

Teradata Vantage™

Cloud Service Description

This Cloud Service Description applies to Vantage on all public cloud platforms on which it is available. In addition, there is an Addendum to this Cloud Service Description for each cloud platform on which Vantage operates. If there are any conflicts between the terms of the cloud platform Addendum and the provisions of this Cloud Service Description, then such Addendum-specific terms shall apply and take precedence over the conflicting provisions of this Cloud Service Description. Such Addenda specify the following:

- Subscription features
- Applications
- Supported connectivity
- Supported instances
- Supported regions

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1. Teradata Vantage Delivered As-a-Service

Teradata Vantage is a data analytics platform for performing advanced analytics in the cloud. With Vantage you can integrate analytic tools, languages, and engines to get insights from your data. With Vantage delivered as-a-service, Teradata manages the performance, security, availability, and operations of the Vantage platform as described in this service description.

BENEFIT	DESCRIPTION
Performance	Customers choose the type, size, and location of infrastructure most aligned with workload and data sovereignty requirements.
Security	Teradata monitors the Cloud instance 24 x 7. Teradata provides customers with options to encrypt data in transit and/or at rest. Teradata performs security testing that consists of threat modeling and automated scanning of code and environments. Teradata enacts access restrictions in the Vantage environment that consist of multi factor authentication, privileged access management, and monitoring of all privileged activity within the environment.
Availability	Teradata supports service availability as described in the Cloud Service Description Addendum for the specific cloud platform.
Operations	Teradata manages patches, upgrades, backups, performance reports, and support ticket resolution.

2. Responsibilities

The cloud service provider, Teradata, and the customer all have responsibilities within a shared security model for the management of the Vantage system.

RESPONSIBILITY	RESPONSIBLE PARTY
Hardware	Cloud Service Provider
Data Center / Hosting	Cloud Service Provider
Initial Data Migration	Customer
System Availability Monitoring	Teradata (OS and Advanced SQL Engine software)
Software Patching/Upgrading	Teradata
Backup and Restoration	Teradata
Premier Cloud Support (software)	Teradata
Cloud Platform Support	Teradata

Security and Compliance	
Database Administration / Operations <ul style="list-style-type: none"> • Database security monitoring • Database encryption • Database user administration, data and upwards 	Customer
Operating System (OS) Administration / Operations <ul style="list-style-type: none"> • OS security monitoring • Volume encryption • OS user administration for Teradata personnel 	Teradata
Network Administration / Operations <ul style="list-style-type: none"> • Security monitoring • Traffic restrictions/filtering • User administration for Teradata personnel 	Teradata
Cloud Site Administration / Operations <ul style="list-style-type: none"> • Security monitoring • User administration for Teradata personnel 	Teradata
Additional Services (Sold Separately)	
Database Administration / Operations	Teradata

3. Vantage License Tiers

The following table states features and functions available in the latest version of Vantage delivered as-a-service for each license tier.

	BASE	ADVANCED	ENTERPRISE
Customer Support Type	Premier Cloud	Premier Cloud	Premier Cloud
Elastic Performance on Demand (EPOD) (Blended Pricing Option required)		•	•
Consumption for Vantage (Available for applicable as-a-service deployment options only)			•
Teradata Native Object Store	•	•	•

Database Features			
Teradata Columnar™	•	•	•
Teradata Intelligent Memory™		•	•
Row-Level Security	•	•	•
Secure Zones	•	•	•
Temporal	•	•	•
Workload Management		Teradata Integrated Workload Management (TIWM)	Teradata Active System Management (TASM)

4. Teradata Application Descriptions

This section describes the various Teradata applications that are available as described in the As-a-Service Applications packaging options section of the Cloud Service Description Addendum.

4.1 Teradata Data Lab. Teradata Data Lab enables self-service business intelligence and analytics by simplifying the provisioning and management of analytic workspace within a production data warehouse. By allocating that workspace, Data Lab provides lab users with easy access to critical production information without moving or replicating data. Data Lab also provides flexibility to self-provision space and experiment with new data and theories. You can perform your own implementation or contract with Teradata Consulting to assist with the implementation for an additional fee.

4.2 Teradata Data Mover. Teradata Data Mover copies data and objects, such as statistics and tables, from one Teradata system to another. Reducing the complexities of data movement, Data Mover leverages built-in, underlying technologies in the Teradata system to enable automation, control, and process monitoring. One Data Mover instance is included as part of Cloud Foundation. Up to three additional instances may be purchased. Data Mover requires implementation by Teradata Consulting for an additional fee.

4.3 Teradata QueryGrid. Teradata QueryGrid delivers data access, processing, and movement across systems in heterogeneous analytical environments. QueryGrid provides a means to connect to a remote system and retrieve or insert data using SQL. Users can access multiple data sources without replicating data in the warehouse. QueryGrid also enables specialized processing engines, such as Advanced SQL Engine and Apache Hive for Hadoop, to act as one solution from a user's perspective. Core enabling software links with processing engines to provide access to data and processing. The connectors deliver bi-directional data movement and push-down processing across connected systems. QueryGrid requires implementation by Teradata Consulting for an additional fee.

4.4 Teradata Query Service. Teradata Query Service is middleware that provides a REST API for Vantage. The Teradata Query Service lets you open database sessions; submit SQL queries and access responses; and access metadata.

4.5 Teradata Viewpoint. Teradata Viewpoint is a web-based portal for managing and monitoring a Vantage system. Viewpoint provides a framework to display web-based applications (portlets) that enable users across an enterprise to customize tasks and display options for their specific business needs.

5. Teradata Vantage Analytics Capabilities

The following Vantage Analytic Capabilities can be, optionally, enabled via a Change Request for the Vantage subscription:

5.1 Vantage Analytics Library (VAL). Vantage Analytics Library provides the data scientist with over fifty advanced analytic functions built directly in the Advanced SQL Engine. These functions support the entire data science process, including exploratory data analysis, data preparation and feature engineering, hypothesis testing, as well as statistical and machine learning model building and scoring.

5.2 Bring Your Own Model (BYOM). BYOM consists of code and libraries that enable Data Scientists to predict (or score) machine learning models in standard interchange formats such as PMML (Predictive Model Markup Language), and H2O MOJO (Model Object, Optimized) against data in Vantage. The BYOM function can be invoked via SQL query, Python and R languages to utilize the stored Machine Learning (ML) model to score Enterprise Feature Data and predict the likelihood of a particular outcome.

5.3 Standard User-Defined Functions. A user-defined function (UDF) lets you create a function by using code in SQL, C, C++, and Java that can be executed directly on the Vantage platform. Customers can bring their customer UDF source code and binaries for C/C++ UDFs, as well as binaries and compiled code for Java UDFs to Vantage. This capability enables customers to add functionality not natively supported by Vantage.

Note: It is best practice to thoroughly test your UDFs for any unwanted effects on performance, security, and availability of the system or confidentiality or integrity of data stored in the system before deploying it on Vantage.

5.4 Vantage Python and “R” Open Analytics. Teradata Vantage provides Python and “R” analytics in two forms, client and server-side analytics. Freely downloadable client Python library (teradataml) and “R” library (tdplyr) enable users to access business data in Vantage and transform them to dataframes as well as utilize Vantage native functions to process them in-database. Meanwhile, server-side Python and “R” analytics give users the ability to run the Python/”R” scripts with open-source analytic libraries where the data reside. Vantage Script Table Operator (STO) and ExecR capabilities enable partitioned data model training and scoring in parallel at high performance. These Vantage capabilities negate the need to export data to another platform to perform the same tasks with added complexity and lower performance.

6. Vantage Operational Services

6.1 Access Management. After initial cloud service provisioning, customers can work with their Teradata support representative to set up customer user accounts and roles in the Service Portal (<https://support.teradata.com>).

ROLE	FUNCTION
Service Owner	Approves changes to cloud services and offerings.
Security Manager	Approves new cloud roles or groups. Approves maintenance schedule. Requests new groups in Teradata Vantage Active Directory. Serves as the backup Access Manager.
Access Manager	Approves new cloud accounts and group memberships.
Technical Contact	Is responsible for network connectivity and related requests or support Cases.
Support Contact	Communicates maintenance intervals and schedules upgrades and outages.
Customer User	Accesses the cloud system. Raises, tracks, and manages support Cases. Changes records.

6.2 System Provisioning. Teradata works with customers to provision the Vantage platform environment and validate service and connectivity to the user environment.

