

What's New for Oracle Autonomous Database on Shared Exadata Infrastructure

Here's a summary of the noteworthy Oracle Autonomous Database additions and enhancements.

August 2022

Feature	Description
Regional Availability Metrics	You can view regional availability metrics by data center for Oracle Autonomous Database. See Monitor Regional Availability of Autonomous Databases for more information.

July 2022

Feature	Description
Use Oracle Java	Autonomous Database supports Oracle JVM. Oracle JVM is a standard, Java-compatible environment that runs any pure Java application. See Using Oracle Java on Autonomous Database for more information.
Oracle APEX 22.1	Autonomous Database uses Oracle APEX Release 22.1. See Creating Applications with Oracle APEX in Autonomous Database for more information.
Wallet Rotation with a Grace Period	Autonomous Database allows you to rotate wallets for an Autonomous Database instance or for all instances that a cloud account owns in a region, with a grace period of 1 hour to 24 hours. See Rotate Wallets for Autonomous Database for more information.

Feature	Description
Change Display Name	You can change the display name for an Autonomous Database instance. See Update the Display Name for an Autonomous Database Instance for more information.
Default Database Name	The default database name and the matching default display name supplied when you provision or clone an instance is a generated 16-character string. See Provision Autonomous Database and Clone an Autonomous Database Instance for more information.
Oracle Real Application Testing: Database Replay	You can use Oracle Real Application Testing Database Replay to capture workload from an on-premises or other cloud service database and replay it on an Autonomous Database instance. This enables you to compare workloads between an on-premises database or other cloud service database and an Autonomous Database. See Using Oracle Real Application Testing - Database Replay for more information.
Export Data with Column Names in Header Row	You can optionally write column names as the first line in output files when you use the <code>EXPORT_DATA</code> procedure with CSV output. See EXPORT_DATA Procedure and DBMS_CLOUD Package Format Options for EXPORT_DATA with Text Files (CSV, JSON, and XML) for more information.

June 2022

Feature	Description
Character Set Support	The Autonomous Database default database character set is Unicode AL32UTF8 and the default national character set is AL16UTF16. When you provision a database, depending on the workload type, you can select a database character set and a national character set. See Choose a Character Set for Autonomous Database for more information.
Synchronization with Data Catalog Enhancements	Synchronize Data Catalog partitioned metadata with Autonomous Database to create partitioned external tables. See the <code>DBMS_DCAT RUN_SYNC</code> procedure.
Database Actions Changes	Database Actions includes new features. See Changes in Oracle Database Actions for more information.
Network Security Group (NSG) Configuration with Private Endpoint	For a private endpoint, the incoming and outgoing connections are limited by the combination of ingress and egress rules defined in NSGs and in the Security Lists associated with the private endpoint's VCN. Adding an NSG is now optional; when you do not include an NSG the ingress and egress rules defined in the Security Lists for the VCN still apply. See Configuring Network Access with Private Endpoints for more information.

Feature	Description
Simplified Configuration Steps with CMU for Microsoft Active Directory	You can configure Autonomous Database to authenticate and authorize Microsoft Active Directory users. The configuration steps are simplified for enabling Autonomous Database with Centrally Managed Users (CMU). See Use Microsoft Active Directory with Autonomous Database for more information.

May 2022

Feature	Description
Azure Active Directory (Azure AD) Integration	Azure Active Directory (Azure AD) users can connect to an Autonomous Database instance using Azure OAuth2 access tokens. See Use Azure Active Directory (Azure AD) with Autonomous Database for more information.
OCPU Limit for License Type Bring Your Own License (BYOL)	The license type Bring Your Own License (BYOL), Oracle Database Standard Edition sets the maximum number of OCPUs that you can use to 8. See View and Update Your License and Oracle Database Edition on Autonomous Database for more information.
Kerberos Authentication Support	You can use Kerberos to authenticate Autonomous Database users. See Configure Kerberos Authentication for more information.
Autonomous Data Guard Standby State	Autonomous Data Guard shows a standby database in "Standby" state. See Autonomous Database Standby Database State for more information.
Database Actions Additions	Database Actions provides all the functionality that is available on the Autonomous Database Service Console. The Service Console will be deprecated soon. See Service Console Replacement with Database Actions for more information on where to find Service Console functionality in Database Actions.
Autonomous Data Guard Support for Terraform	Autonomous Data Guard supports operation from Terraform scripts See the following for more information: <ul style="list-style-type: none"> • Use the API • oci_database_autonomous_database • Oracle Cloud Infrastructure Provider • Terraform Registry Data Source: Data Source: oci_database_autonomous_database
Use Azure Service Principal	You can use an Azure service principal with Autonomous Database to access Azure resources without having to create and store your own credential objects in the database. See Use Azure Service Principal to Access Azure Resources for more information.

