platform market.

We had another platform, and we initially intended to expand it, but when we couldn't, we had to find an alternative.

We brought Snowflake in to replace our on-premises setup and migrated all our data up to Snowflake.

We tested another platform and found the Snowflake Data Cloud to be better.

The Snowflake Data Cloud looked the most scalable and usable.

We considered Microsoft, but we ultimately chose Snowflake because it looked like it would work better.

The platform we replaced was on premises, and its storage costs were difficult. We had to have a more scalable solution, so we had to move to the cloud.

Snowflake's solution is really the best in class as it relates to scalable data warehousing.

We chose Snowflake because there was no setup. Basically, we opened a trial account with them, and then you could play and even load some data and do whatever we wanted. Once we signed the contract, Snowflake just took our trial account and turned it into a real account. With all the other cloud solutions we looked at, there was going to be a lot of work to get things rolling.

What are your future plans with Snowflake?

We focus primarily on our data lake and don't generally build or support applications. That is just not what our team does.

Normally, data warehouses are used more strictly for analytics, such as data science, but we tend to use the Snowflake Data Cloud more for applications as well because of all of the product's capabilities. Some people don't necessarily think of data warehouses as sources for applications to hit, but we intend to keep all of the data in there. We intend to start hitting the Snowflake Data Cloud directly with applications such as our patient-facing portal and our mobile app because we are going to get more real-time, or partially real-time, data into the Snowflake Data Cloud. We never would have done that in a traditional data warehouse.

We have no hard plans with Snowflake, but there are already some applications available. When the use cases warrant it, we will start looking at buying or subscribing to already-built applications. I wouldn't say we have any future plans with Snowflake or any hard plans for building apps, but I am sure that the time may come for us to make those plans. That is where Snowflake's move to a cloud platform instead of a data warehouse has really been beneficial. Snowflake's relatively recent release of Snowpark and its data environment will definitely extend our use of the Snowflake Data Cloud so that we either use existing applications or potentially build some small, niche applications. We will definitely be exploring data science capabilities with the Snowflake Data Cloud.

We don't really have future plans with Snowflake's collaboration workload.

We will continue to extend our use of the Snowflake Data Cloud because it is our data platform of choice. We are actually getting ready to start using other tools and products that will make development on the Snowflake Data Cloud easy. Those tools include offerings for data engineering.

We definitely have expansion plans with Snowflake. The Snowflake Data Cloud is a way for the entire organization to see their data in one central location instead of on multiple servers. In the future, I see us being able to allow more of the hospital departments to come into the Snowflake Data Cloud and see the data that we have basically curated for them, and Snowflake's role-based access controls will be fantastic for that.

Our continued use of the data lake in the Snowflake Data Cloud is yet to be seen. At this point, I expect us to maintain our current level of usage of the product, but I am not sure how much more our usage will expand.

The data science workload in the Snowflake Data Cloud is definitely very interesting to us and is something that we are looking into. Data science capabilities are way too easy with the product, so we don't need a lot of other tools or products. We can do most of what we need to do within the platform.

We plan to use Snowflake's data warehouse.

I hope we will use Snowflake for all of our data warehousing. We still have a lot of things on premises right now, and we just need to get upper management to see the light. Our current use case is that the vital signs and waveforms we are collecting have to go into a big data platform.

We have big plans to partner with Snowflake on a security expansion, but we don't have all of the plans nailed down yet.

Our future plans with Snowflake are to continue to use their system and to grow and expand it across our organization. As we merge with additional entities and bring in their data sets, our environment is going to continue to grow. We are going to have new data sets, data models, and data sources all flowing into the Snowflake Data Cloud. The Snowflake Data Cloud is going to be the single source of truth for all of our downstream applications.