6.3 System Onboarding. Teradata provides customers with instructions for using the Vantage environment, including:

- a) Service portal, account, and network setup
- b) Communication and escalation management
- c) Incident and problem management
- d) Change and release management

6.4 System Monitoring.

- a) Teradata monitors cloud infrastructure for Vantage. Monitoring services include platform availability, successful execution of backup jobs, security, and availability of Vantage environments. Teradata collects telemetry measurements and data, including:
 - i. Obfuscated query logs, omitting query text and other sensitive information.
 - ii. Infrastructure resource utilization (CPU, memory, storage, input/output, and more)
- b) In addition, customers have the option to share additional data with Teradata to leverage available Industry Data Models and business value frameworks to help them build their data and analytics strategy. This additional data collection includes:
 - i. Detailed performance metrics
 - ii. Usage metrics by user-id / customer-metadata
 - iii. Object usage - database, table, and column names metadata

iv. Obfuscated (non-PII) user information

6.5 Console. Customers can use the web-based, self-service Console (<https://console.vantage.teradata.com>) to monitor and manage Vantage systems. Depending on your order, available features may include:

- a) View Vantage site metrics and utilization trends
- b) Scale Vantage compute power up or down, scale instances out or in, and stop or restart instances without affecting persistent storage (for applicable Blended Pricing options only)
- c) Track Vantage Units used for Consumption pricing for Vantage offering
- d) View backup history, modify backup schedules and retention policies, and abort or retry scheduled backups
- e) Create and delete Console user accounts
- f) Submit and track support requests

6.6 Service Management

- a) Teradata uses Infrastructure Technology Information Library (ITIL) best practices for Vantage service management. Customer-facing service management processes include Cases, Service Requests, and Change Requests. The Service Portal is available at <https://support.teradata.com>.
- b) Teradata performs service maintenance during maintenance windows. Teradata regularly updates the service to maintain the currency of infrastructure, security, patches, and maintenance releases in monthly service maintenance windows.
- c) For flexibility, Teradata provides customers with three options for a recurring monthly maintenance window. Teradata will assign a maintenance window to customers that do not select a maintenance window from the provided scheduling options.

6.7 Software Upgrades

- a) Teradata upgrades Vantage as Teradata releases new versions.
- b) To minimize disruptions, Teradata works with customers to coordinate upgrade schedules and support migrations to new software versions. Teradata provides a minimum four-month notice for major version upgrades to the analytic engine (major upgrades) for customers to test application compatibility and validate new versions. To schedule upgrades, Teradata provides customers with three options for upgrade maintenance window. Teradata will assign an upgrade maintenance window with a monthly cadence to customers that do not select from the provided scheduling options.

6.8 Infrastructure Upgrades

- a) Teradata occasionally upgrades the Vantage infrastructure. Teradata works with customers to schedule infrastructure upgrades and minimize service disruptions. Teradata provides customers with three options for upgrade maintenance window. Teradata will assign an upgrade maintenance window with a monthly cadence to customers that do not select from the scheduling options provided.

6.9 Backup and Restoration Services

- a) Backup Services (Available). Backup storage and retention policies depend on the cloud platform a customer chooses for Vantage deployment. Teradata sets up backup job scheduling and retention policies during the Cloud system provisioning and configuration process based on the customer's requested backup policy (for day and time for backup job to start) and retention count (how many copies of the requested backup job should be retained; older backups will automatically be deleted). After initial deployment, a customer may change or modify the backup policies via the Vantage Console or the change request process. Backup jobs are run as an automated process once set up and will continue per the requested policy unless modified or cancelled by a change request. Restore jobs are performed manually by Teradata as a one-time operation (for the requested objects: i.e., tables and/or databases) at the date and time agreed upon in a change request.
- i. Standard Backups. Standard backups can be performed as online or offline (as defined by the customer's requested backup policy on a per-backup job policy basis); note that online backups will contend for access to the objects being backed up, reducing available performance, while offline backups will block write access to objects in the backup job until the job is completed. Standard backups are retained in the same cloud provider region and zone where the Vantage Cloud instance is located.
1. Full and Full Delta Incremental Standard Backups. Full system standard backups can be executed either as full or full delta incremental jobs. A full standard backup is a complete copy of the system data. A full delta incremental standard backup covers all the data that has changed since the previous full standard backup, regardless of type (i.e., full vs. full delta incremental).
 2. Partial and Partial Incremental Standard Backups. **(Limited Availability feature)**. Partial system standard backups can be either a partial full or partial incremental job. A partial system standard backup includes a subset of the data (databases, tables, views, etc.) from the overall system. A partial full standard backup is a complete copy of the targeted subset of the data being backed up as part of the defined partial backup job, along with any subsequent full backups performed as part of that defined partial backup job. A partial incremental backup includes only the data in the partial backup that has changed since the previous partial backup job was run. The first time a partial incremental backup job is performed, it will always be a full copy of the targeted subset of data—only the subsequent backup jobs will be performed as an incremental backup. Partial backups can be used to split up full system backups into multiple smaller jobs run at different times to minimize the impact on long running backups, or to allow more frequent backups of data that changes frequently. The partial backups feature is only available as user-managed capability through the Vantage Console: restores of partial backup jobs are still performed by Teradata on request through the Change Request process, and requests are limited to the recovery of lost or corrupted objects only. If frequent (more than twice a month) restores are needed, additional services at extra cost will be required.

- ii. Snapshot Backups. (Limited Availability feature) Snapshot Backups are always full-system and have a limited effect on system availability while in progress. Snapshot Backups are retained in the same cloud provider region as the source Vantage System.
 - 1. Full and Incremental Snapshot Backups. Full system snapshot backups can be performed on an ad-hoc basis or configured to run according to a pre-defined schedule. snapshot scheduling and retention policies are customer defined and managed through the self-service Console feature. The first snapshot backup executed will be a full snapshot backup of data on the Vantage system, with subsequent snapshot backups always being incremental. snapshot backups are a complete copy of all system data; the incremental snapshot includes only data that has changed since the previous Snapshot was run. **Snapshots can only be used to restore a full copy of all system data**; partial restores (of individual tables or databases) are not supported. Note that standard backups should still be performed for data that are frequently modified or may need to be restored without updating all the data/objects in the Vantage system to the version of those objects as contained in the snapshot being restored.
 - 2. The customer is responsible for ensuring that an appropriate full system backup exists - either with snapshots or with a full standard backup, scheduled by the customer during onboarding or via the Console to meet the customer's desired recovery point objective. This backup will be used by Teradata to restore data and Vantage services in case of a system outage or hardware / software / OS induced data corruption that has rendered the database unusable and requires full data to be restored. Note that full system restores are performed only when needed to recover from a system outage or data loss/corruption event.
- b) Backup Services are available through either of the following methods:
- i. Service Portal: <https://support.teradata.com>
 - ii. Console: <https://console.vantage.teradata.com>

BACKUP SERVICES	AVAILABILITY	
	Service Portal	Console
Enable daily, weekly, or monthly backups	•	•
Suspend the execution of backup jobs	•	•
Cancel in-progress backup jobs		•
Enable auto-restart to re-run a failed backup job one time	•	•
View the status of upcoming and previously executed backup jobs	•	•
Change default and custom backup schedules		•
Edit backup retention policies The Cloud Service Description Addendum for the specific cloud platform the customer chooses provides the backup retention terms		•
Sign up for weekly backup status reports by email	•	•

6.10 Enhanced Backup Services (Sold Separately)

- a) Backup and snapshot storage and retention policies depend on the cloud platform a customer chooses for Vantage deployment. The Cloud Service Description Addendum for the specific cloud platform provides details.
- b) Increasing retention and adding backup and snapshot jobs increases storage use and incurs additional costs.
- c) Enhanced backup services are available through either of the following methods
 - i. Service Portal: <https://support.teradata.com>
 - ii. Console: <https://console.vantage.teradata.com>

BACKUP SERVICES	AVILABILITY	
	Service Portal	Console
Create custom backup job policies (such as additional daily, weekly, or monthly backups, full or incremental)	•	•
Create custom backup retention policies	•	•
Additional custom backup services (such as copying backups to multiple availability zones or regions for disaster recovery purposes) are purchased separately through Teradata Consulting and/or Teradata Services.	•	

