Dispelling the Myths and Reflecting Reality

Companies are relying on Teradata, not cloud-only data warehouse providers, to execute enterprise-scale analytics
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It’s a widely recognized industry phenomenon: as new competitors emerge, they often target the market leader in an attempt to increase adoption for their new technologies. They typically claim to have cheaper, faster, and easier-to-use solutions. It’s also common for customers of established vendors to try the new technologies, especially since they are always looking for new ways to lower their costs and improve their performance.

We’ve seen this come to pass in recent years with emerging cloud computing technologies.

Gartner describes this process with the “Hype Cycle” (See Fig. 1), a model that begins with an Innovation Trigger kicking off a potential breakthrough innovation. The Peak of Inflated Expectations occurs next, carried forward through early successes as well as initial failures. The Trough of Disillusionment is the next stage, where implementations fail to deliver as promised. Some technologies make it into the Slope of Enlightenment, where the benefits become more focused and clear. Finally, there is a Plateau of Productivity, where mainstream adoption occurs and the benefits clearly pay off.

In their 2019 Hype Cycle for Cloud Computing, Gartner\(^1\) reported that cloud computing has reached the Slope of Enlightenment, but many emerging cloud technologies are still climbing the Peak of Inflated Expectations.

It’s true that cloud is a strategic investment for any enterprise IT approach, and Teradata is committed to deploying our award-winning technology seamlessly on leading public cloud infrastructures. However, despite the cloud’s many benefits, it is not a panacea – and relying too heavily on what may be the most hyped technology ever could deter the enterprise from reaching critical objectives.

In the early days, the cloud was touted as a way to save money. But today, most enterprise IT leaders

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\(^1\) Gartner, “Hype Cycle for Cloud Computing, 2019”, Analyst(s): David Smith, Ed Anderson, August 8, 2019
have realized that the cloud is not cheaper. In the analytics market, the Hype Cycle for “cloud-native” vendors is on full display as providers offer technologies that are built only for the cloud. These solutions will not work effectively for on-premises solutions since they rely on an abundance of cloud infrastructure to scale performance and their software is immature and untested. Cloud-native solutions may work well for basic workloads, but companies attempting to stretch these into the enterprise scale are experiencing the Trough of Disillusionment. Scalability, cost, and migration challenges are starting to emerge.

McKnight Consulting Group, the premier consulting firm for cloud analytics, recently published a whitepaper entitled *Price Performance in Modern Cloud Database Management Systems*. McKnight found that “data warehouses may look great at the low-end, but in reality implementations can get very expensive if deployed at production scale. Some organizations have seen upwards of 3–5X higher costs than originally projected. [emphasis added] This has forced some deployments to different solutions – either on-premises or a different cloud platform. Time wasted. Budgets impacted. Migrations disrupted. It doesn’t have to be this way.”

As an incumbent industry leader in the analytics software space, Teradata closely watches emerging technologies and solutions. We welcome new innovations and believe that customers are best served when vendors engage in healthy competition. But we also believe that customers deserve to know the facts about available solutions so they can make the best decisions required for their desired business outcomes.

This paper intends to dispel the predominant myths (or hype) generated in the intensely competitive cloud analytics industry about Teradata, showing that:

1. Teradata’s legacy is being the best.
2. Teradata is cost-effective and easy to deploy.
3. Enterprises are embracing a combination of solutions that include Teradata’s offerings.
4. Teradata’s business transformation is succeeding.
5. Teradata’s technology is still differentiated.

**Reality #1 – Teradata’s “legacy” is being the best.**

One of the unique traits of the technology industry is that the newest, emerging technologies often get outsized focus. Unlike in other industries, your relevance is questioned more, not less, the longer you successfully run a company.

