



Teradata and AWS Partnership

Offering Choice, Flexibility, and Elasticity in the Cloud

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Agenda

- Intro & Background
- AWS Value Drivers
- Teradata deployment options for AWS
- Teradata in the AWS ecosystem

AWS Value Drivers



Innovation



Availability



Elasticity



Global Scale



Cost



Security

AWS Capabilities

Technical & Business Support									
Marketplace									
Analytics		Dev/Ops		Mobile Services		IoT		AI	
Data Warehousing	Elasticsearch	One-click App Deployment	API Gateway	Rules Engine	Machine Learning	Virtual Desktops	Data Integration	Schema Conversion	
Business Intelligence	Data Pipelines	Resource Templates	Single Integrated Console	Device Shadows	Image Recognition	Sharing & Collaboration	Integrated Networking	Exabyte-Scale Data Migration	
Hadoop/Spark	Interactive SQL Queries	Build and Test	Identity	Device SDKs	Text to Speech	Corporate Email	Integrated Identity & Access	Application Migration	
Streaming Data Analysis	ETL	Application Lifecycle Management	Sync	Device Gateway	Conversational Interface	App Streaming	Integrated Resource & Deployment Management	Database Migration	
Streaming Data Collection		DevOps Resource Management	Mobile Analytics	Registry	Deep Learning Frameworks	Communications	Integrated Devices & Edge Systems	Server Migration	
App Services		Triggers		Mobile App Testing		Local Compute			
Queuing & Notifications	Email	Containers	Targeted Push Notifications						
Workflow	Transcoding	Analyze and Debug							
Infrastructure		Core Services		Security & Compliance				Management Tools	
Regions	Compute VMs, Auto-scaling, Load Balancing, Containers, Virtual Private Servers, Batch Computing, Cloud Functions, Elastic GPUs, Edge Computing	Storage Object, Blocks, File, Archivals, Import/Export, Exabyte-scale data transfer	Databases Relational, NoSQL, Caching, Migration, PostgreSQL compatible	Identity Management	Access Control	Monitoring & Logs	Assessment & Reporting	Manage Resources	Service Catalogue
Availability Zones				Configuration Compliance	Key Management & Storage	Account Grouping	Resource & Usage Auditing	Web Application Firewall	Configuration Tracking
Points of Presence		Networking VPC, DX, DNS	CDN				DDOS Protection	Monitoring	Server Management
								Resource Templates	

Common Use Cases for Cloud Adoption



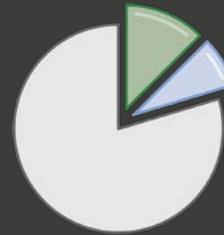
Dev & test



New applications



Digital



Analytics



Mobile



Datacenter migration



Mission-critical applications



All-in



Strategic
Partnership



AWS Enterprise
Support



Operational
Support





Do-it-yourself



AWS Deployment Option #1

Do-it-yourself

- *"I'll deploy in AWS and be responsible for managing everything."*
- **Benefit:** Broad system customization
- **Footprint:** Most AWS regions globally
- **Term:** Hourly, 1-year, 3-year
- **Buy from:** Marketplace, Teradata (BYOL)
- Recommended use cases:
 - Proofs of Concept
 - Test & Development
 - Discovery Analytics / Data Labs



POC + Test/Dev + Discovery + Data Labs

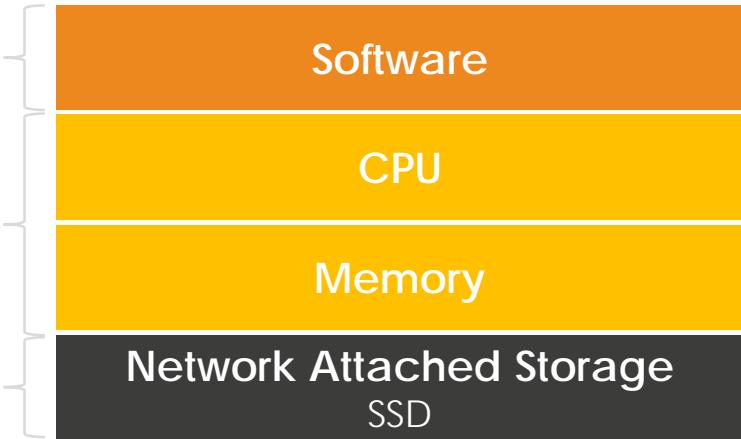
Teradata Software for AWS



TERADATA.

aws

- Amazon Machine Images (AMI)
- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon Elastic Block Store (Amazon EBS)



How to Subscribe and Deploy

How to subscribe

- Two subscription options:
 1. **Marketplace**: hourly pay-as-you-go consumption
 2. **Bring Your Own License (BYOL)**: 1-year or 3-year subscriptions