Feature	Description
Monitor Autonomous Database Availability	You can monitor availability information for your Autonomous Database instance from the Oracle Cloud Infrastructure Console or by viewing metrics. See Monitor Autonomous Database Availability and View Metrics for an Autonomous Database Instance for more information.
Database Names Length Limit	The length limit for database names when you create or clone your database has been increased from 14 to 30 characters. This change provides more flexibility, giving you the option to create longer database names. See Provision Autonomous Database or Clone an Autonomous Database Instance for more information.
Egress Rules for all Outbound Connections with Private Endpoints	When you define a private endpoint for your Autonomous Database instance you can provide enhanced security by setting a database property to enforce that all outgoing connections to a target host are subject to and limited by the private endpoint's egress rules. See Enhanced Security for Outbound Connections with Private Endpoints for more information.

April 2022

Feature	Description
Display Autonomous Database Availability	You can monitor Autonomous Database availability from the Oracle Cloud Infrastructure Console or using metrics. See Monitor Autonomous Database Availability for more information.
OML4Py SQL API for Embedded Python Execution	OML4Py embedded Python execution on Autonomous Database supports a SQL API in addition to the REST API. Embedded execution allows you to run user-defined Python functions in database-spawned and managed Python engines, along with data-parallel and task-parallel automation. See SQL API for Embedded Python Execution with On-premises Database for more information.
Create Database Links from Autonomous Database to Oracle Databases on a Private Endpoint without a Wallet	You can create database links from an Autonomous Database to a target Oracle Database that is on a private endpoint and connect without a wallet (TCP). See Create Database Links from Autonomous Database to Oracle Databases on a Private Endpoint without a Wallet for more information.
Availability Service Level Objectives (SLOs)	Describes the Service Level Objectives (SLOs) for Oracle Autonomous Database. See Availability Service Level Objectives (SLOs) for more information.

Feature	Description
Synchronization with Data Catalog Enhancements	The <code>DBMS_DCAT_RUN_SYNC</code> procedure has new parameters to give you more control over what objects are synchronized and how the synchronization is performed. See <code>CREATE_SYNC_JOB</code> Procedure and <code>RUN_SYNC</code> Procedure for more information.
Data Catalog Views	Discover all accessible data catalogs in the current region or across all regions. See <code>ALL_DCAT_GLOBAL_ACCESSIBLE_CATALOGS</code> View and <code>ALL_DCAT_LOCAL_ACCESSIBLE_CATALOGS</code> View for more information.

March 2022

Feature	Description
Oracle APEX 21.2	Autonomous Database uses Oracle APEX Release 21.2. See Creating Applications with Oracle APEX in Autonomous Database for more information.
OML4Py Client Access	A new client package for OML4Py provides a “universal” client in that users can access Autonomous Database from a standalone Python engine on Linux to connect to Autonomous Database as well as 19c and newer Oracle Database releases. This supports working with OML4Py on Autonomous Database, local third-party IDEs, and other notebook environments, like JupyterLab. It further allows switching between on-premises and Autonomous Database instances using the same client package. See Install OML4Py Client for Linux for Use With Autonomous Database for more information.
Oracle APEX Upgrade Available Event	The <code>APEXUpgradeAvailable</code> event is generated when you are using Oracle APEX and a new release becomes available. See About Events Based Notification and Automation on Autonomous Database for more information.
Database Links with Oracle-Managed Heterogeneous Connectivity	Autonomous Database support for Oracle-managed heterogeneous connectivity makes it easy to create database links to non-Oracle databases. When you use database links with Oracle-managed heterogeneous connectivity, Autonomous Database configures and sets up the connection to the non-Oracle database. See Create Database Links to Non-Oracle Databases with Oracle-Managed Heterogeneous Connectivity for more information.
Metadata Columns in External Tables	To identify which file each row is coming from in your external tables, you can query the columns named <code>file\$name</code> and <code>file\$path</code> to find the source file name and the Object Store path URL for that file. See External Table Metadata Columns for more information.

Feature	Description
External Tables with Partitioning Specified in Source Files	<p>When you use external file partitioning with the partitions specified in external source files, Autonomous Database analyzes Cloud Object Store path information to determine the partition columns and data types.</p> <p>See Query External Tables with Partitioning Specified in Source Files for more information.</p>
Identity and Access Management (IAM) Authentication Additional Features	<p>You can configure Autonomous Database to use Oracle Cloud Infrastructure Identity and Access Management (IAM) authentication and authorization to allow IAM users to access an Autonomous Database with IAM credentials. New additions for IAM support include the following: defining global user mapping, defining global roles mapping, support for resource principal usage with IAM, and proxy user support.</p> <p>See Use Identity and Access Management (IAM) Authentication with Autonomous Database for more information.</p>
Storage Auto Scaling	<p>With Storage auto scaling enabled the Autonomous Database can expand to use up to three times the reserved base storage. If you need additional storage, the database automatically uses the reserved storage without any manual intervention required. Storage auto scaling is disabled by default.</p> <p>See Storage Auto Scaling for more information.</p>
Documentation Addition: Get Help, Search Forums, and Contact Support	<p>When you use Autonomous Database, sometimes you need to get help from the community or to talk to someone in Oracle support. This documentation addition provides information about getting help by viewing and posting questions on forums and using Oracle Cloud Support to create a support request.</p> <p>See Get Help, Search Forums, and Contact Support for more information.</p>