We’ve heard some analysts claim that Teradata is a “legacy” data warehouse company and that our technology is “not modern.” Here are some facts that challenge those perceptions:

McKnight found that “data warehouses may look great at the low-end, but in reality implementations can get very expensive if deployed at production scale. Some organizations have seen upwards of 3–5X higher costs than originally projected.
Fact: Teradata’s legacy is consistently being ranked #1 as the premier technology solution for enterprise analytics. Our track record of award-winning technology leadership and innovation continues into 2020. Forrester Research named Teradata as the Leader in Current Offering in The Forrester Wave: Data Management For Analytics, Q1 2020. This positioning was based on Teradata Vantage™, our modern analytics platform that unifies analytics, data lakes, and data warehouses in a single, easy-to-use platform.

In this report, VP and Principal Analyst, Noel Yuhanna stated that our reference customers appreciate our technology’s “ease of use, hybrid cloud and independent storage, and compute processing capabilities.” Yuhanna added that Teradata “remains a prominent choice, especially for hybrid deployments where scalability and availability are critical.”

In addition, Gartner recently named Teradata as a Leader in their Magic Quadrant for Data Management Solutions for Analytics report for the 17th consecutive time. Teradata received the highest scores for four out of four Use Cases in the Critical Capabilities for Data Management Solutions for Analytics. Traditional Data Warehouse, Logical Data Warehouse, Real-Time Data Warehouse, and Context-Independent Data Warehouse (See Fig. 2). Gartner added that Teradata held this position in each category by “a comfortable margin,” scoring 15–20 percent higher than the median.

Having received the highest scores for all four Use Cases in Gartner’s Critical Capabilities for Data Management Solutions for Analytics demonstrates the power of the Vantage platform to go beyond “cloud-native” or “cloud-only” solutions. Each of Gartner’s Critical Capabilities plays a crucial role in delivering accurate and actionable insights for the enterprise:

- The Traditional Data Warehouse supports relational analytical queries over normalized and dimensional models. This provides a foundation for all data-driven business decisions across the enterprise.
- The Logical Data Warehouse supports multiple data repositories, query federation, and distributed processing. This delivers integrated data from all

Teradata is #1 in Four Use Cases for Data Management Solutions for Analytics

2 The Forrester Wave™: Data Management for Analytics, Q1 2020, February 12, 2020, by Noel Yuhanna with Gene Leganza, Robert Perdone and Madison Bakalar
3 Gartner, “Critical Capabilities for Data Management Solutions for Analytics”, Analyst(s) Rick Greenwald, Adam Ronthal, March 18, 2019
4 Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Gartner research publications consist of the opinions of Gartner’s research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

Figure 2: Teradata received the highest scores for four out of four Use Cases in Gartner’s Critical Capabilities for Data Management Solutions for Analytics. Source: Gartner, Critical Capabilities for Data Management Solutions for Analytics, Adam M. Ronthal, Rick Greenwald, 18 March 2019.
repositories, regardless of location, yielding the best, most accurate answers.

- The Real-Time Data Warehouse supports streaming data, real-time loading, and real-time analytics. This empowers the enterprise to spot anomalies and glean “right now” insights that drive profitable, opportunistic outcomes.

- The Context-Independent Data Warehouse drives discovery, data science, ad hoc queries, Python, R, Machine Learning (ML), Graph, and nonrelational functions. These sophisticated data-science-driven analytics produce material business-transforming insights.

By supporting this diverse set of capabilities, Vantage provides a comprehensive solution to today’s new challenges. There are additional reasons why Vantage is innovative, which leads to a second fact:

**Fact: Teradata Vantage delivers what the cloud promises — and then some.**

One of the advantages of any cloud deployment is the ability to elastically scale resources when required, separate compute and storage, support multiple cloud services, and integrate modern data sources such as that streaming in from sensors, social media, SMS, and more. Vantage delivers on all of these fronts.

- **Elastic Scaling** – Through the Vantage Console, an easy-to-use web portal, users can monitor, manage, and scale their as-a-service environment with the following additional features:

  - **Scaling Up and Down** – Users can change instance size, such as going from small to either medium or large instances, with just a restart without requiring data redistribution.