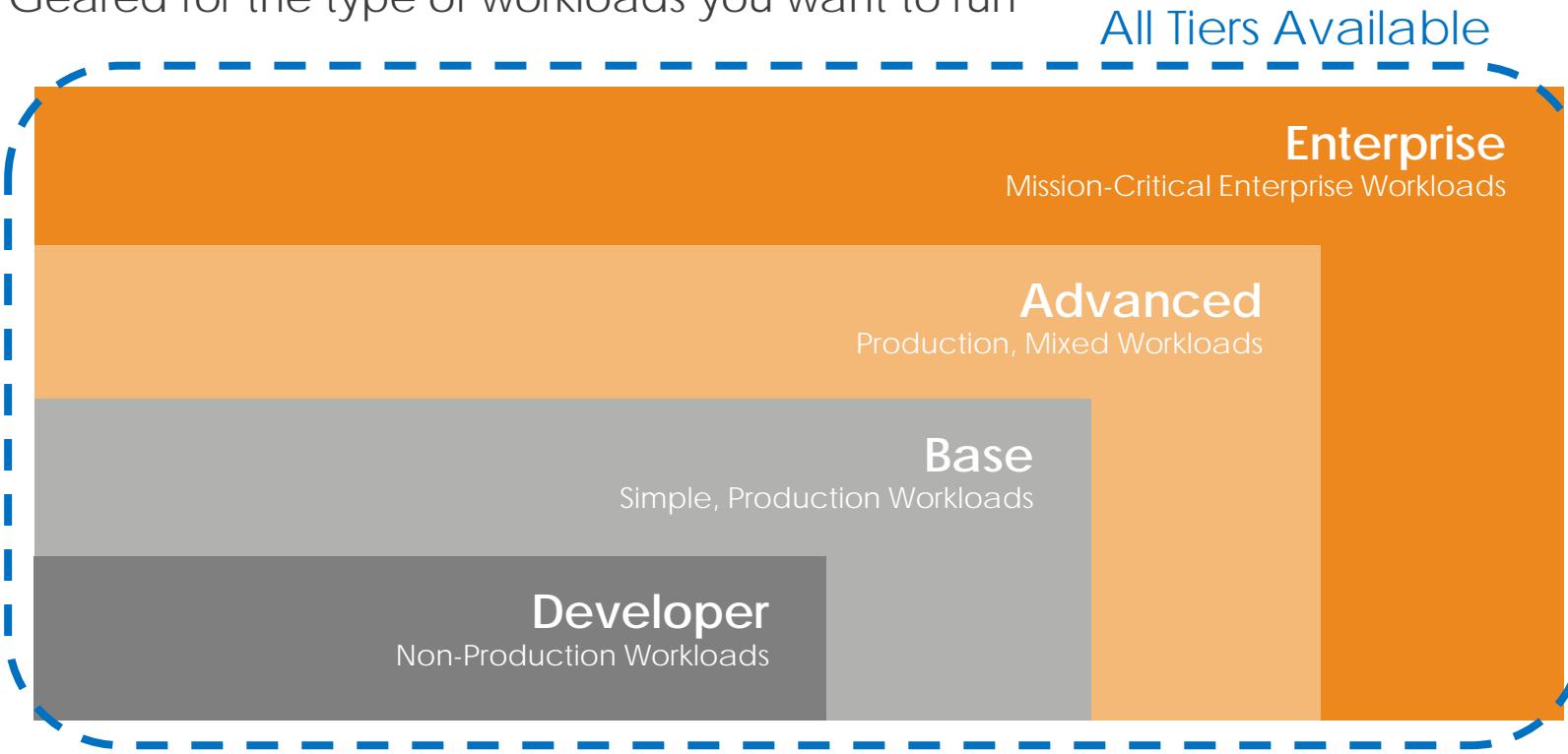
How to deploy

- Deployment via [AWS Marketplace](#)
- Thorough documentation, Premier Cloud Support included



Software Tiers

Geared for the type of workloads you want to run



Deploy via AWS Marketplace

Choose Teradata Database with or without Teradata IntelliSphere

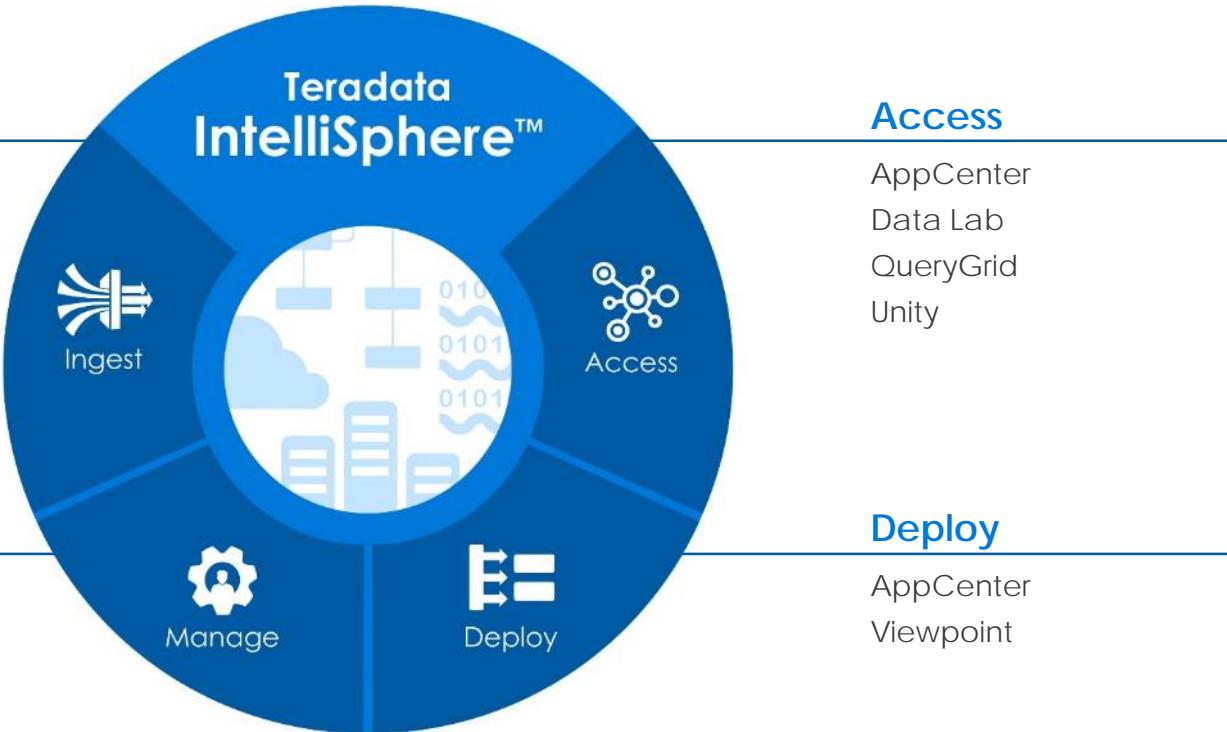
The screenshot shows the AWS Marketplace search results for "teradata". The search bar at the top has "teradata" entered. The results page displays three products:

- Teradata Database Enterprise**:
 - Version: 16.10.00.08 | Sold by Teradata
 - Starting from \$0.90/hr or from \$6,048.00/yr (23% savings) for software + AWS usage fees
 - Flagship data warehouse software featuring Teradata Active System Management and no system concurrency limit. Customers get quick time to value and low total cost of ownership....
 - Linux/Unix, Other SLES 11 SP3 for Teradata, kernel-default-3.0.101-0.132.TDC.1.R.0-default - 64-bit Amazon Machine Image (AMI)
- Teradata Database Enterprise with IntelliSphere**:
 - Version: 16.10.00.08 | Sold by Teradata
 - Starting from \$1.02/hr or from \$6,864.00/yr (23% savings) for software + AWS usage fees
 - Flagship data warehouse software featuring Teradata Active System Management and no system concurrency limit. Includes entitlement to Teradata IntelliSphere software bundle....
 - Linux/Unix, Other SLES 11 SP3 for Teradata, kernel-default-3.0.101-0.132.TDC.1.R.0-default - 64-bit Amazon Machine Image (AMI)
- Teradata Database Enterprise (BYOL)**:
 - Version: 16.10.00.08 | Sold by Teradata
 - Flagship data warehouse software featuring Teradata Active System Management and no system concurrency limit. Customers get quick time to value and low total cost of ownership....
 - Linux/Unix, Other kernel-default-3.0.101-0.132.TDC.1.R.0-default - 64-bit Amazon Machine Image (AMI)

The left sidebar contains filters for Categories (All Categories, Software Infrastructure, Business Software), Operating System (All Windows, All Linux/Unix), Software Pricing Plans (Free, Hourly, Annual, Bring Your Own License), Support (Product Support Connection), Software Free Trial (Free Trial), Delivery Method (Amazon Machine Image, CloudFormation Stack, SaaS), and View Categories.

IntelliSphere

Several capabilities included in one simple subscription-based software license



AWS CloudFormation Templates

Templates enable easy deployment of an entire Teradata ecosystem (3 options)

Test and Development



- Teradata Database
 - Viewpoint (Single Sy)

Minimum Production



- Teradata Database
 - Viewpoint (Single System)
 - Server Management
 - Data Stream Utility

Full Production



- Teradata Database
 - Viewpoint (Multi-System)
 - Server Management
 - Data Stream Utility
 - REST Services
 - Data Mover
 - Ecosystem Manager

Specify Details

Specify a static name and parameter values. You can use or change the default parameter values, which are defined in the AWS CloudFormation template. Learn more.

Stack name:

Parameters

Tracdata Database

Server Name:	<input type="text" value="localhost"/>
DB Password:	<input type="password"/> <small>Optional: AWS KMS encrypted</small>
Japanese Support:	<input checked="" type="checkbox"/> Japanese language support
HTTP Server:	<input type="text" value="ContainerPort:8080;Protocol:HTTP;AmazonPort:8080;Protocol:HTTP;Listeners"/>
System Timezone:	<input type="text" value="Asia/Tokyo"/> <small>Optional: Default: AWS Region timezone</small>

Node Count & Instance Type

Number of Nodes:	<input type="text" value="4"/> <small>Database node count (Min: 2 Max: 20)</small>
Instance and Storage Type:	<input checked="" type="radio"/> Amazon - SSD - 6TB <small>Storage size per node</small>

VPC Settings

VPC:	<input type="text" value="10.8.0.0/16"/> <small>CDR starts for new VPC (e.g., 10.8.0.0/16)</small>
AvailabilityZone:	<input type="text" value="Search"/> <small>-</small>
Public Subnet:	<input type="text" value="10.8.1.0/24"/> <small>CDR starts for new public subnet (e.g., 10.8.1.0/24)</small>
BYNET1 Subnet:	<input type="text" value="10.8.1.0/24"/> <small>CDR starts for new BYNET1 subnet (e.g., 10.8.1.0/24). Endpoints for main connection</small>
BYNET2 Subnet:	<input type="text" value="10.8.2.0/24"/> <small>CDR starts for new BYNET2 subnet (e.g., 10.8.2.0/24). Endpoints for main connection</small>

Security Group

Remote Access From:	<input type="text"/> <small>CDR starts for incoming SSH and database client traffic to the database nodes</small>
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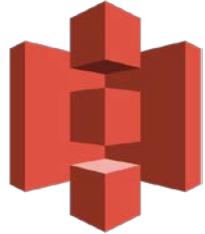
Key Pair:

AWS Key Pair:	<input type="text" value="Search"/> <small>-</small>
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Note: Ecosystem templates are not launched from AWS Marketplace but rather teradata.com/aws/getting-started

Integration with Amazon S3

With low-cost S3, pay only for what you use – storage scales automatically



Load / Export

Teradata Parallel Transporter (TPT)

- TPT Access Module for Amazon S3 (part of Teradata Tools and Utilities) enables direct load and export between S3 and Teradata Database

Backup / Restore

Teradata Data Stream Controller

- Data Stream Controller (part of Data Stream Utility) enables direct backup / restore between Amazon S3 and Teradata Database
- Choose from daily, weekly or monthly backups which are automatically configured
- Restore from a backup by submitting a request

Querying

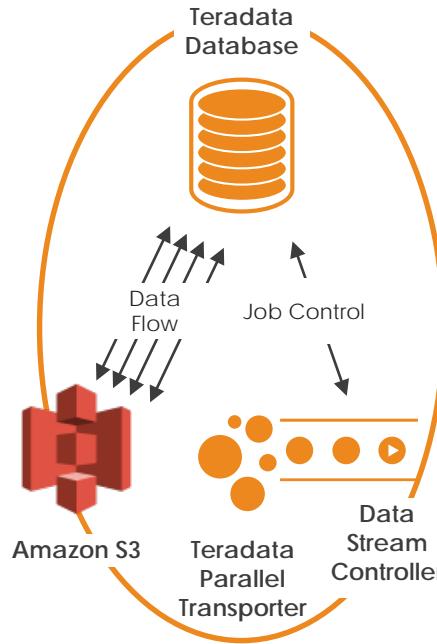
Teradata QueryGrid

- QueryGrid Presto and Hive Connectors enable direct querying of data stored in Amazon S3
- Connectors must be purchased separately