February 2022

Feature	Description
Track Oracle Cloud Infrastructure Resources, Cost and Usage	<p>Autonomous Database provides details on Oracle Cloud Infrastructure resources, cost and usage.</p> <p>See Track Oracle Cloud Infrastructure Resources, Cost and Usage Reports with Autonomous Database Views for more information.</p>
Critical Events with Customer-Managed Keys	<p>Autonomous Database events are triggered when an instance is using customer-managed keys and the database becomes inaccessible or when the database recovers from being inaccessible.</p> <p>See About Critical Events on Autonomous Database for more information.</p>

Feature	Description
Time Zone Handling in Calls to SYSDATE and SYSTIMESTAMP	The initialization parameter <code>SYSDATE_AT_DBTIMEZONE</code> parameter enables special handling in a session for the date and time value returned in calls to <code>SYSDATE</code> and <code>SYSTIMESTAMP</code> . Depending on the value of <code>SYSDATE_AT_DBTIMEZONE</code> , you see either the date and time based on the default Autonomous Database time zone, Coordinated Universal Time (UTC), or based on the time zone that you set in your database. See <code>SYSDATE_AT_DBTIMEZONE</code> for more information.

January 2022

Feature	Description
Use a Cloud Code Repository	Autonomous Database provides routines to manage and store files in Cloud Code (Git) Repositories. The supported Cloud Code Repositories are: GitHub Repository, AWS CodeCommit, and Azure Repos. See Using and Managing a Cloud Code Repository with Autonomous Database for more information.
Oracle Machine Learning Notebooks Repository	Oracle Machine Learning Notebooks repositories are stored in a schema on the Autonomous Database instance. This enables database instance-specific backup and restore of Oracle Machine Learning Notebooks as well as support for cross-region Autonomous Data Guard. See What's New in Oracle Machine Learning on Autonomous Database for more information.
Oracle Machine Learning Notebooks Import and Export of Jupyter Format Notebooks	Oracle Machine Learning Notebooks supports importing and exporting Jupyter format notebooks. This makes it easier for users to interoperate with other notebook environments. See Export a Notebook and Import a Notebook for more information.
Add My IP Address Button	When you provision an Autonomous Database instance and configure network access with Access Control Lists (ACLs) or when you update network access, click Add My IP Address to add your current IP address to the ACL entry. See Configuring Network Access with Access Control Rules (ACLs) for more information.
Reconnect a Disconnected Refreshable Clone	You can reconnect a refreshable clone to the source database. This allows you to use a refreshable clone as a test database and run DML and make changes while the database is disconnected. When you are done with your testing you can reconnect to the source database, which refreshes the clone to the point where it was when you disconnected. See Reconnect a Refreshable Clone to the Source Database for more information.
GitHub Raw URL support in <code>DBMS_CLOUD</code>	Use GitHub Raw URLs with <code>DBMS_CLOUD</code> APIs to access source files that reside on a GitHub Repository. See GitHub Raw URL Format for more information.

Feature	Description
View Maintenance Status and Timezone Version Notifications	The <code>DB_NOTIFICATIONS</code> view stores information about maintenance status notifications and timezone version upgrade notifications for your Autonomous Database instance. See View Maintenance Status and Timezone Version Notifications for more information.
One-way TLS Connections on Linux x64 Clients using Oracle Call Interface without a Wallet	Using TLS authentication for Oracle Call Interface connections on Linux x64, a wallet is not required when the client program connects with Oracle Instant Client 19.13. Using TLS authentication for Oracle Call Interface connections on all other platforms, or without Oracle Instant Client 19.13, clients must provide a generic CA root certificate wallet. See Prepare for Oracle Call Interface, ODBC, and JDBC OCI Connections Using TLS Authentication for more information.

December 2021

Feature	Description
Oracle Database API for MongoDB	Oracle Database API for MongoDB lets applications interact with collections of JSON documents in Autonomous Database using MongoDB commands. See Using Oracle Database API for MongoDB for more information.
Oracle Data Miner Access to Autonomous Database	Oracle Data Miner in SQL Developer can be used with Oracle Autonomous Database. Oracle Data Miner is a SQL Developer extension that enables users to create, schedule, and deploy analytical workflows through a drag-and-drop user interface. Oracle Data Miner serves as a productivity tool for data scientists and an enabler for citizen data scientists with a no-code machine learning environment that automates some common machine learning steps. See Oracle Data Miner for more information.
Autonomous Data Guard Paired Regions	The Autonomous Data Guard paired region list is expanded with additional regions. Autonomous Data Guard paired regions are remote regions where you can create a cross-region standby database. See Autonomous Data Guard Paired Regions for more information.
DBMS_PIPE PL/SQL Package	The <code>DBMS_PIPE</code> package that lets two or more sessions in the same instance communicate is available in Autonomous Database.