  - **Scaling Out and In** – Users can adjust the quantity of compute instances without affecting storage and without requiring data redistribution.

  - **Stop/Start** – Users can turn off compute instances to halt core operations for some period of time in order to optimize spend and then restart again when needed.

Vantage also offers pay-per-use pricing options to give users more flexibility as they scale their capacity with the needs of the business.
**• Separate Compute and Storage** – Ideally, users shouldn’t have to scale compute and storage at the same time. Otherwise, if data is streaming in at a rapid rate, having to scale compute nodes at the same level could drive up costs when the value of the data is unknown. Or, demand might drive the need to scale up compute based on what the business user needs.

In order to keep up with the dynamic and always-evolving demands of both data and users, companies need an architecture that separates compute from storage while still allowing for seamless communication and compatibility. We had this balance in mind when we designed a high-speed fabric to connect the data and object stores in Vantage. This unifying layer allows data and compute nodes to work together but also independently. Together, data and compute can operate as one system, minimizing data movement and duplication and making it easier to collaborate and share data across the enterprise. At the same time, keeping compute and storage independent provides the foundation for exponential growth in data and allows for dynamic scaling.

**• Multi-Cloud Support** – Many leading companies run Vantage on Amazon Web Services (AWS), or Microsoft Azure, which are SaaS environments that are easy to provision and simple to scale up or scale out. This native integration with cloud services enables the enterprise to run advanced analytics from a single environment that pulls in and joins data from other sources. Customers can thus use all of their data, whether in Vantage itself or their object store data lake, such as Amazon S3, Azure Blob, and Apache Hadoop.

**• Ingestion of Modern Data Sources** – With multi-dimensional linear scalability, we efficiently handle data and performance requirements of any size or type. Vantage can process or query structured (i.e. traditional) data along with newer semi-structured data types like JSON, Avro, and XML. Vantage is also designed to ingest data in near-real time for operational analytics while more complex strategic analysis is occurring concurrently. With support for R and Python languages, we go beyond just SQL all in the same platform. This versatility allows Vantage users to optimize for evolving data types, minimize application-to-database changes and ETL, and speed time to value.

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**Figure 4:** Vantage helps enterprise customers cut down on costs through efficient workload management and advanced indexing, which help improve complex query response times and meet SLAs.

According to Principal Forrester analyst Noel Yuhanna, Teradata ‘remains a prominent choice’ for enterprise analytics, ‘especially for hybrid deployments where scalability and availability are critical.’
Reality #2 – Teradata is cost-effective and easy to deploy.

A key benefit that many cloud startups tout is their low upfront cost and fast deployment times, pointing to industry leaders like Teradata as being more expensive and cumbersome to set up. Here are some facts that challenge this myth:

Fact: You can start with Vantage on AWS or Microsoft Azure with zero upfront commitment and pay as you go on a per-second basis. Vantage operates on a consumption pricing model, so even if you are buying Teradata in your on-premises data center, you can purchase Vantage on a subscription basis with no large capital outlay required. On an hourly basis, Vantage on AWS or Azure with our capacity model is $5 per hour for compute, and less than .20 cents per terabyte per storage hour (See Fig. 4).

Cloud-only competitors who offer simple hardware scaling to improve performance quickly become expensive at the enterprise level. Enterprises that run complex queries often find it more cost-effective to optimize these queries with workload management and advanced indexing, which can improve query response times by many orders of magnitude and meet response-sensitive SLAs. Vantage provides these features at no extra cost, including indexing and partitioning to meet every workload and enforce uniqueness and referential integrity. Most of our customers execute millions of queries a day.

Cloud-only data warehouses require scaling hardware in the form of larger clusters or multiple clusters to solve problems like performance and concurrency. This brute force requirement becomes inefficient and expensive and will never achieve the scale that enterprise workloads require.5 Cloud-only customers have told us that they spend 3-5X more than expected when scaling with hardware.