6.11 Backup Restoration Services (Available)

- a) You can submit tickets for restoring Advanced SQL Engine tables, databases, and full system-level data through either of the following methods; note that the response time for restore requests will be performed per the standard service level agreement for change requests
 - i. Service Portal: <https://support.teradata.com>
 - ii. Console: <https://console.vantage.teradata.com>
- b) Restored data can be written to an alternate table or database, if there is adequate space, and can only be applied to the same system that performed the original backup.
- c) Snapshot Backups (**Limited Availability feature**) can only be used for full system restores and the Vantage system is restored to the point-in-time state from when the last snapshot backup was taken. The configuration (instance type, size, and quantity, storage volume sizes, AMP configurations, etc.) of the Vantage system being used as a snapshot backup restoration target must match that of the source Vantage system from which that snapshot backup was taken. When snapshot backup is restored, it will initiate a reset of the full Vantage system, including any metadata stored on the Vantage ecosystem. **Snapshots can only be used to restore a full copy of all system data**; partial restores (of individual tables or databases) are not supported. Note that standard backups should still be performed for data that are frequently modified or may need to be restored without updating all the data/objects in the

Vantage system to the version of those objects as contained in the snapshot being restored

6.12 Enhanced Backup Restoration Services (Sold Separately). Additional custom backup services (such as copying backups to multiple availability zones or regions for disaster recovery purposes) are purchased separately through Teradata Consulting and/or Teradata Services.

7. Additional Services

7.1 Database Administration and Operations (Sold Separately)

a) Transition Support

- i. Teradata works with you to validate ecosystem baseline metrics and mutually agree upon the following support and escalation processes:
 1. End-user support requests
 2. Change management
 3. Communication and escalation management
 4. Configuration and release management
 5. Case and problem management
 6. Resource management
 7. Service requests and work orders
- ii. Upon agreement, Teradata works with you to develop an operations manual and knowledge base that specifies the processes and procedures to be followed, the timing and frequency of such services, and the roles and responsibilities of those who will deliver the services. The operations manual does not specify how to run Vantage jobs.
- iii. Teradata will be primarily responsible for the agreed upon services after creating the operations manual and completing a knowledge transfer of the existing processes, tools, and technologies.

b) Vantage Database Administration Deliverables

DELIVERABLE	DESCRIPTION	FREQUENCY
Manual Services Operations Manual	Modifying the operations manual to reflect any procedure changes	As needed
Proactive Monitoring	Monitoring Vantage and responding to alerts	Continuous
Security Monitoring	Monitoring Vantage access and escalating if necessary	Periodic
Service Operations Report	Summary of Vantage operations, monthly service volume, and activities	Monthly
Technical Status Report	Status of technical Vantage operations services	Monthly
Performance Reports	Select the following database operations reports: <ul style="list-style-type: none"> • Vantage database space summary • Analytic engines CPU • Analytic engines I/O • Advanced SQL Engine usage • Failed logon • Password expiry • Resource usage 	Monthly

c) Vantage Administration and Operations. Teradata will add, edit, or delete any Vantage database structures, spaces, users, purge jobs, and alerts associated with the Teradata environment as required. In addition, Teradata will monitor alerts, queries, locking logger, access locks, and database performance.

d) Vantage Security Administration. Teradata will add, edit, or delete any Vantage database security roles, passwords, and access rights as required.

e) Vantage Performance Monitoring

i. If Teradata Workload Management tools are installed and configured, then Teradata Services maintains the performance tool settings of the Vantage environment. This service includes the following performance tools:

1. Teradata Workload Management settings
2. Teradata Priority Scheduler Facility
3. Teradata Viewpoint alerts

ii. Vantage Metrics Collecting and Reporting. Upon agreement, Teradata collects your system usage, performance, and capability metrics, and provides a monthly report on the performance and capacity of the database environment.

iii. Vantage Optimization. Teradata monitors and analyzes Vantage activity, including queries and jobs, to identify performance enhancing opportunities as part of the monthly System and Performance Report. Workload Management setup is not included.

f) Support Activities under Vantage Database Administration

- i. You can submit Support Tickets through the Service Portal or Console – available 24 hours a day, 7 days a week, 365 days a year at: Service Portal: <https://support.teradata.com>, Console: <https://console.vantage.teradata.com>.
- ii. Teradata responds to tickets during your primary coverage window. If you submit a ticket outside your primary coverage window – that is, during your secondary coverage window – Teradata investigates and resolves only S1 (Critical) Cases and responds to all other tickets the next business day.
- iii. If you exceed the monthly limits for your primary coverage window, Teradata accommodates excess tickets by up to 5% of the threshold and responds by severity. If tickets exceed the monthly limit more than two consecutive months, Teradata may suggest you use a different level of support.

PRIMARY COVERAGE WINDOW FOR DATABASE ADMINISTRATION AND OPERATIONS (HOURS IN PT / MT / CT / ET)	MONTHLY LIMITS	
	Cases	Change Requests
24-Hour Shift Monday – Sunday (All hours)	315	40
16-Hour Shift Monday – Friday (9 a.m. – 11 p.m.)	130	20
12-Hour Shift Monday – Friday (9 a.m. – 9 p.m.)	95	15
8-Hour Shift Monday – Friday (9 a.m. – 5 p.m.)	65	10

- g) Managed Services Tools. Teradata may develop or use computer programs, scripts, data, documentation, tools, and other materials—called MS Tools – to render professional services (including services provided under this service description). MS Tools are the confidential and proprietary intellectual property of Teradata, do not constitute products under the agreement, and are not licensed or transferred to the customer. MS Tools may not be used, copied, transferred, or disclosed by anyone other than Teradata without Teradata's prior written consent, and no rights or licenses will be implied. Teradata may install, update, change, or remove MS Tools at its discretion; however, Teradata will remove MS Tools from your environment by no later than the effective date of expiration or termination of this service.

7.2 Service Management (Sold Separately)

- a) Service Management is a program oversight and management function designed to help Teradata work with you as an integrated unit. Teradata provides Service Management for coordinating daily integration activities, managing available resources, participating in communication and reporting, and ensuring process adoption and improvement. Service Managers manage risk and activities through the Issues, Risks, and Actions log.

- b) For deployments that include Vantage Administration and Operations services, Teradata works with you to establish a shared responsibility model for database management. Before delivering these services, Teradata sets up secure access controls to ensure DBAs cannot access, nor perform any tasks that involve, personally identifiable data.

7.3 Success Services (Sold Separately)

Teradata Success Services offers Essential, Performance, and Optimize services for an additional fee.

a) Essential Service

- i. Essential service builds upon the features of Premier Cloud Support to improve system availability, issue prevention, and platform enablement.
- ii. For Advanced SQL Engine instances with greater than 70 TCores or 367,000 TCore-Hours, Essential Service is included.
- iii. With Consumption Pricing, Essential Service is included.

iv. Essential Features

1. Customer support plan
 2. Assigned service management
 3. Service reports
 4. Service reviews
 5. Viewpoint reviews
 6. PDCR configuration
- v. Customer support plan. Teradata documents on going customer support processes (including roles and responsibilities) in a support plan that Teradata reviews with the customer annually and updates as necessary.
 - vi. Assigned Service Management
 7. Teradata identifies technical resources to lead, direct, and facilitate customer service deliverables. The Customer Support Plan specifies individuals by name, provides direct contact information, and identifies their specific roles and responsibilities in delivering services.
 8. For each Severity 1 Case, a Teradata representative conducts a "post-mortem" analysis that includes a closed loop corrective action plan. Teradata informs the customer of any changes in the product support policy permitted by, and in accordance with, this document, any order, or the agreement.
 - vii. Service Reports
 1. Availability Management Report: Teradata provides a convenient method of measuring, monitoring, and reporting platform availability. Availability reports identify outages and durations, analyze the cause, and recommend changes to improve availability.
 2. State of Health Report: Teradata performs remote platform health checks to identify potential problem areas where errors have not reached platform-defined thresholds and are currently recoverable. The health check tool

compares customer data to associated thresholds and generates a report that a Teradata support analyst uses to recommend how to resolve any issues during the customer next planned maintenance window.