Feature	Description
Cross-Region Cloning	<p>When you clone an Autonomous Database instance using the Oracle Cloud Infrastructure Console, you can select your preferred region for the clone. You can create the clone in the current region or in a remote region. The list of available regions to create a clone only shows the regions that you are subscribed to.</p> <p>See Clone an Autonomous Database Instance for more information.</p>
Identity and Access Management (IAM) Authentication	<p>You can configure Autonomous Database to use Oracle Cloud Infrastructure Identity and Access Management (IAM) authentication and authorization to allow IAM users to access an Autonomous Database with IAM credentials.</p> <p>See Use Identity and Access Management (IAM) Authentication with Autonomous Database for more information.</p>
Schedule Start and Stop Times	<p>When you enable an Auto Start/Stop Schedule for an Autonomous Database instance, the instance automatically starts and stops according to the schedule you specify. This allows you to reduce costs by scheduling shutdown periods for times when a system is not in use.</p> <p>See Schedule Start and Stop Times for an Autonomous Database Instance for more information.</p>
PL/SQL API for Switching Consumer Groups	<p>Use the <code>CS_SESSION</code> Package to switch the database service and consumer group of an existing session.</p> <p>See CS_SESSION Package for more information.</p>
Export Data as CSV, JSON, or XML Data Files	<p>You can export data from Autonomous Database as text in the following formats: CSV, JSON, or XML.</p> <p>See Move Data to Object Store as CSV, JSON, or XML Using EXPORT_DATA for more information.</p>
Use Database Links with a Target Database on a Private Endpoint	<p>Create database links from an Autonomous Database source to a target Oracle Database that is on a private endpoint. To create a database link to a target database on a private endpoint, the target database must be accessible from the source database's Oracle Cloud Infrastructure VCN.</p> <p>See Create Database Links from Autonomous Database to Oracle Databases on a Private Endpoint for more information.</p>

November 2021

Feature	Description
Database Management	<p>The Associated Services area on the Oracle Cloud Infrastructure Console includes a Database Management link. You can use Database Management service to monitor the health of a single Autonomous Database or a fleet of Autonomous Databases.</p> <p>See Use Database Management Service to Monitor Databases for more information.</p>

Feature	Description
Database Actions Access	Access Database Actions on the Oracle Cloud Infrastructure Console with Database Actions button. See Connect with Built-in Oracle Database Actions for more information.
DBMS_LDAP and UTL_TCP Packages	The DBMS_LDAP and UTL_TCP packages are available, with some restrictions. See Restrictions and Notes for Database PL/SQL Packages for more information.
Concurrent Operations with Lifecycle Management Actions	When you initiate operations that take some time to complete, including scaling the system (Scale Up/Down) or performing a manual backup, these operations no longer prevent you from performing other operations. For example, if you perform certain database lifecycle management actions such as stopping the database during a long-running operation, depending on the operation, the long running operation is either canceled or paused. See Concurrent Operations on Autonomous Database for more information.

October 2021

Feature	Description
Import JSON Data from Cloud Object Store	You can import JSON data from Cloud Object Store into a table. This import method supports all the Cloud Object Stores supported by Autonomous Database, and you can use an Oracle Cloud Infrastructure resource principal to access your Oracle Cloud Infrastructure Object Store or Amazon Resource Names (ARNs) to access AWS Simple Storage Service (S3). See Create Credentials and Copy JSON Data into an Existing Table for more information.
Blockchain Tables Support	Blockchain tables are insert-only tables that organize rows into a number of chains. Blockchain tables protect data that records important actions, assets, entities, and documents from unauthorized modification or deletion by criminals, hackers, and fraud. Blockchain tables prevent unauthorized changes made using the database and detect unauthorized changes that bypass the database. See Managing Blockchain Tables for more information.
Immutable Tables Support	Immutable tables are read-only tables that prevent unauthorized data modifications by insiders and accidental data modifications resulting from human errors. See Managing Immutable Tables for more information.
Integrate with Oracle Cloud Infrastructure Data Catalog	OCI Data Catalog metadata is synchronized with Autonomous Database creating schemas and external tables. You are allowed to immediately query data available in object store. See Query External Data with Data Catalog for more information.

Feature	Description
Oracle APEX 21.1	Autonomous Database uses Oracle APEX Release 21.1. See Creating Applications with Oracle Application Express in Autonomous Database for more information.

September 2021

Feature	Description
TLS and Mutual TLS Connections	Autonomous Database by default supports Mutual TLS (mTLS) connections. You have the option to configure an Autonomous Database instance to support both mTLS and TLS connections. See the following for more information: <ul style="list-style-type: none"> About Connecting to an Autonomous Database Instance Update Network Options to Allow TLS or Require Only Mutual TLS (mTLS) Authentication on Autonomous Database
Vanity URLs for APEX, ORDS and Database Tools	You can configure a custom domain name or vanity URL for your APEX apps, Oracle REST Data Services (ORDS), and developer tools by placing an Oracle Cloud Infrastructure Load Balancer directly in front of your Autonomous Database. See the following for additional details, including prerequisites and step-by-step instructions: <ul style="list-style-type: none"> Access Oracle APEX, Oracle REST Data Services, and Developer Tools Using a Vanity URL Access Oracle REST Data Services, Oracle APEX, and Developer Tools Using a Vanity URL