Another way that Vantage reduces costs for our customers is by reducing analytics siloes, which can create redundant processes and wasted resources as people spend hours reconciling data. Teradata customers find that as their environments grow, they add incrementally less data and less effort to enable new applications and new business value.

For enterprise analytics at scale that can drive billion dollar business returns, Teradata is orders of magnitude less expensive on a cost-per-user or cost-per-application basis.

Reality #3 – Enterprises are embracing a combination of solutions that include Teradata’s offerings.

Some cloud computing companies and industry analysts have remarked that enterprises are migrating off of veteran industry leaders like Teradata and rushing to deploy cloud-only data warehouses. While we advise our customers to test new innovations, they tell us again and again that they prefer hybrid solutions.

Many large enterprises who have tried cloud-only data warehousing have either returned to working with

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5 By requiring hardware scaling at such a rapid pace, cloud-only data warehouse also have a sustained negative impact on carbon emissions and the environment.
Teradata or spent many months and millions of dollars on migration consulting, only to find that their attempts to “save money” have only driven their true costs much higher. They find that cloud-only solutions work for basic departmental data warehousing, but they lack functionality and become too expensive at scale for enterprise analytics (See Fig. 6).

Most large enterprises still have the majority of their operational applications in their own data centers. Due to data gravity and security requirements, their primary analytical environment will remain co-located on-premises with the operational source data. Migration is also a huge risk for companies – just moving from one technology to another involves significant effort in converting data, definitions, code, ETL connections, and BI connections.

Given all of these reasons, it doesn’t surprise us that a 2016 survey of our customers, in which 90 percent of companies said they wanted to deploy both on-premises and in the cloud by 2020, has proven to be accurate. This has been recognized as best practice by firms such as Forrester, which wrote in their Four Software Licensing Trends That Support Your Business Technology Agenda report, that customers insist on suppliers of on-premises software granting them the freedom to deploy it in public, private, or hybrid clouds.

### Flexibility and Portability with Vantage

To meet this clear demand for flexibility and portability, Vantage allows customers to leverage any combination of hybrid cloud, multi-cloud, or public cloud. We offer the following options in order to meet their requirements, not technology’s restrictions, so they can de-risk their investment:

- **Hybrid Cloud** – Many customers are continuing operations on-premises while migrating to the cloud. By offering both on-premises and cloud platforms, Vantage fully supports customer use cases. This is not an option for solutions offered by cloud providers, which run only on cloud.
- **Multi-Cloud** – Vantage is available on multiple cloud providers, AWS and Azure. This flexibility reduces the customer’s reliance on a single vendor and increases deployment flexibility. The Vantage code base is

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**Enterprise Analytics**

**Business Value: High to Extreme**

- Hybrid, On-Prem, + Cloud
- Integrated, Cross Functional Data
- Mission-Critical Status (Can’t Go Down)
- Operational SLAs
- Predictable Pricing Model
- Advanced Analytics Workloads
- High Concurrency
- Scale Performance with Software Optimization

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**Figure 6:** Cloud-only data warehouses serve the needs of a specific market that is much less complex than an enterprise analytics platform. They can meet the needs of a basic data warehouse but cannot replace enterprise-scale systems like Vantage.
the same for each cloud provider as well as our on-premises and Teradata Cloud offerings, making it less risky for customers as they migrate from on-premises to the cloud provider of their choice as no data or code conversion is needed. Our IntelliFlex-optimized infrastructure in customer data centers also offers cloud-like benefits of subscription pricing and rapid expansion of compute resources.

- **Public Cloud** – Customers can still opt for the public cloud option, using computing solutions offered by third-party providers like AWS, and Microsoft Azure over the public Internet.