- Amazon S3 is the preferred data repository for Data Lakes with unstructured data in AWS

Load Data with Teradata Parallel Transporter

- Teradata Parallel Transporter (TPT) Access Module for AWS enables **parallel data load and export** between Amazon S3 and Teradata Database
- TPT is FREE with Teradata Database and includes Load, Export, Update, and Stream operators



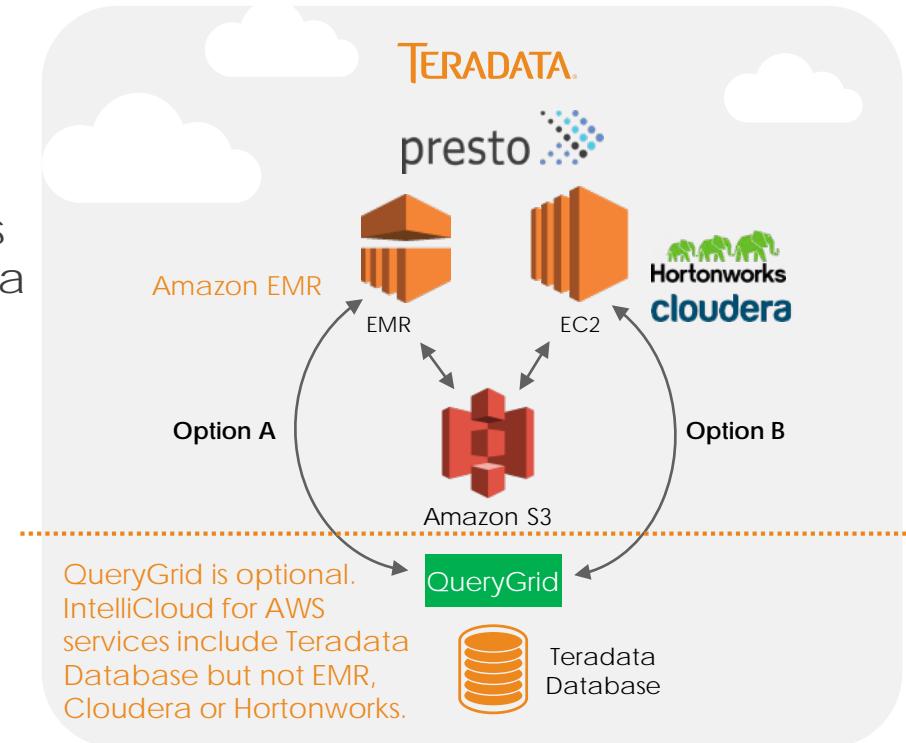
Backup Data with Data Stream Controller

- Easily create and manage jobs in **Teradata Viewpoint** for backup and restore at the database or object level
- **Incremental backup** means only changed blocks are streamed from the database
- **Multiple parallel data streams** between each Teradata node and Amazon S3 minimize backup and restore windows

Direct access to DSC is not available with IntelliCloud

Directly Query Amazon S3 Using Teradata QueryGrid

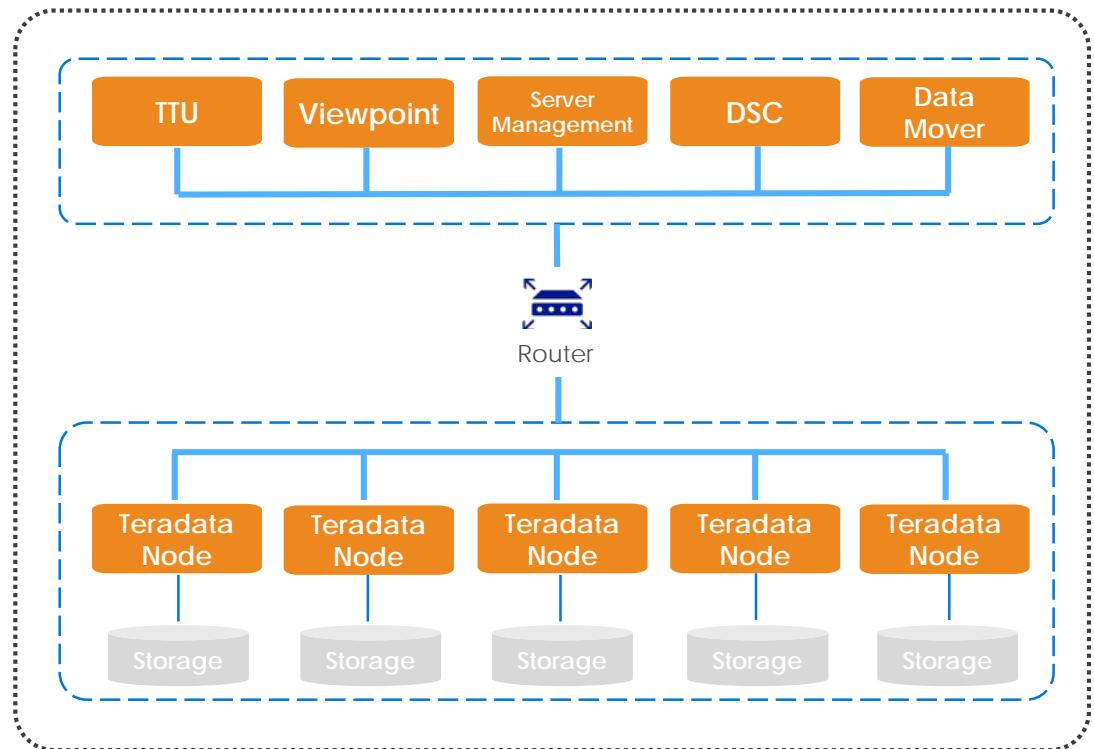
- Directly query data in Amazon S3
- Run SQL Joins from Data Lake to Data Warehouse
- Optional Teradata QueryGrid Connectors for Hive and Presto interface with Teradata Presto
- Hive Metastore renders objects in S3 storage able to be queried by Teradata
- Presto provides in-memory SQL engine
- AWS Hadoop options include:
 - Amazon Elastic MapReduce (EMR), or
 - Hortonworks (HDP) or Cloudera (CDH) on EC2
- QueryGrid, Presto purchased separately