3. **Service Performance Report:** Teradata provides a service performance report that identifies Teradata response time to all Cases submitted to a Teradata Service Center during the quarterly reporting period. Service performance reports for dual active systems (including the platform health check, TPS compliance, and service performance reports) are platform-specific; therefore, in dual active implementations, customers receive two individual platform versions of these reports.
 - viii. **Service Reviews.** Teradata conducts quarterly service performance reviews with the customer. On an annual basis, Teradata reviews the customer service offer to assess service coverage, determine how current services will satisfy any planned platform enhancements, and discuss future opportunities for developing the customer's relationship with Teradata. Reviews are conducted either on site or by telephone at Teradata discretion.
 - ix. **Teradata Viewpoint Reviews.** On an annual basis, Teradata reviews and, if necessary, updates Teradata Viewpoint to verify that notifications and workload parameters are properly configured for the customer analytical ecosystem.
 - x. **PDCR Configuration.** On an annual basis, Teradata reviews and, if necessary, updates the Performance Data Collection Reporting (PDCR) tool and database. PDCR helps customers leverage historic platform and query performance for more informed database management and consumption decisions.
- b) **Performance Service.** Performance service builds upon the Essential service to engage additional tools, processes, and resources that are designed to improve the performance of the analytical ecosystem. Performance includes all Essential features, plus the following additional features.

FEATURE	DESCRIPTION	FREQUENCY
Database Health Checks	Basic health checks that ensure database availability.	Weekly
Database Monitoring	Automated alerts and thresholds that monitor the database and platform to look for trends and report any known issues. Alerts are available in the Teradata Operations Management (TOM) portal.	Ongoing
Database Performance Reports	Online reports that show monthly platform performance.	On-demand
Database Administrator Advisor On-Demand Access	Access to Teradata experts to address specific questions about database performance, workload management, and so on.	On-demand; 16 hours per quarter

- c) Optimize Service. Optimize service builds upon the Performance offering to engage additional tools, processes, and resources that are designed to improve the operation of the analytical ecosystem. Optimize includes all Performance features, plus the following additional features.

FEATURE	DESCRIPTION	FREQUENCY
Customer Optimization Plan	Teradata works with you to create an optimization plan to document procedures and operational aspects of the Teradata environment; however, the plan is not meant to detail specific database jobs and processes.	Annually
Database Operations and Administration	<p>Teradata maintains (adds, deletes, or modifies) database structures, spaces, users, purge jobs, and alerts in the Teradata environment.</p> <p>Operations involves monitoring alerts, queries, locking logger, access locks, and database performance.</p>	As Required
Database Performance Tools Operations	<p>Teradata optimizes and manages Advanced SQL Engine performance, analyzes and solves performance issues to save CPU, I/O, and space, and provides a more stable platform with better response times.</p> <p>Teradata regularly maintains the performance tool settings (Viewpoint alerts, Priority Scheduler Facility, and so on) of the data warehouse environment.</p>	As Required
Database Optimization	Teradata monitors and analyzes data warehouse activity (jobs and queries) to identify possible performance improvements.	As Required

8. Consumption Pricing

8.1 Consumption Pricing allows customers to pay only for the compute resources they use. This pricing model is available for supported deployment options only. Teradata measures consumption using Vantage Units.

8.2 Teradata measures Vantage Units by summing the compute resources a system uses. The measurement of Vantage Unit usage begins immediately after system provisioning. Vantage Units are consumed by the logical I/O data used by the instance excluding the uses set out in Excluded from Vantage Units.

- a) Included in Vantage Units. All logical I/O other than I/O from the activities described in subsection (b) below are included in the calculation of Vantage Units. The following activities are examples of some of the queries and functions included:
- All Advanced SQL Engine queries
 - Viewpoint and system monitoring activities including the following:
 - Viewpoint usage via the user interface
 - Viewpoint data collector activity (See the Teradata Viewpoint User Guide for more information about data collectors.)
 - Statistics collected via SQL by statsuser in the Stats Manager
 - If the customer has the Machine Learning and Graph Engines (not available on all Vantage cloud platforms and Vantage versions): SQL used periodically to move Machine Learning Engine consumption data from the machine learning nodes to the Advanced SQL Engine (not synced to SQL queries)
 - Load
 - Utility-based load jobs
 - Backup / restore / data migration
 - Backups
 - Restores, including post-restore SQL scripts
 - Data migration (for example, Data Transfer Utility)
- b) Excluded from Vantage Units. Logical I/O created by the following functions are excluded from the calculation of Vantage Units.
- Consumption collector queries by the consumption service (by vcmuser) and activities by system users
 - Movement of usage data from DBC/DBQL to PDCR
 - SQL usage by PDCR Admin in the Performance Data Collection portlet
 - User-initiated queries that are aborted due to a processing error and return a database error code

8.3 Purchase Consumption. You can purchase Consumption for Vantage through either a commitment or on-demand subscription.

	COMMITMENT	ON-DEMAND
Description	Pre-purchase a certain amount of compute that your organization consumes during the subscription term	Purchase compute as you use it
Subscription	Annual or 3-year terms are required for Consumption for Vantage.	Pay-as-you-go. Any usage outside of a commitment or when all of the committed Vantage Units have been consumed in a contract year will be billed at on-demand rates.
Payment	Pre-paid annually for a defined quantity of Vantage Units You can purchase additional Vantage Units for the remainder of the annual term, if needed, or continue usage at the on-demand rates	Paid monthly, in arrears, based on actual compute usage
Best For	Known or predictable workloads Moderate to high utilization Budget predictability	New or uncertain workloads Short lifespan systems Budget flexibility

8.4 Monitor Consumption

- a) Console. In the Console (<https://console.vantage.teradata.com>), you can monitor hourly, weekly, and monthly Vantage Unit consumption by site, department, or query.
- b) Email Alerts. In the Console, you can set a custom threshold alert for Vantage Unit consumption by site.
- c) Monitor Compute Usage. Teradata monitors your compute usage and adjusts system resources as needed during scheduled maintenance windows. Monitoring compute usage ensures system capacity aligns with workload demand.
- d) Monitor Consumption Usage
 - i. Teradata collects and stores usage data to monitor, evaluate, and report system status and performance. Teradata uses this data to determine how you use our software, access functions, and perform analytics. Teradata does not collect any sensitive or personally identifiable data, nor any data values you enter into your Vantage system.
 - ii. You can enable log features during onboarding to monitor Teradata processing activities.

- iii. To monitor system consumption, Teradata requires continuous access to your system compute resources. If you do not grant this level of access or if you turn it off, you will owe the full amount of the deployed system at the maximum Vantage Unit capacity available to you for the entire month. If you do not reinstate access before the start of the next month, Teradata reserves the right to terminate the service.
- iv. Database Query Log (DBQL) and Performance Data Collection Reporting (PDCR) Log.
 1. The customer must not move data from dbc.Dbqlogtbl, dbc.ResUsageSpma, or dbc.dbqlutilitytbl.
 2. Configured Viewpoint jobs move data from dbc.Dbqlogtbl, dbc.ResUsageSpma, and dbc.dbqlutilitytbl to the PDCR log.
 3. Teradata maintains a minimum of three months of data in the PDCR log.
 4. If there is a shortage of space in the PDCR log, Teradata will increase the space to accommodate the new logs.
 5. Teradata sets SQL, Utilityinfo, and FUL DBQL logging for all the users. The customer must not change it.
 6. Teradata disables Summary and Threshold logging.
- v. VCMUSER requires access to several views, tables, macros, and stored procedures to perform Vantage Unit collection activities.

9. Vantage Security

9.1 Teradata's as-a-service offers are audited periodically for compliance with the following standards:

- Health Insurance Portability and Accountability Act (HIPAA)
- International Standards Organization (ISO/IEC27001)
- Payment Card Industry Data Security Standard (PCI-DSS 3.2.1)
- Service Organization Controls (SOC1, SOC2, Type 1 and 2)

9.2 Periodic audits help customers meet their associated privacy responsibilities, for example under California Consumer Privacy Act (CCPA) and General Data Protection Regulation (GDPR). For more information, review our privacy policy at [Teradata.com/Privacy](https://www.teradata.com/Privacy) and contact your Teradata account team for a copy of an audit report.

9.3 Access Control

- a) As part of its access protection policy, Teradata assigns a risk designation to every Vantage Operations position. Personnel in these positions must complete screening criteria and sign security agreements before receiving system access.
- b) Teradata enforces password complexity, stores and transmits only encrypted password representations, and sets minimum and maximum lifetime restrictions on passwords. Teradata cannot view or access your data – and we never transfer your data between countries.