August 2021

Feature	Description
Cross-Region Autonomous Data Guard	Autonomous Data Guard allows you to enable a cross-region standby (peer) database to provide data protection and disaster recovery for your Autonomous Database instance. When you enable Autonomous Data Guard, the system creates a standby database that is continuously updated with the changes from the primary database. You can enable Autonomous Data Guard with a standby in the current region, a local standby, or with a standby in a different region, a cross-region standby. You can also enable Autonomous Data Guard with both a local standby and a cross-region standby. See Using Standby Databases with Autonomous Database for Disaster Recovery for more information.
SQL Tracing for Database Session	Use SQL tracing to help you identify the source of an excessive database workload, such as a high load SQL statement in your application. See Perform SQL Tracing on Autonomous Database for more information.

Feature	Description
Export Data as JSON to Cloud Object Store	<p>Use the procedure <code>DBMS_CLOUD.EXPORT_DATA</code> to export data to your Cloud Object Store as JSON, by specifying a query.</p> <p>This export method supports all the Cloud Object Stores supported by Autonomous Database, and you can use an Oracle Cloud Infrastructure resource principal to access your Oracle Cloud Infrastructure Object Store or Amazon Resource Names (ARNs) to access AWS Simple Storage Service (S3).</p> <p>See Move Data to Object Store as JSON Data Using EXPORT_DATA for more information.</p>
Documentation Addition: Load Data from a Source File with Fixed Width Data	<p>The documentation provides an example for loading data from a fixed-width source file to an external table.</p> <p>See Example Loading Data from a Fixed Width File for more information.</p>
Set Patch Level	<p>When you provision or clone an Autonomous Database instance you can select a patch level to apply upcoming patches. There are two patch level options: Regular and Early.</p> <p>After your provision or clone an Autonomous Database instance and set the patch level to Early, maintenance windows for the instance are scheduled and applied one week before instances with the patch level set to Regular. The Early patch level allows you to use and to test upcoming patches before they are applied to all systems.</p> <p>See Set the Patch Level for more information.</p>

July 2021

Feature	Description
View Patch Details	<p>You can view Autonomous Database patch information, including a list of resolved issues.</p> <p>See View Patch Information for more information.</p>
Include Developer Tools Links in Wallet Readme File	<p>The wallet <code>README</code> file includes links for Autonomous Database tools and resources, including: Database Actions, Graph Studio, Oracle APEX, Oracle Machine Learning Notebooks, Autonomous Database Service Console, and SODA drivers.</p> <p>See Wallet README File for more information.</p>

June 2021

Feature	Description
Change MEDIUM Service Concurrency Limit from Service Console	<p>If your application requires a customized concurrency limit not available with the predefined services, you can modify the concurrency limit for the MEDIUM service from the Autonomous Database Service Console or using PL/SQL procedures.</p> <p>See Change MEDIUM Service Concurrency Limit for more information.</p>

Feature	Description
Automatic Partitioning	<p>Automatic partitioning analyzes and automates partition creation for tables and indexes of a specified schema to improve performance and manageability in Autonomous Database. Automatic partitioning, when applied, is transparent and does not require user interaction or maintenance. Automatic partitioning does not interfere with existing partitioning strategies and manually partitioned tables are excluded as candidates for automatic partitioning.</p> <p>See Manage Automatic Partitioning on Autonomous Database for more information.</p>
Use Customer-Managed Encryption Keys	<p>Autonomous Database provides two options for Transparent Data Encryption (TDE) to encrypt data in the database:</p> <ul style="list-style-type: none"> • Oracle-managed encryption keys • Customer-managed encryption keys <p>See Managing Encryption Keys on Autonomous Database for more information.</p>
Autonomous Database RMAN Recovery Catalog	<p>You can use Autonomous Database as a Recovery Manager (RMAN) recovery catalog. A recovery catalog is a database schema that RMAN uses to store metadata about one or more Oracle databases.</p> <p>See Autonomous Database RMAN Recovery Catalog for more information.</p>
Read-Only Mode for Sessions	<p>You can set the Autonomous Database operation mode to read-only for a session. In read-only mode users for the session can only run queries.</p> <p>See Change Autonomous Database Operation Mode for a Session for more information.</p>
Documentation Addition: CS_RESOURCE_MANAGER Package	<p>The CS_RESOURCE_MANAGER package provides procedures to list and update consumer group parameters, and to revert parameters to default values.</p> <p>See CS_RESOURCE_MANAGER Package for more information.</p>