Automatic Node Failure Recovery

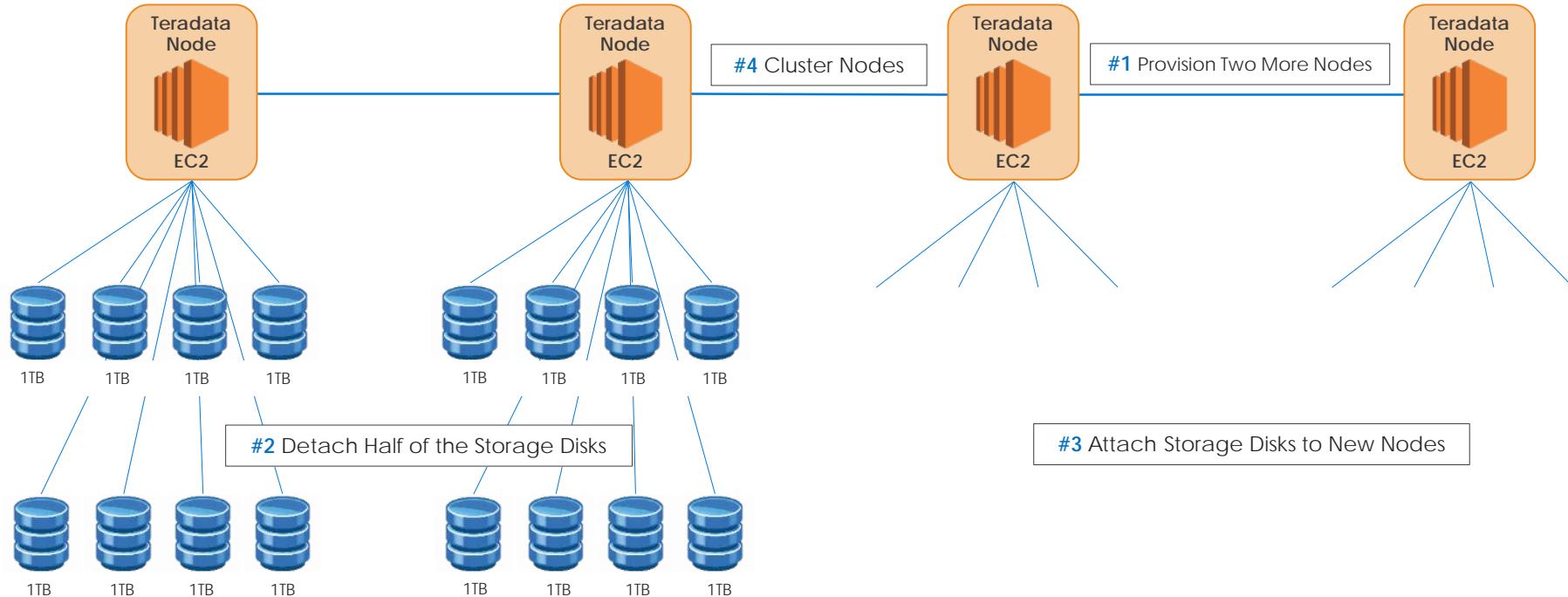
Building for Failure is a key design point of Teradata Software for AWS

- Detects when a node has dropped out of a system and spins up a new one (in approximately 20 minutes)
- In Amazon EBS storage configurations, all system resources **are automatically restored**



Elasticity: Double Compute Capacity with Scale Out/In

Example: A 2-node system with 40TB total storage Scaled Out to a 4-node system with 2x the compute resources



Compute Elasticity with Scale Out/In

- The system can be **Scaled Out** (grown) when the workload requires more CPU, memory, and storage bandwidth
 - Yields 2x or 4x of compute (CPU and memory)
 - Yields 2x or 4x the storage IO throughput (*i.e., not storage quantity*)
 - Afterward, when the workload doesn't require so much CPU, memory, and storage bandwidth, the system can be Scaled In (shrunk) back to the original state
- AMPs are migrated to new nodes along with the storage disks
 - **No data redistribution is required**, minimum downtime (minutes)
 - Total AMPs and Storage across the system remains the same
 - But, the **compute resources per AMP increase → performance improves**
- Supported only for Teradata Database systems deployed on EC2 instances using Amazon EBS (**m4 family**)

Teradata Software for AWS

Do-it-yourself	Americas	International
Available Now	Brazil, Canada, U.S.	Australia, Germany, India, Ireland, Japan, Korea, Singapore, U.K.
Coming Soon	AWS GovCloud	--





As-a-service



AWS Deployment Option #2

As-a-service (IntelliCloud)

- *"Manage the environment for me, but I'll choose the region for deployment."*
- **Benefit:** No infrastructure management
- **Footprint:** Select AWS regions globally
- **Term:** Monthly, 1-year, 3-year
- **Buy from:** Teradata Account Team
- Recommended use cases
 - Production Analytics
 - Disaster Recovery
 - Test / Dev / QA / Data Labs



Production + DR + Test/Dev + QA + Labs

IntelliCloud Subscription Attributes



Service Feature	Included
Software	✓
Infrastructure	✓
Monitoring	✓
Encryption	✓
Compliance	✓
Web Console	✓
Onboarding	✓
Up to 99% SLA	✓
Backups	✓

- **Predictable cost**
 - Flexible pricing, no hidden fees
- **Convenient subscription options**
 - Monthly, 1-year, and 3-year terms
- **“Just bring your data and a DBA”**
 - We manage the environment for you