9.4 Security Re-Approval Process. Teradata establishes a strict security re-approval process for Teradata personnel that consists of:

- Creating, enabling, modifying, disabling, and removing Vantage directory accounts according to account management procedures
- Reviewing and approving account management actions
- Monitoring account management operations for unauthorized actions
- Disabling inactive accounts after 90 days
- Disabling Vantage accounts after an employee is transferred or terminated
- Modifying role-based access when an employee system usage or need-to-know requirements change

9.5 Network Security

a) Teradata includes two layers of network security:

- i. Ingress and egress filtering control lists
- ii. Robust application firewalls

b) Teradata applies ingress and egress filtering control lists, which are configured as "deny-by-default" and limit connectivity, to its Internet border routers. Teradata can also configure your site-to-site VPNs to terminate on cloud firewalls and sets network access control lists (NACLs) to define which traffic transports across tunnels (additional consulting services engagement). Unapproved traffic is blocked. For internal traffic between virtual networks, data is private and not publicly exposed.

9.6 Encryption. Teradata provides customers with options for encryption of data-in-transit and data-at-rest. When enabled, data is encrypted in transit between Teradata and connecting client sessions. Data is also secure from public exposure as it traverses network segments in cloud by implementing customer-selected connectivity options. Customer data can be secured in transit via the cloud service provider's encryption options available for the transit mechanism selected by the customer. Data at rest is stored in encrypted volumes in the cloud service provider's storage. Enhanced encryption solutions are also available from Teradata's third-party partners. Additional information is provided in the Cloud Service Description Addenda.

9.7 Secure Authentication LDAP and Kerberos initial setup and configuration and post-deployment incident and change management, requires additional consulting services engagement.

- a) Lightweight Directory Access Protocol (LDAP). Vantage is LDAP-ready. Vantage secure LDAP directory services integration for secure authentication is available through a Teradata Consulting engagement for an additional fee. Teradata supports encrypted connections between LDAPv3-compliant external directory services and a Vantage system over SSL/TLS (LDAPS). Alternatively, customers can use database authentication (TD2 in Teradata). LDAP requires Customer Directory Service and Vantage usernames to match. LDAP requires network connectivity between Vantage and the Customer external directory service.
- b) Kerberos. Teradata supports Kerberos single sign-on (SSO) secure user authentication between Customer domain users and a Vantage system where the Customer external directory service is designated as the Kerberos Key Distribution Center (KDC) This option does not require network connectivity between Vantage and the customer's external directory service.

9.8 User Roles. Designated users receive user IDs from Teradata with permissions to access Vantage and its stored data. User types DBC (superuser), SYSDBA (Vantage management), and SECADM (security administration) receive TD2 authentication and default passwords, which Customer is responsible for changing after the first use.

9.9 Monitoring. To help customers proactively detect cyberattacks and policy violations, the Vantage security monitoring process collects and correlates relevant security events (such as intrusions). When network devices, such as border routers and firewalls, send security events to Teradata Security Information and Event Monitoring (SIEM) system, it responds according to the detected event.

9.10 Vulnerability Management. Teradata performs regular scans of the environment and code to identify and remediate vulnerabilities in the software and operating systems. This is performed through a combination of static application security analysis and network as well as application-level vulnerability assessments.

10. Vantage Support

10.1 Premier Cloud Support (Included). Teradata Premier Cloud Support provides integrated maintenance and support services for all Vantage subscriptions, including flexible coverage hours and response times, unlimited access to the Service Portal (<https://support.teradata.com>) and Console (<https://console.vantage.teradata.com>), downloadable software, knowledge base searching, communities and forums, and other valuable features. Customers can submit Cases, Service Requests and/or Change Requests through the Service Portal, which is available 24 hours a day, 7 days a week, 365 days a year. Incidents and Problem Tickets are triggered through internal Teradata monitoring and are not visible to the customer. Teradata will respond to tickets based on the assigned ticket severity level. All Vantage subscriptions include Premier Cloud Support with the following Case response times by severity:

	S1 (CRITICAL)	S2 (SIGNIFICANT)	S3 (MINOR)	S4 (LOW)
Cases	24 x 7	9 standard business hours, 5 business days per week ¹		
Case Acknowledgement	2 hours	2 hours ¹	Next business day ²	
Customer Status Updates	Every hour	Every 6 hours ¹	Daily ¹	Weekly
¹ Same business day: Monday – Friday (Customer's local time zone) ² Next business day example: If the customer opens an S3 or S4 Case after 8 p.m. on Friday, Teradata staff will respond after 9 a.m. on Monday. Note: Support is provided in English only. Local language support is not provided for as-a-service subscriptions.				

10.2 Priority Service (Sold Separately). Teradata Priority Service provides customers with increased Vantage Support coverage hours and accelerated response times for certain Case severities as described in the table below:

	S1 (CRITICAL)	S2 (SIGNIFICANT)	S3 (MINOR)	S4 (LOW)
Cases	24 x 7		9 standard business hours, 5 business days per week ¹	
Case Acknowledgement	30 minutes		2 hours	Next business day ²
Customer Status Updates	Every hour	Every 6 hours ¹	Daily ¹	Weekly
¹ Same business day: Monday – Friday (Customer's local time zone) ² Next business day example: If the customer opens an S3 or S4 Case after 8 p.m. on Friday, Teradata staff will respond after 9 a.m. on Monday. Note: Support is provided in English only. Local language support is not provided for as-a-service subscriptions.				

10.3 Support Tickets. Customers can submit Cases, Service Requests and Change Requests (collectively called Support Tickets) through the Console at <https://console.vantage.teradata.com> or Service Portal at <https://support.teradata.com>.

TICKET TYPE	REPORTING OPTION
Case	Service Portal Telephone (S1, S2 Cases only): 1-877-MY-TDATA, Option 3 Automatic Incident Creation: Generated by Teradata systems
Service Request	Service Portal
Change Request	Service Portal

- a) Cases. When opening a Case in the Console or Service Portal, customers must select a Severity based on the level of impact and urgency.

SEVERITY	IMPACT	DESCRIPTION
S1 (Critical)	Mission critical system and/or application component is down, unavailable, or unusable.	Daily business is being critically impacted, causing revenue/risk exposure. Users unable to perform primary function with no workaround. Many users cannot access system or login. If customers submit an S1 Case, they must agree to allow Teradata to contact appropriate escalation personnel. If the appropriate personnel are not available, Teradata changes the Case from S1 to S2 and responds accordingly.
S2 (High)	Production system is up and running, but issue has severe, on-going impact to daily operations; non-mission critical system is down. Applications respond, but critical data is missing / absent or incorrect. Some critical application functionality is not available.	If not resolved, an outage is likely to occur and cause revenue/risk exposure. Users unable to perform primary function with no workaround which significantly affects ability to achieve business objective sufficiently. Many users are affected.
S3 (Medium)	Issue interferes with normal work efforts, but work can continue. System response / performance is degraded. Non-critical application functionality is not available.	Medium and manageable impact to business, with little revenue/risk impact. Users unable to perform secondary function with sufficient short-term workaround. Small group of users affected.
S4 (Low)	Minor issue; normal operations can continue. Functionality impacted but not down. Sporadic error messages.	No business impacts. Primary function is performed infrequently, availability of workaround is not required. Includes High Priority Service Requests.

- b) **Change Requests.** A Change Request is a proposal to add, modify, or remove a service or service component and its associated elements. When opening a change request in the Console (<https://console.vantage.teradata.com>), customers must select a priority according to the impact on operations.

PRIORITY	IMPACT	PRIORITY DEFINITION
1	Critical	Essential to meet business objectives
2	High	Significant but not essential to meet business objectives
3	Medium	Moderate but not significant or essential to meet business objectives
4	Minor	Low or optional
5	Planning	Part of a scheduled planning activity

11. **Pre-GA Offerings**

Teradata may make available, and a customer may choose to use, pre-general availability features for Vantage delivered as-a-service that are identified as “Limited Availability,” “Early Access,” “Preview,” “Alpha,” “Beta,” or a similar designation in related documentation or materials. Pre-general availability offerings are not necessarily feature-complete, nor do they necessarily have technical support commitments. Unless otherwise stated by Teradata, pre-general availability features are intended for use in test environments only and should not be used to process personally identifiable data or data subject to legal or regulatory compliance requirements. Customers may provide feedback and suggestions to Teradata about pre-general availability offerings, and Teradata and its affiliates may use any feedback or suggestions provided without restriction and without obligation to the customer. Pre-general availability offerings (a) may be changed, suspended, or discontinued at any time without prior notice to the customer and (b) are not covered by any SLA.