May 2021

Feature	Description
Transparent Application Continuity (TAC) on Autonomous Database	<p>Autonomous Database provides application continuity features for making connections to the database. You enable Application Continuity on Autonomous Database in one of two configurations: Application Continuity(AC) or Transparent Application Continuity (TAC).</p> <p>Application Continuity hides outages for thin Java-based applications, Oracle Database Oracle Call Interface, and ODP.NET based applications with support for open-source drivers, such as Node.js, and Python.</p> <p>Transparent Application Continuity (TAC) transparently tracks and records session and transactional state so the database session can be recovered following recoverable outages. This is done with no reliance on application knowledge or application code changes.</p> <p>See Using Application Continuity on Autonomous Database for more information.</p>
Amazon Resource Names (ARNs) to Access AWS Resources	<p>You can use Amazon Resource Names (ARNs) to access AWS resources with Autonomous Database. When you use ARN role based authentication with Autonomous Database, you can securely access AWS resources without creating and saving credentials based on long-term AWS IAM access keys.</p> <p>See Use Amazon Resource Names (ARNs) to Access AWS Resources for more information.</p>
Resource Principal to Access Oracle Cloud Infrastructure Resources	<p>When you use a resource principal with Autonomous Database, you or your tenancy administrator define the Oracle Cloud Infrastructure policies in a dynamic group that allows you to access resources. With a resource principal you do not need to create a credential object and Autonomous Database creates and secures the resource principal credentials you use to access the Oracle Cloud Infrastructure resources specified in the dynamic group.</p> <p>See Use Resource Principal to Access Oracle Cloud Infrastructure Resources for more information.</p>
Graph Studio	<p>Graph Studio features include automated modeling to create graphs from database tables, an integrated notebook to run graph queries and analytics, and native graph and other visualizations. You can invoke nearly 60 pre-built graph algorithms and visualize your data with many visualization options. Graph Studio is a fully integrated, automated feature with Autonomous Database.</p> <p>See Using Oracle Graph with Autonomous Database for more information.</p>

April 2021

Feature	Description
Change MEDIUM Service Concurrency Limit	If your application requires a customized concurrency limit not available with the predefined services, you can modify the concurrency limit for the MEDIUM service. See Change MEDIUM Service Concurrency Limit for more information.
DBMS_CLOUD REST API Results Cache	The DBMS_CLOUD REST API functions allow you to make HTTP requests and obtain and save results. Saving results in the cache allows you to view past results with the <code>SESSION_CLOUD_API_RESULTS</code> view. Saving and querying historical results of DBMS_CLOUD REST API requests can help you when you need to work with previous results in your applications. See DBMS_CLOUD REST API Results Cache for more information.
View and Manage Customer Contacts for Operational Issues and Announcements	When customer contacts are set, Oracle sends notifications to the specified email addresses to inform you of service-related issues. Contacts in the customer contacts list receive unplanned maintenance notices and other notices, including but not limited to notices for database upgrades and upcoming wallet expiration. See View and Manage Customer Contacts for Operational Issues and Announcements for more information.
Always Free Autonomous JSON Database	You have the option to create a limited number of Always Free Autonomous JSON Databases that do not consume cloud credits. Always Free Autonomous JSON Databases can be created in Oracle Cloud Infrastructure accounts that are in a trial period, have paying status, or are always free. See Always Free Autonomous Database for more information.
Always Free Oracle APEX Application Development	You have the option to create a limited number of Always Free APEX Services that do not consume cloud credits. Always Free APEX Service can be created in Oracle Cloud Infrastructure accounts that are in a trial period, have paying status, or are always free. See Always Free Oracle APEX Application Development for more information.
Expiring Wallets Notification	Starting six weeks before the wallet expiration date Oracle sends notification emails each week, indicating the wallet expiration date. These emails provide notice before your wallet expires that you need to download a new wallet. You can also use the <code>WalletExpirationWarning</code> event to be notified when a wallet is due to expire. See Download Client Credentials (Wallets) for more information.
Documentation Addition: Oracle Graph	Oracle Graph with Autonomous Database enables you to create graphs from data in your Autonomous Database. With graphs you can analyze your data based on connections and relationships between data entities. See Using Oracle Graph with Autonomous Database for more information.

Feature	Description
Documentation Addition: Oracle Spatial	Oracle Spatial with Autonomous Database allows developers and analysts to get started easily with location intelligence analytics and mapping services. See Using Oracle Spatial with Autonomous Database for more information.
Download Data Pump Dump File Set with Script	To support using Oracle Data Pump Import to import a dump file set to a target database, you can use a script that supports substitution characters to download all the dump files from your Object Store in a single command. See Download Dump Files, Run Data Pump Import, and Clean Up Object Store for more information.

March 2021

Feature	Description
Autonomous Database Tools for Database Actions	Autonomous Database provides the following data tools: <ul style="list-style-type: none"> • Data Load: helps you select data to load from your local computer, from tables in other databases, or from cloud storage. Then you can add the data you select to new or existing tables or views in Autonomous Database. See The Data Load Page for more information. • Catalog: helps you to see information about the entities in your Autonomous Database, and to see the effect that changing an object has on other objects. Catalog provides a tool for you to examine data lineage and understand the impact of changes. See The Catalog Page for more information. • Data Insights: crawls a table or business model and discovers hidden patterns, anomalies, and outliers in your data. Insights are automatically generated by built-in analytic functions. The results of the insight analysis appear as bar charts in the Data Insights dashboard. See The Data Insights Page for more information. • Business Models: describes the business entities that are derived from data in your Autonomous Database schema or from other sources. This allows you to create a semantic model on top of your data identifying hierarchies, measures, and dimensions. See The Business Models Page for more information.
Maintenance History	You can view Autonomous Database maintenance history to see details about past maintenance, such as the start time and stop time for past maintenance events. See About Autonomous Database Maintenance Windows and History for more information.