IntelliCloud Service Features



Performance

Multiple instance types
Multiple regions enable low-latency access

Security

24x7 monitoring
Data encryption
ISO 27001, SOC 1/2, PCI, HIPAA, GDPR

Availability

SLA for up to 99% uptime
Daily backups for rollback and business continuity

Operations

Software patches
Version upgrades
Management console

IntelliCloud Security and Compliance

- Audited for compliance
 - ISO 27001
 - SOC 1 and 2
 - PCI
 - HIPAA
- Designed to comply
 - GDPR
 - EU-US Privacy Shield
 - EU Model Clauses
 - Additional regulations



HIPAA
Compliance

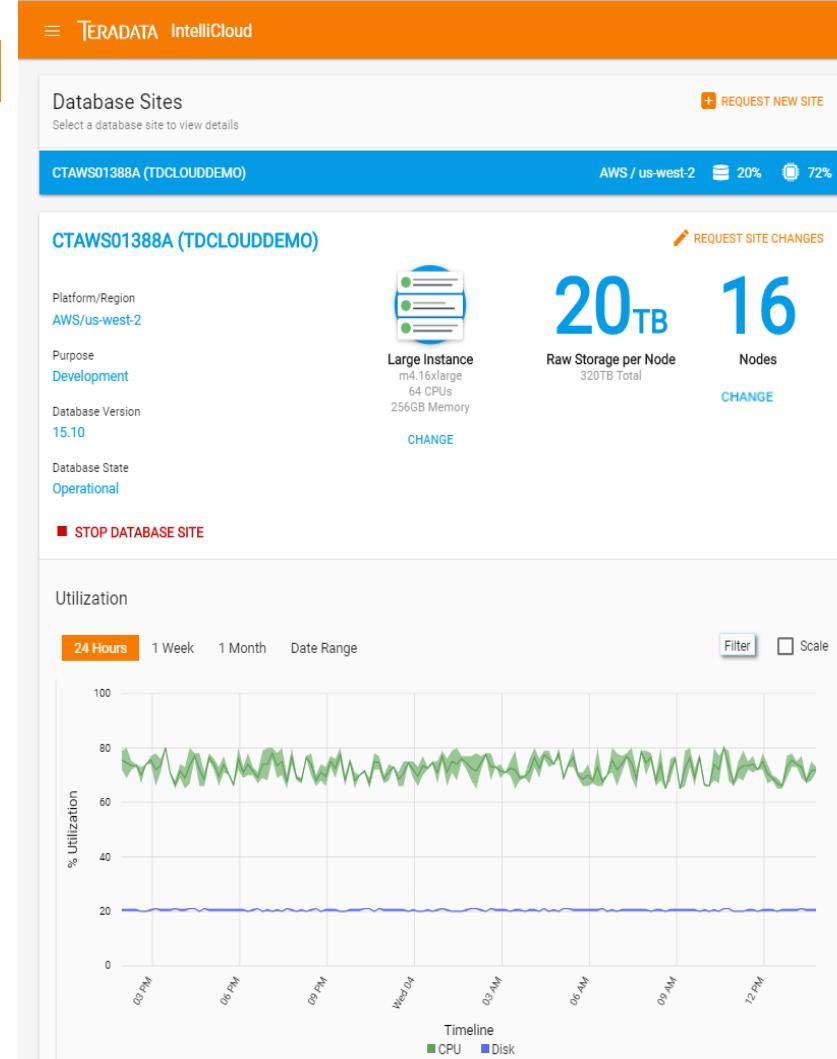


We invest ~\$1M each year in recurring third-party audits to ensure compliance

Point-and-Click Control

IntelliCloud Management Console

- **Scale** compute up/down and out/in
- **Stop/Start** the database
- **Modify backup parameters**: schedule, # backups maintained
- **View usage metrics**: memory and disk utilization
- **View site details**: node types, # nodes, storage per node, IP addresses, etc.
- **Coming**: Add firewall rules to allow only desired IPs, ports, protocols



Management Console Makes it Easy

- Place a site request by selecting:
 - Infrastructure: **AWS**
 - Region: e.g., **AWS East, AWS London, AWS Frankfurt**
 - License tier: **Base, Advanced, Enterprise**
 - Instance Type: **m4.4xl, m4.10xl, m4.16xl**
 - Number of Nodes: **Between 2 and 64**
 - Network Storage Size: **Between 5TB and 60TB**

The screenshot shows the 'Request a New Site' page in the Teradata IntelliCloud Management Console. It includes fields for Cloud Platform (Azure), Region (West US 2), Database Version (15.10), and Product Tier (Advanced). Below these, sections for 'Advanced Tier' (Scalability, Customer Support, Teradata Database Features), 'Ecosystem Applications' (Data Stream Controller, Ecosystem Manager, REST Services, Server Management, Teradata Tools and Utilities, Viewpoint (Multi System)), and 'More info? View our Azure services page.' are displayed. At the bottom, options for selecting a virtual machine configuration (Medium and Large) and setting database node count (15) and storage size (20TB) are shown.

TERADATA IntelliCloud

Request a New Site
Please fill out the fields below to begin the Site Creation process

Which platform should host your database site?

Cloud Platform: Azure

Region: West US 2

Database Version: 15.10

What product tier best fits your needs?