Teradata Vantage™

Cloud Service Description: AWS Managed Application Addendum

This document supplements the Teradata Vantage Cloud Service Description.

March 4, 2022

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1. Teradata Vantage as an AWS Managed Application

1.1 Teradata deploys Vantage as an AWS Managed Application in a customer-owned AWS account that is dedicated to host the infrastructure for the Vantage as a Managed Application workload. This document supplements the Teradata Vantage Cloud Service Description.

1.2 The customer must provide administrator rights on the AWS account to Teradata using the AWS Identity and Access Management (IAM) service. Teradata needs rights to provision, operate, maintain, and upgrade the AWS instance based on Teradata's standard policies and procedures. The customer has a view-only IAM role access to the AWS instance running Vantage and the resources in this AWS account. Customers might want to subscribe to a Vantage environment in an AWS account in the same AWS region as their data.

2. Responsibilities

2.1 The cloud service provider, Teradata, and the customer all have responsibilities within a shared security model for the management of the Vantage as an AWS Managed Application system.

RESPONSIBILITY	RESPONSIBLE PARTY
	Managed Application (Cloud Infrastructure in Customer Tenant)
Hardware	Customer (Cloud Service Provider)
Data Center / Hosting	Customer (Cloud Service Provider)
Initial Data Migration	Customer
System Availability Monitoring	Teradata (OS and Advanced SQL Engine software)
Software Patching/Upgrading	Teradata
Backup and Restore	Teradata
Premier Cloud Support (software)	Teradata
Cloud Platform Support	Customer (Cloud Service Provider)
Security and Compliance	
Database Administration / Operations <ul style="list-style-type: none">• Database security monitoring• Database encryption• Database user administration, data and upwards	Customer

OS Administration / Operations <ul style="list-style-type: none"> • OS security monitoring • Volume encryption • OS user administration 	Teradata
Network Administration / Operations <ul style="list-style-type: none"> • Security monitoring • Traffic restrictions/filtering • User administration 	Teradata/Customer ¹
Cloud Site Administration / Operations <ul style="list-style-type: none"> • Security monitoring • User administration 	Teradata/Customer ¹
Additional Services (Sold Separately)	
Database Administration / Operations	Teradata
¹ Because the customer also holds root credentials to the account hosting the Vantage cloud infrastructure, both Teradata and the Customer are responsible for securing their respective user credentials.	

2.2 Customers are responsible for procuring AWS infrastructure outside of the AWS account provided to Teradata. Teradata is responsible for providing the Vantage software and services within the AWS account.

2.3 The availability of a service-level agreement (SLA) applies only to the Advanced SQL Engine software. The SLA does not apply to availability issues caused by AWS infrastructure components.

2.4 Teradata is responsible for certifying the environment to meet compliance with audits included within the Vantage service.

2.5 Customers are prohibited from modifying the permissions on the account after they provide administrator rights to Teradata.

2.6 Customers are prohibited from accessing the Vantage as an AWS Managed Application account and systems within the Account using means other than Teradata-approved access mechanisms or the view-only IAM role.

3. Working with AWS

Customers must add Teradata to all correspondence with AWS that affects the availability and stability of the Vantage as a Managed Application system. Scenarios might arise where Teradata, the customer, and AWS will need to work together to resolve issues. In such scenarios, Teradata is not responsible for any delays experienced in restoring the service.

4. Incident Resolution

4.1 The customer must provide Teradata with AWS recommended Identity Access Management (IAM) permissions within the customer AWS Managed Application account.

4.2 The IAM permissions should enable Teradata to:

- a) Open, own, and edit incidents in the customer's AWS account.
- b) Receive updates made to the incidents as needed to restore or maintain service, stability, and performance of the Vantage on AWS Managed Application systems.

4.3 Should Teradata request, the customer will provide authorization (by email) to allow Teradata's AWS Technical Account Managers to:

- a) Engage to resolve the incident.
- b) Be able to access logs and other relevant details as available to the customer's AWS Technical Account Managers.

4.4 The customer will add Teradata's provided email address as an alternate contact for Operations and Security for the AWS Managed Application account

5. Access to Vantage by Teradata

5.1 Because the customers are responsible for procuring the cloud infrastructure and Teradata provides Vantage software and operational services, the availability service-level agreement (SLA) applies only to Teradata Advanced SQL Engine software.

5.2 If the customer takes any of the following actions, they may void the availability SLA and security compliance such as Payment Card Industry Data Security Standard (PCI DSS), Service Organization Control (SOC), and so on.

- a) Using the root user account to log on to the Managed Application account
- b) Assuming IAM role into the managed app account from the master account
- c) Revoking assume role access for Teradata or modifying or using the `AWSAccountAccessRole`
- d) Creating a new role or other mechanism that might provide the ability to change Teradata access permissions
- e) Accessing the APIs of the services provided by Teradata in the managed application environment
- f) Accessing or changing deployed resources like VPCs or VMs specifically for managed app in the customer account

5.3 These actions might result in loss of the Teradata solution, including loss of customer data. In such a scenario, the availability SLA won't be applicable, and Teradata is not responsible for any data loss that occurs.

5.4 If there is data or service loss, Teradata will attempt to restore data and service on a best effort basis using our backup restoration services or enhanced backup restoration services at an additional cost.

6. Compute Pricing Options

Pricing for Vantage is available in four options: Fixed Capacity, Flexible Capacity, Elastic Performance on Demand (EPOD), and Consumption. Each Vantage system can support only one pricing option. In this Section, “compute capacity” refers to the cloud computing infrastructure capability the customer has procured from the Cloud Service Provider.

Note: Vantage as a Managed Application is not offered in the Consumption Pricing model.

6.1 Blended Pricing. Fixed Capacity, Flexible Capacity, and Elastic Performance on Demand are considered blended pricing models. The specific terms for each model are set out in this Section.

- a) Fixed Capacity. Fixed Capacity consists of fixed baseline TCore purchased for the Cloud Service Term along with the option to obtain additional capacity for a variable term.
 - i. Fixed Capacity Baseline. The Customer must order a fixed amount of compute capacity for the full Cloud Service Term. The Customer cannot reduce capacity below this level for the Cloud Service Term. Fixed Baseline Capacity is measured in TCores.
 - ii. Adjustable Capacity. Additional CPU, memory, and I/O can be added on demand through the use of Vantage elasticity features (see table in Section 4 below). During the Cloud Service Term, any capacity added can be removed through the same processes. This additional capacity is billed in On Demand TCore-Hours. On Demand TCore-Hours are billed monthly in arrears and are a function of a) the number, type, and size of the provisioned Advanced SQL Engine compute instances, b) their respective TCore ratings, and c) the number of full or partial hours that the adjusted Advanced SQL Engine compute instances are provisioned. The computation of On Demand TCore-Hours will also take into account the Fixed Capacity Baseline ordered.
- b) Flexible Capacity. Flexible Capacity allows the customer to vary the compute capacity of the instance during the Cloud Service Term. Flexible Capacity is measured in both Committed TCore-Hours and On Demand TCore-Hours.
 - i. Committed TCore-Hours. Committed TCore-Hours are purchased at the beginning of each contract year in the Cloud Service Term and consumed over that contract year. Unused TCore-Hours expire at the end of each contract year and do not roll over. If/when Committed TCore-Hours are fully consumed during a contract year, Flexible Capacity is then billed at the On Demand TCore-Hours rate. Flexible Capacity has a minimum annual commitment of 25,000 Committed TCore-Hours per Advanced SQL Engine instance. The rate of TCore-Hours drawdown from this annual commitment is a function of a) the number, type, and size of the provisioned Advanced SQL Engine compute instances, b) their respective TCore ratings, and c) each full or partial hour that the Advanced SQL Engine compute instances are provisioned.
 - ii. On Demand TCore-Hours. On Demand TCore-Hours are billed monthly in arrears and are a function of a) the number, type, and size of the provisioned Advanced SQL Engine compute instances, b) their respective TCore ratings, and c) the number of full or partial hours that the Advanced SQL Engine compute instances are provisioned.
 - iii. Vantage elasticity features (see table in Section 4 below) can be used to add and/or remove compute capacity of a Vantage instance as needed to meet workload

requirements.