Deployment flexibility and license portability are also important to customers, so we made sure that customers can use Vantage software however and wherever they prefer. While other companies may have deployment choice, they typically have different versions of software in those environments.

Having the flexibility to run and migrate analytic workloads across different options provides tremendous operational agility. It also de-risks customers’ architectural decisions by allowing adjustment in how and where workloads are run as the business evolves. Flexibility and portability also grants customers freedom from lock-in because they can move anytime.

**Reality #4 – Teradata’s business transformation is succeeding.**

Teradata is in the midst of a multi-year business transformation as we transition from a perpetual hardware-centric company to a subscription software business. As with any major pivot, change takes time and roadblocks are inevitable. But our business transformation is actually ahead of schedule. In fact, 88 percent of our bookings mix in 2019 was subscription-based, a faster rate than we anticipated. And our annual recurring revenue (ARR) at the end of 2019 was $1.4 billion, a 9 percent increase over the prior year.

From an overall revenue perspective, we planned for short-term challenges related to revenue growth as we moved to a subscription model. We also invested more heavily in our consulting services that would drive Vantage consumption.

Feedback from Customers

**Negotiated consumption pricing on Teradata is lower cost per query than Snowflake.**

**We can quantify business value by Teradata. Not sure we can say the same about Snowflake applications.**

**Scalability and cost control are concerns at the Enterprise level with competing technologies such as Snowflake.**

**We were surprised when our Snowflake cost went from just under $100k to over $500k.**

**Teradata is an essential component of our supply and demand chain planning. Any unplanned outage is a potential $100M+ business impact.**

![Teradata's transition to a subscription business appears to be working, as subscription-based transactions comprised 88% of the company's bookings mix in 2019.](image-url)
### Escalating Costs with Cloud-Only Data Warehouses

Again and again, we’ve seen customers turn to Teradata after trying to scale the cloud-only data warehouse to an enterprise scale. Scalability, unpredictable cost, and migration challenges are starting to emerge. Customers are putting cloud-only claims to the test and seeing where they work — and where they break down.

Here are some examples of companies who bought into the promises of cloud-only and put them to the test, only to recommit to Teradata.

<table>
<thead>
<tr>
<th>Company</th>
<th>Promised</th>
<th>Reality</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Large Restaurant Chain</td>
<td>Low cost, superior performance and a simple migration.</td>
<td>They spent over $2M attempting to migrate and found there were huge ongoing operating costs.</td>
<td>Simple migration from Teradata on-prem to Teradata Vantage on AWS.</td>
</tr>
<tr>
<td>American Internet Retailer</td>
<td>Significant cost savings, faster performance, and a simple migration.</td>
<td>Found the costs were much higher than promised.</td>
<td>Decided not to migrate their EDW</td>
</tr>
<tr>
<td>Food Manufacturer</td>
<td>Easy and cheap migration, can handle any workload that Teradata is running at lower cost.</td>
<td>Could not handle some of the basic workloads requiring query re-writes. Cost of migration and footprint to handle the enterprise complexity of workload was significant.</td>
<td>Simple, low-risk migration. Replaced Teradata on-prem solution with Teradata in the cloud. Predictable and manageable cost model.</td>
</tr>
<tr>
<td>Property and Casualty Insurance Company</td>
<td>Easy and cheap migration, could handle any workload that Teradata is running. Third party tools (Datometry) would automate the migration.</td>
<td>Estimated time and cost to replace Teradata was three years and $15-$20M+ 50% risk contingency.</td>
<td>Replaced Teradata on-prem solution with Vantage on AWS with pay-per-use pricing. Migration completed in only a weekend. Everything they loved about Teradata now in the cloud – plus Machine Learning and Graph.</td>
</tr>
<tr>
<td>Healthcare Company</td>
<td>Promised they could handle any workload that Teradata is running at lower cost.</td>
<td>Huge migration costs, data loading issues, no referential integrity, could not tune for performance or meet minimum security requirements.</td>
<td>Planning a hybrid implementation of Teradata on-prem and in the cloud as a single integrated ecosystem with full portability and security. Maintains performance guarantees for each application with lowest TCO on Teradata.</td>
</tr>
</tbody>
</table>
Our industry is also recognizing the success of our transformation. For example, Gigaom’s Andrew Brust and Yiannis Antoniou called Vantage a “strong offering in the marketplace, backed by one of the stalwarts of the industry” in their Evaluating Data Warehouse Platforms report. They also wrote, “We expect that Teradata’s strong enterprise presence, the platform’s modular architecture, varied offerings, and deployment capabilities will continue to position it as an enterprise leader for years to come.” Katy Huberty, Morgan Stanley’s Managing Director of Technology Research, said “We view TDC as a strategic asset as data becomes central to IT strategies and are encouraged by renewed focus on new logo and cloud growth.”