Product Tier: Advanced

Advanced Tier

Scalability

- Concurrent Query Limit: No Limit
- Node Limit: Up to 32
- Premier

Customer Support

Teradata Database Features

- Row Level Security
- Secure Zones
- Teradata Columnar
- Teradata Temporal
- Teradata Intelligent Memory
- Workload Management: TISM

Ecosystem Applications

- Data Stream Controller
- Ecosystem Manager
- REST Services
- Server Management
- Teradata Tools and Utilities
- Viewpoint (Multi System)

More info? [View our Azure services page.](#)

Select a virtual machine configuration

Medium
m4.16xlarge
16 CPUs
112 GB RAM

Large
m4.16xlarge
20 CPUs
140GB Memory

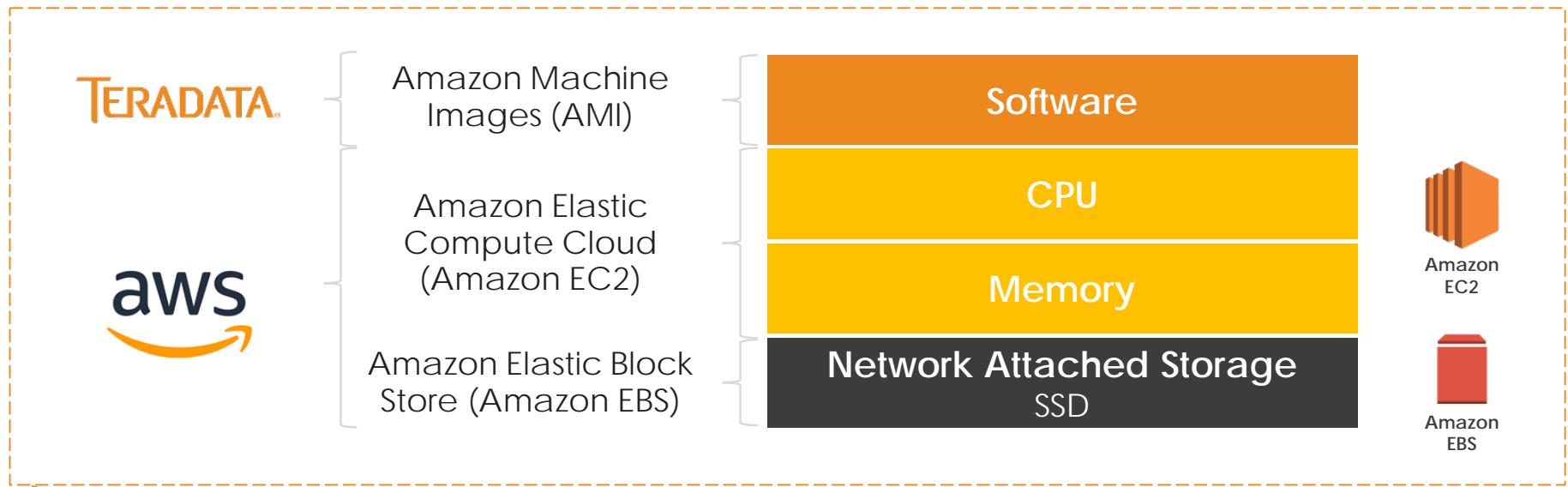
Database Node Count (max 64): 15

Storage Size: 20TB



IntelliCloud for AWS

As-a-service Teradata software running with AWS infrastructure

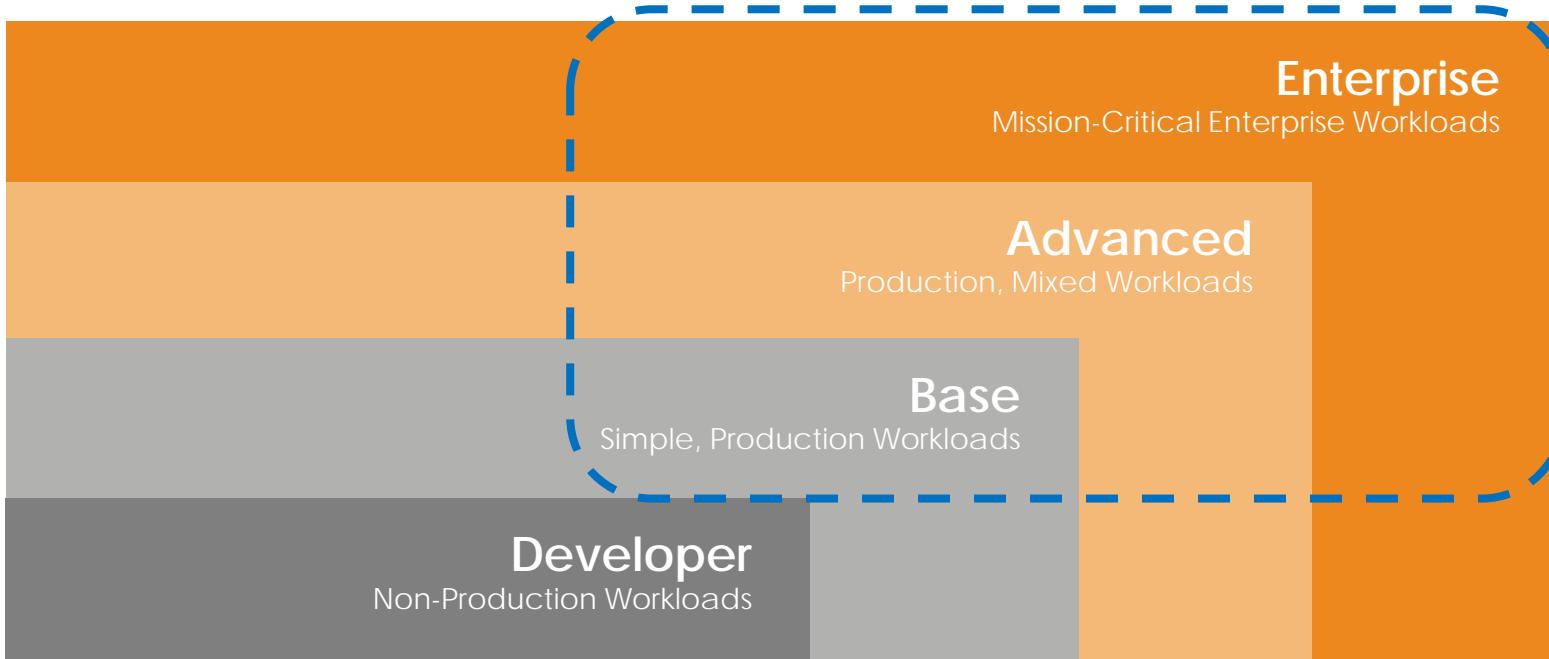


IntelliCloud services encompass the software + infrastructure stack and include security monitoring, encryption, compliance, automated backups, uptime SLA, and much more