- c) Elastic Performance on Demand (EPOD). For EPOD, Teradata provisions additional fixed compute capacity in the instance. The Customer purchases Committed EPOD TCore-Hours and when the Customer's processing uses that additional compute capacity in the instance, that usage consumes the EPOD TCore-Hours first from any Committed EPOD TCore-Hours and then from On Demand TCore-Hours.
- i. Fixed Capacity Baseline. The Customer must order a fixed amount of compute capacity for the full Cloud Service Term. The Customer cannot reduce capacity below this level for the Cloud Service Term. Fixed Capacity Baseline is measured in TCores.
 - ii. Committed EPOD TCore-Hours. Committed EPOD TCore-Hours are purchased at the beginning of each contract year in the Cloud Service Term and consumed over that contract year. Unused EPOD TCore-Hours expire at the end of each contract year and do not roll over. If/when Committed EPOD TCore-Hours are fully consumed during a contract year, EPOD usage is then billed at the On Demand EPOD TCore-Hours rate. EPOD has a minimum annual commitment of 25,000 Committed EPOD TCore-Hours per Advanced SQL Engine instance.
 - iii. On Demand EPOD TCore-Hours. If/when Committed EPOD TCore-Hours are fully consumed during a contract year, EPOD usage is then billed at the On Demand EPOD TCore-Hours rate. On Demand EPOD TCore-Hours are billed monthly in arrears.
 - iv. EPOD TCore-Hour Usage. Teradata measures EPOD TCore-Hour usage during each month of the Cloud Service Term by running a standard report summing up all of the time that the compute instance was processing and based on the TCore rating of each Advanced SQL Engine instance. That total is converted to TCore-Hours. The Fixed Capacity Baseline TCore that the Customer has purchased are deducted from that total. The remainder are the TCore-Hours used in that month.

6.2 Consumption Pricing. Consumption Pricing is not available for Vantage as an AWS Managed Application offering.

7. Storage Pricing Options

7.1 Backup Storage. Backup Storage is sold as Tebibytes of raw storage capacity consumed based on the maximum storage capacity utilized at any point during each calendar month (the Backup Storage "high-water mark").

- a) Standard Backup Storage. Beyond the two full backups for which storage is included, Standard Backup Storage is a required purchase to store additional Standard Backups.
- b) Snapshot Backup Storage. Snapshot Backup Storage is a required purchase to store Snapshot Backups (**Limited Availability feature**).

8. Subscription Features

The Cloud Service Description describes many of the features specified in this Cloud Service Description AWS Managed Application Addendum.

FEATURE	DESCRIPTION
System Features (Included)	
Service Availability	<p>24 x 7 availability service-level agreement (SLA of 99.9%) for the Advanced SQL Engine, measured and tracked monthly</p> <p>Please note that the 99.9% SLA applies only to the Teradata Vantage software and not the cloud infrastructure since that is deployed in the customer's AWS account.</p> <p>Note: The availability SLA of 99.9% is not applicable to a disaster recovery event where the cloud provider availability zone or region is impacted. If Vantage is deployed in a cloud provider region that has multiple availability zones, Teradata will use reasonable efforts to deploy a new system in a secondary, unimpacted availability zone and restore from an existing backup to the secondary, unimpacted availability zone as part of our service.</p>
Onboarding Services	System provisioning and validation
System Monitoring	Infrastructure and operating system monitoring
System Maintenance	Software patches and version upgrades
System Backups	<p>Daily, weekly, or monthly full system backups with two backups retained by default. Additional backup storage may be purchased to support additional backups or retentions as needed.</p> <p>Snapshot Backups (Limited Availability) Snapshot storage must be purchased as needed to support the required snapshot frequency and retention policy.</p> <p>Custom backup services (such as copying backups to multiple availability zones or regions for disaster recovery purposes) are purchased separately through Teradata Consulting and/or Teradata Services.</p>
Encryption	<p>Teradata provides customers with choices for encryption of data at rest and in transit. When enabled, data is encrypted in transit between Teradata and connected client sessions.</p> <p>By default, Vantage Data Store leverages AWS-managed custom master keys (CMK) for encryption at rest. Customers may, optionally and where available, leverage customer-managed custom master keys (CM-CMK) to manage these keys themselves.</p> <p>As an enhanced security option, database administrators can leverage third-party partner software (sold separately) to encrypt and control access to individual rows and columns within the database</p>

Elasticity Features (Available for Blended Pricing Only)	
Vantage Stop/Start	<p>Stop and restart Vantage instances without affecting persistent storage (subject to the cloud infrastructure availability). Stop/Start will pause/resume the rate of TCore-Hour consumption when the Vantage instance is stopped/restarted.</p> <p>Note: Available for Flexible Capacity pricing only</p> <p>Note: Queries that are running when the Vantage instance is stopped are not automatically resumed and must be restarted after the Vantage instance is restarted.</p> <p>Note: Vantage Stop/Start alters the runtime state of Advanced SQL Engine only and does not extend to other components and services (and any associated fees) such as Applications, backups, network egress, etc.</p>
Vantage Scale Out/In	<p>Change number of Advanced SQL Engine node instances without affecting persistent storage (subject to the cloud infrastructure availability). Scale Out/In will increase/decrease the rate of TCore-Hour consumption based on the number and size of the instances being added or removed to the Vantage system.</p> <p>Note: Available for Fixed Capacity and Flexible Capacity pricing options only</p> <p>Note: Scale Out/In operations result in the Vantage instances being restarted during which time customers cannot submit queries and any running queries will need to be restarted.</p>
Vantage Scale Up/Down	<p>Change Advanced SQL Engine node instance sizes without affecting persistent storage (subject to the cloud infrastructure availability). Scale Up/Down will increase/decrease the rate of TCore-Hour consumption.</p> <p>Note: Available for Fixed Capacity and Flexible Capacity pricing options only</p> <p>Note: Scale Up/Down operations result in the Vantage instances being restarted during which time customers cannot submit queries and any running queries will need to be restarted.</p>
Elastic Performance on Demand (EPOD)	<p>Add additional Vantage compute capacity without any downtime. EPOD capacity up to the baseline Vantage system size is possible.</p> <p>Note: Available for the EPOD pricing option only</p>
Elasticity Features (Available for all Pricing Options)	
Data Store Expansion	<p>Expand storage after deployment in 1 TB increments (raw) at the node level</p> <p>Note: Data Store Expansion operations result in the Vantage system being restarted during which time customers cannot submit queries and any running queries will need to be restarted.</p> <p>Note: Data Store Expansion is a one-way operation. Once increased, storage capacity cannot be reduced.</p>

Self-Service Interfaces (Included)	
Service Portal	Submit incidents and other requests
Console	Monitor and manage systems, users, and tickets
Additional Fees (Optional)	
Additional TCore-Hours	Additional TCore available on demand (Blended Pricing option required)
Standard Backup storage	Storage to persist standard backups, beyond the two full backups for which storage is included, in 1 TiB increments (raw)
Snapshot Backup storage (Limited Availability feature)	Storage to persist snapshot-based backups in 1 TiB increments (raw) (required for Snapshot Backups)
Teradata Success Services	Proactive operational support and service management
Priority Service	Increased incident support coverage hours and accelerated response times

9. Applications

This section describes various applications, including packaging options, that are either included with the Vantage subscription or that are sold separately.

9.1 Application Packaging Options Summary

This section describes various applications, including packaging options, that are either included with the Vantage subscription or that are sold separately.

PACKAGE	AVAILABILITY	DETAILS
Cloud Foundation	Included.	Included with Vantage Subscription.
A-la-Carte Teradata Applications	Sold separately.	Alternative purchase option for Teradata applications on an individual application-by-application basis.
Third-Party Tools	Sold separately.	Customers may bring their own license for approved third-party partner tools (BYOL) that reside within the Vantage on AWS environment. Subject to an additional third-party software hosting fee.

9.2 Cloud Foundation (Included). Cloud Foundation bundles the foundational applications included with the Vantage subscription.

APPLICATION	DETAILS
Teradata Advanced SQL Engine	Included with Vantage subscription.
Teradata Data Mover	One instance included. Requires implementation by Teradata Consulting for an additional fee. Vantage on AWS must be used as either a source or target.
Teradata Query Service	Included with Vantage subscription.
Teradata Viewpoint	One standard-size instance included with Vantage subscription.

9.3 A-la-Carte Teradata Applications (Sold Separately). For an additional fee, Teradata applications may be purchased individually.