**Reality #5 – Teradata’s technology is still differentiated.**

While the analytics software market is crowded and competitive, Teradata’s technology is clearly differentiated for enterprise-scale analytics. Figure 8 summarizes our primary areas of differentiation, some of which have already been described in this paper.

Figure 9 shows how Teradata covers the entire market with our solution. This includes basic data warehousing in leading public cloud infrastructures all the way to the most sophisticated and high-velocity analytic workloads at the enterprise level in hybrid architectures. Enterprise analytics at scale drives extreme business value with hyper-scale ROI, enabling our customers to out-perform their competitors.

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**Figure 8**: For enterprises looking for multi-cloud and hybrid deployment options, flexible pricing and capacity, and advanced analytics and languages support, Teradata checks all the boxes.

< continues from page 9

<table>
<thead>
<tr>
<th>What do you want your analytic platform to do?</th>
<th>Vantage Enterprise Analytics Platform</th>
<th>Cloud-Only Data Warehouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable choice of clouds</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Pay only for what you need</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Provide predictable pricing</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Enable hybrid deployments (on-premises to cloud)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Enable analysis of space and time (geospatial and temporal)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Meet SLAs for multiple apps (workload management)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Optimize performance with software, not just hardware</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Pinpoint access and retrieval in real-time</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Integrated, advanced analytics (AI/ML)</td>
<td>✔</td>
<td></td>
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<tr>
<td>Have the lowest cost-per-query at scale</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Ranked #1 consistently by industry analysts</td>
<td>✔</td>
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</tbody>
</table>

“Vantage is a strong offering in the marketplace, backed by one of the stalwarts of the data warehouse industry. We expect that Teradata’s strong enterprise presence, the platform’s modular architecture, varied offerings, and deployment capabilities will continue to position it as an enterprise leader for years to come.”

- Gigaom
Teradata’s Legacy Is Being the Best

Teradata is sometimes labeled a “legacy” company, set in contrast to “disruptor” companies who are emerging onto the market. We don’t mind the “legacy” label, since we see our “legacy” as being the best — of having a track record of proven industry leadership and sustained innovation that is consistently recognized by leading industry analysts. That said, we have never sat on our laurels, and we welcome competition that produces the best results for customers. For our part, we will continue to aggressively drive solutions that provide the lowest cost of ownership and the highest ROI for enterprise analytics at scale. That’s a reality that will never change.

We know that finding an effective and efficient analytics software solution can be difficult for enterprises.

Encountering conflicting or inaccurate information about various analytics software provider’s capabilities only makes this decision more challenging. Our hope is that this paper has dispelled common myths about Teradata and Vantage and that we provided clarity on the realities of our solutions and competitors’ offerings.

**Teradata Realities**

1. Teradata’s legacy is being the best.
2. Teradata is cost-effective and easy to deploy.
3. Enterprises are embracing a combination of solutions that include Teradata’s offerings.
4. Teradata’s business transformation is succeeding.
5. Teradata’s technology is still differentiated.