Software Tiers

Geared for the type of workloads you want to run

IntelliCloud for AWS



IntelliCloud for AWS



	Base	Advanced	Enterprise
Amazon EC2 Options			
EBS Network Attached Storage	m4.4xl, m4.10xl, m4.16xl	m4.4xl, m4.10xl, m4.16xl	m4.4xl, m4.10xl, m4.16xl
Scalability			
Concurrent Query Limit	15	None	None
Node Limit	64	64	64
Customer Support			
Support Included	Premier Included	Premier Included	Premier Included
Server Management			
Teradata Database Features			
Row Level Security	•	•	•
Secure Zones	•	•	•
Teradata Columnar	•	•	•
Teradata Temporal	•	•	•
Teradata Intelligent Memory	-	•	•
Workload Management	-	TIWM	TASM
Ecosystem Applications			
Data Stream Controller	•	•	•
Ecosystem Manager	•	•	•
REST Services	•	•	•
Teradata Tools and Utilities	•	•	•
Viewpoint (Multi-System)	•	•	•
Value-Add Options			
Data Mover	Available	Available	Available
QueryGrid	Available	Available	Available
Price Ratio	0.7x	1x	1.2x

Target Use Cases

- Enterprise: Mission-Critical
- Advanced: Production, Mixed
- Base: Simple, Production

Workload Management

- Enterprise: TASM
- Advanced: TIWM
- Base: None

Relative Pricing

- Base = 30% less than Advanced
- Enterprise = 20% over Advanced

Many Types of Elasticity with IntelliCloud for AWS

- **Scale Up/Down**
 - Change instance size (e.g., m4.4xl to m4.16xl)
- **Scale Out/In**
 - Change number of compute nodes w/o affecting storage
- **Stop/Start**
 - Turn database instances off then turn them back on later
- Consumed via “bucket of hours” or “pay as you go” basis
 - “Buckets” purchased in multiples of 24 hours with 1-hour granularity
- **Storage Elasticity**
 - Change storage per node, ranging from 5TB to 60TB



IntelliCloud for AWS

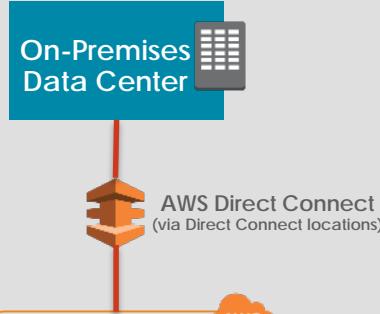
As-a-service	Americas	International
Available Now	Canada, U.S.	Germany, Ireland, U.K.
Coming Soon	--	Australia, Japan



Other countries will be prioritized based on customer demand

Connectivity Options: IntelliCloud for AWS

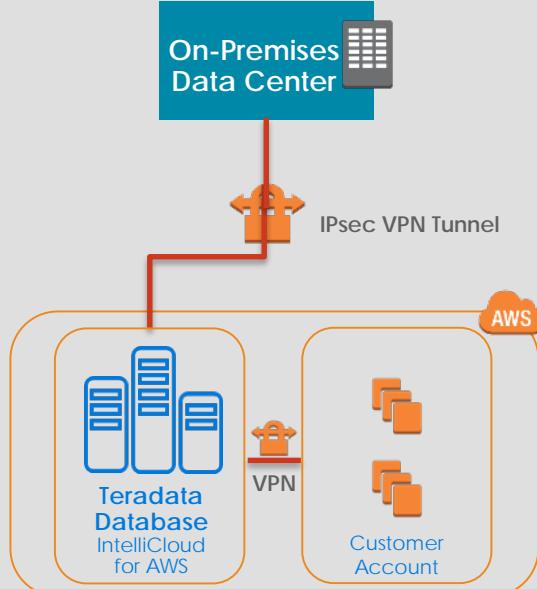
AWS Direct Connect



Extend your On-Premises Data Center directly to IntelliCloud for AWS

Customer owns the AWS Direct Connect

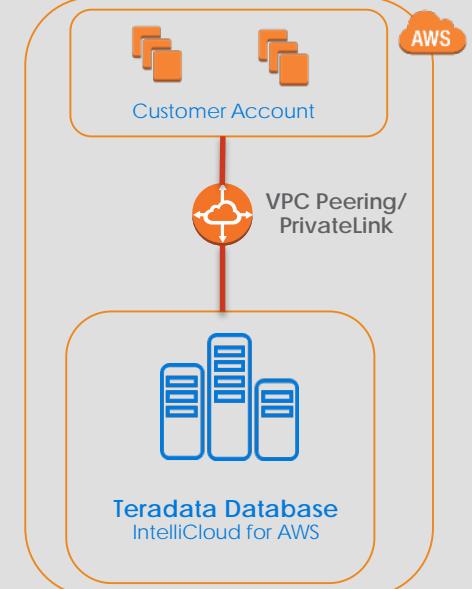
Virtual Private Network



Extend your On-Premises DC or AWS VPC to IntelliCloud with encryption

Customer can choose to use AWS Hardware VPN or Software VPN

VPC Peering/PrivateLink



Connect your AWS cloud to IntelliCloud for AWS

Customer can choose to use AWS VPC Peering or PrivateLink to connect to IntelliCloud in the same region

Comparing Purchase Options for AWS

	Do-it-yourself Marketplace	Do-it-yourself BYOL	As-a-Service IntelliCloud
Benefits			
Hourly On-Demand	•		
Monthly Subscription			•
1-Year Subscription	•	•	•
3-Year Subscription		•	•
Negotiated Pricing		•	•
License Portability		•	•
Premier Cloud Support	•	•	•
Availability SLA			Up to 99.9%
Daily Backups			•
Software Updates / Patches			•
System Monitoring			•
Security Compliance			•

Teradata Options for AWS

Thank You!

Rate This Session # ????

with the Teradata Analytics Universe Mobile App

Questions/Comments

Email: ropujari@amazon.com