APPLICATION	AVAILABILITY
Teradata Data Lab	Available.
Teradata Data Mover	Available in one size. Note: The first instance is included in Cloud Foundation. Up to three additional instances may be purchased. Requires implementation by Teradata Consulting for an additional fee. Vantage on AWS must be used as either a source or target.
Teradata QueryGrid	Teradata Connectors for one Vantage system. Includes one instance of Teradata QueryGrid Manager per Vantage system. Requires implementation by Teradata Consulting for an additional fee.
Teradata Viewpoint	Available. One standard-size instance is included with Cloud Foundation.

9.4 Third-Party Tools Descriptions (Sold Separately). For an additional fee, called the Vantage Third-Party Software Hosting Fee, Teradata will host approved and licensed third-party software as described in this section.

- a) Third-Party Tools are available only through a bring-your-own-license (BYOL) model where the customer is required to enter into a separate agreement directly with the third-party vendor to license, maintain, and support the Third-Party Tool for the duration of the customer's Vantage subscription.
- b) Customers are responsible for engaging the Third-Party Tool vendor for software maintenance and support. Teradata agrees to perform activities that are necessary for such maintenance and support of the Third-Party Tool software in a Vantage environment that require infrastructure or node-level access, but only as specifically

described and directed by the customer.

- c) Service Availability. SLA commitments do not apply to the extent that Teradata reasonably determines a failure was caused by the Third-Party Tool software.
- d) Customers are responsible for managing their own Third-Party Tool configurations, including application policies, passwords, and encryption keys.

THIRD-PARTY TOOL	DETAILS
Protegrity	<p>Protegrity develops enterprise data security software and provides scalable, end-to-end data security solutions. Protegrity Data Security Platform helps Teradata customers secure sensitive data and comply with privacy regulations. Protegrity includes two components that pertain to Vantage:</p> <ul style="list-style-type: none"> • Protegrity Database Protector for Teradata: Provides policy-based data encryption and tokenization capabilities for Advanced SQL Engine. • Protegrity Enterprise Security Administrator (ESA): Provides customers with centralized, visual administration of data security policies, key management, auditing, and reporting. Protegrity ESA must be installed, hosted, and managed by the customer, outside of the Vantage environment managed by Teradata. <p>Note: Customers must contract with Teradata Consulting to assist with implementation for an additional fee.</p>
Thales CipherTrust Protection for Teradata (CPT)	<p>Thales develops enterprise data security software and provides scalable, end-to-end data security solutions. Thales CipherTrust Protection for Teradata helps Teradata customers secure sensitive data and comply with privacy regulations. CipherTrust Protection for Teradata includes two components that pertain to Vantage:</p> <ul style="list-style-type: none"> • CipherTrust Protection for Teradata: Provides encryption and decryption controls for securing sensitive columns in Advanced SQL Engine. • CipherTrust Manager: Provides customers with centralized administration of data security policies, key management, auditing, and reporting. CipherTrust Manager must be installed, hosted, and managed by the customer outside of the Vantage environment managed by Teradata. <p>Note: Customers must contract with Teradata Consulting to assist with implementation for an additional fee.</p>
Imperva SecureSphere	<p>Imperva SecureSphere for Teradata database is a database activity monitoring (DAM) solution that provides real-time database protection and security. It helps Teradata customers monitor and audit access to all sensitive data and helps customers to satisfy compliance requirements. Imperva DAM reads database traffic from Vantage Advanced SQL Engine for monitoring, auditing, reporting, and alerting customers. Imperva integrates with Teradata using an on-node agent installation that communicates to a management, rule-based command, and control console known as Imperva SecureSphere Management Server. Imperva SecureSphere Management Server must be installed, hosted, and managed by the customer, outside of the Vantage environment managed by Teradata.</p> <p>Note: Customers must contract with Teradata Consulting to assist with implementation for an additional fee.</p>
IBM Guardium	<p>Guardium is a data protection and network monitoring tool from IBM. It provides a database activity monitoring system (DAM), which reads network traffic from the database for collection, aggregation, monitoring, reporting, and alerting on user activity on the integrated database. Guardium integrates with Vantage using an agentless “Guardium Exit Library” configuration that communicates to a rule-based management command and control console that is hosted and managed by the customer, outside of the Teradata-managed Vantage environment. S-TAP/K-TAP integrations are not supported.</p>

	<p>Guardium Exit Library is the supported integration.</p> <p>Note: Customers must contract with Teradata Consulting to assist with implementation for an additional fee.</p>
Dataguise	<p>Dataguise is a provider of data-centric audit and protection (DCAP) solutions that discover sensitive data and secure it. DgSecure by Dataguise detects, protects, audits, and monitors sensitive data across the enterprise for data stored in Vantage by means of functions installed on the Vantage Advanced SQL Engine.</p> <p>Note: Customers must contract with Teradata Consulting to assist with implementation for an additional fee.</p>
SAS Embedded Process (SAS EP)	<p>SAS develops and markets a suite of analytics software, which helps access, manage, analyze and report on data to aid in decision-making. SAS Embedded Process helps bring to Teradata customers advanced analytics capabilities through SAS code in Teradata Vantage without moving data out of Vantage.</p> <p>SAS EP includes two components that pertain to Vantage:</p> <ul style="list-style-type: none"> • SAS User-Defined Function (UDF) Server components: Includes SAS EP, SAS EP Support Functions, and the SAS Formats library. Installing or upgrading SAS EP is independent of Vantage. However, if these components are required. Teradata will install SAS UDF Server components for an additional fee. <p>SAS client-side software: Provides an interface that customers can use to initiate function calls and analyze the results.</p>

10. Supported AWS Connectivity Options

CONNECTIVITY OPTIONS	DETAILS
AWS Transit Gateway (TGW)	<p>This is the recommended option</p> <p>Customers must deploy the TGW in their account</p> <p>The customer uses a network transit hub to interconnect the VPCs and on-prem networks</p> <p>For quotas or bandwidth details see: https://docs.aws.amazon.com/vpc/latest/tgw/transit-gateway-quotas.html</p>
VPN	Standard connection speed up to 5 Gbps, subject to AWS published data rates for an AWS-managed VPN gateway
AWS PrivateLink	AWS PrivateLink is supported by an endpoint in a customer VPC and supports Connection speed of up to 25 Gbps
Direct Connect	AWS Direct Connect allows the customer to establish a dedicated network connection from their premises to the Vantage instance in AWS. Using AWS Direct Connect, you establish a private connection between AWS and your datacenter, office, or colocation environment.

11. Supported AWS Instances

Vantage offers instance options based on customer infrastructure and performance requirements. Instances are preconfigured with Teradata software.

ENGINE	INSTANCE SIZE	INSTANCE LIMIT	TCORE	KEY ATTRIBUTES
Advanced SQL Engine	Small 1	2-128	2.96	Separate compute and storage for elasticity Fallback for availability
	Small 2		4.46	
	Medium		5.14	
	Large 1		7.51	
	Large 2		8.91	
	XLarge 1		10.29	
	XLarge 2		11.66	
	XLarge 3		12.46	
	XLarge 4		13.26	
	XLarge 5		13.37	
	XLarge 6		14.74	
	XxLarge 1		15.03	
	XxLarge 2		16.23	
	XxLarge 3		16.46	
	XxLarge 4		17.83	
	XxLarge 5		19.89	
	XxLarge 6		23.31	
XxLarge 7	26.74			

12. Supported AWS Regions

REGION NAME	REGION
North America	
US East (N. Virginia)	us-east-1
US East (Ohio)	us-east-2
US West (N. California)	us-west-1
US West (Oregon)	us-west-2
Canada (Central)	ca-central-1
South America	
South America (Sao Paulo)	sa-east-1
Asia Pacific	
AP (Hong Kong)	ap-east-1
AP (Mumbai)	ap-south-1
AP (Seoul)	ap-northeast-2
AP (Singapore)	ap-southeast-1
AP (Sydney)	ap-southeast-2
AP (Tokyo)	ap-northeast-1

Europe	
EU (Frankfurt)	eu-central-1
EU (Ireland)	eu-west-1
EU (London)	eu-west-2
EU (Milan) ¹	eu-south-1
EU (Paris)	eu-west-3
EU (Stockholm)	eu-north-1
Middle East	
ME (Bahrain)	me-south-1
Africa	
AF (Cape Town) ¹	af-south-1
¹ Support in this region requires a two-week lead time.	