Feature	Description
Oracle Machine Learning AutoML User Interface	AutoML User Interface (AutoML UI) is an Oracle Machine Learning interface that provides you with no-code automated machine learning. When you create and run an experiment in AutoML UI, it automatically performs algorithm and feature selection, as well as model tuning and selection, thereby enhancing productivity as well as model accuracy and performance. See Get Started with AutoML for more information.
Oracle Machine Learning Models	REST endpoints are available so that you can store Machine Learning models and create scoring endpoints for the models. The REST API for Oracle Machine Learning Services supports both Oracle Machine Learning models and ONNX format models. See REST API for Oracle Machine Learning Services for more information.
ADMIN Password Expiration Warning Event	The <code>AdminPasswordWarning</code> event produces an event when the Autonomous Database ADMIN password is expiring within 30 days or is expired. See About Events Based Notification and Automation on Autonomous Database for more information.
Oracle Machine Learning for Python (OML4Py)	Oracle Machine Learning for Python (OML4Py) on Autonomous Database provides a Python API to explore and prepare data, and build and deploy machine learning models using the database as a high-performance compute engine. OML4Py is available through the Python interpreter in Oracle Machine Learning Notebooks. See Get Started with Notebooks for Data Analysis and Data Visualization for more information.

February 2021

Feature	Description
Oracle Database Actions	SQL Developer Web is now called Database Actions. Database Actions is a web-based interface that provides development tools, data tools, administration, and monitoring features for Autonomous Database. Using Database Actions you can load data and run SQL statements, queries, and scripts in a worksheet. See Connect with Built-in Oracle Database Actions for more information.
Query Big Data Service Hadoop (HDFS) Data	Big Data Service provides enterprise-grade Hadoop as a service, with end-to-end security, high performance, and ease of management and upgradeability. After deploying the Oracle Cloud SQL Query Server to Big Data Service, you can easily query data available on Hadoop clusters at scale from Autonomous Database using SQL. See Query Big Data Service Hadoop (HDFS) Data from Autonomous Database for more information.

January 2021

Feature	Description
Autonomous Database Events	Autonomous Database generates events that you can subscribe to with Oracle Cloud Infrastructure Events. There are two new Information events: <code>ScheduledMaintenanceWarning</code> and <code>WalletExpirationWarning</code> . See Use Autonomous Database Events for more information.
Manual Backup Enhancements	You can choose the bucket name to store manual backups and the steps to configure manual backups are simplified. See Manual Backups on Autonomous Database for more information.
Private Endpoint Support for Tools (Oracle Machine Learning Notebooks are supported with Private Endpoints)	You can access Oracle APEX, Oracle SQL Developer Web, Oracle REST Data Services, and Oracle Machine Learning Notebooks with Private Endpoints. See Configuring Network Access with Private Endpoints for more information.

2020 What's New

December 2020

Feature	Description
Replicate Data and Capture Data with Oracle GoldenGate	Using Oracle GoldenGate you can capture changes from an Oracle Autonomous Database and replicate to any target database or platform that Oracle GoldenGate supports, including another Oracle Autonomous Database. See Oracle GoldenGate Capture for Oracle Autonomous Database for more information.
Oracle APEX Application Development	Oracle APEX Application Development (APEX Service) is a low cost Oracle Cloud service offering convenient access to the Oracle Application Express platform for rapidly building and deploying low-code applications. See Oracle APEX Application Development for more information.
Oracle Database 21c with Always Free Autonomous Database	Oracle Database 21c is available with Always Free Autonomous Database. See the following for more information: <ul style="list-style-type: none">• Always Free Autonomous Database• Always Free Autonomous Database Oracle Database 21c Features
Oracle APEX 20.2	Autonomous Database uses Oracle APEX 20.2. See Creating Applications with Oracle Application Express in Autonomous Database for more information.

November 2020

Feature	Description
Amazon S3 Presigned URLs	You can use a presigned URL in any <code>DBMS_CLOUD</code> procedure that takes a URL to access files in Amazon Simple Storage Service, without the need to create a credential. See Amazon S3 Compatible URI Format for more information.
Azure Blob Storage Shared Access Signatures (SAS) URLs	You can use Shared Access Signatures (SAS) URL in any <code>DBMS_CLOUD</code> procedure that takes a URL to access files in Azure Blob Storage, without the need to create a credential. See Azure Blob Storage URI Format for more information.

October 2020

Feature	Description
User-Defined Profiles Minimum Password Length	If you create a user-defined profile with a Password Verification Function (PVF), then the minimum password length can be 8 characters. See Manage Password Complexity on Autonomous Database for more information.
PL/SQL SDK for Oracle Cloud Infrastructure Resources	PL/SQL SDK for Oracle Cloud Infrastructure enables you to write code to manage Oracle Cloud Infrastructure resources. The PL/SQL SDK is on all Autonomous Databases using shared Exadata infrastructure. See PL/SQL SDK for more information.
Documentation Addition: Oracle Database Actions User Management	You can quickly create users and modify account settings for users with Oracle Database Actions. See Create Users on Autonomous Database for more information.
Autonomous Database Events	Autonomous Database generates events that you can subscribe to with Oracle Cloud Infrastructure Events. Subscribing to Autonomous Database events allows you to create automation and to receive notifications when the events occur. See Use Autonomous Database Events for more information.

September 2020

Feature	Description
Private Endpoint Support for Tools	You can access Oracle APEX, Oracle SQL Developer Web, and Oracle REST Data Services with Private Endpoints. See Configuring Network Access with Private Endpoints for more information.

Feature	Description
Read-Only and Restricted Modes	You can select an Autonomous Database operation mode. The default mode is Read/Write. If you select Read-Only mode users can only run queries. In addition, for either mode you can restrict access to only allow privileged users to connect to the database. See Change Autonomous Database Mode to Read/Write or Read-Only for more information.
Refreshable Clones	Autonomous Database provides cloning where you can choose to create a full clone of the active instance, create a metadata clone, or create a refreshable clone. With a refreshable clone the system creates a clone that can be easily updated with changes from the source database. See Using Refreshable Clones with Autonomous Database for more information.
Documentation Addition: Auditing Autonomous Database	This new chapter describes the auditing features that allow you to track, monitor, and record activity on your database. Auditing can help you detect security risks and improve regulatory compliance for your database. See Auditing Autonomous Database for more information.

August 2020

Feature	Description
Autonomous JSON Database	If your database version is Oracle Database 19c or higher, you can provision an Autonomous JSON Database. Autonomous JSON Database is an Oracle Cloud service that is specialized for developing NoSQL-style applications that use JavaScript Object Notation (JSON) documents. See About Autonomous JSON Database for more information.
Amazon S3-Compatible Object Stores	Autonomous Database supports Amazon S3-Compatible object stores, such as Oracle Cloud Infrastructure Object Storage, Google Cloud Storage, and Wasabi Hot Cloud Storage. See Load Data from Files in the Cloud for more information.
Asynchronous Requests using <code>SEND_REQUEST</code>	The <code>DBMS_CLOUD_SEND_REQUEST</code> function supports long running requests with the additional parameters: <code>async_request_url</code> , <code>wait_for_states</code> , and <code>timeout</code> . See SEND_REQUEST Function for more information.
Rename Database	If your database version is Oracle Database 19c or higher, you can rename your Autonomous Database. See Rename Autonomous Database for more information.

July 2020

Feature	Description
Oracle APEX Release 20.1	<p>Autonomous Database supports Oracle APEX Release 20.1. See Creating Applications with Oracle Application Express in Autonomous Database for more information.</p> <p>If your Autonomous Database instance is on Oracle Database 18c, to use APEX 20.1 you must upgrade to Oracle Database 19c. After you upgrade to Oracle Database 19c, APEX is automatically upgraded to APEX 20.1.</p>
Use a Standby Database	<p>Autonomous Database provides the Autonomous Data Guard feature to enable a standby (peer) database to provide data protection and disaster recovery for your Autonomous Database instance.</p> <p>See Using a Standby Database with Autonomous Database for more information.</p>
Create and Alter User Profiles	<p>You can create and alter database user profiles. See Manage User Profiles with Autonomous Database for more information.</p>
Manage Time Zone File Versions	<p>The time zone files are periodically updated to reflect the latest time zone specific changes. Autonomous Database automatically picks up the updated time zone files.</p> <p>See Manage Time Zone File Version on Autonomous Database for more information.</p>
Network Access Changes	<p>If your Autonomous Database network access is configured to use a private endpoint you can change the configuration to use a public endpoint. Likewise, if your Autonomous Database instance is configured to use a public endpoint, you can change the configuration to use a private endpoint.</p> <p>Autonomous Database network access changes from a public to a private endpoint, or from a private to a public endpoint are only supported with database versions Oracle Database 19c onwards. See Configuring Network Access with Access Control Rules (ACLs) and Private Endpoints for more information.</p>
Use Database Links to Access Non-Oracle Databases	<p>You can create database links from an Autonomous Database to an Oracle Database Gateway to access Non-Oracle databases. See Create Database Links to an Oracle Database Gateway to Access Non-Oracle Databases for more information.</p>

June 2020

Feature	Description
ORC Format and Complex Types	Autonomous Database supports loading and querying data in object store in ORC format, in addition to Avro and Parquet. Also, for ORC, Avro, and Parquet structured file types you can load and query complex data types. Support for ORC format and complex types requires Oracle Database 19c. See Load Data from Files in the Cloud and Query External Data with ORC, Parquet, or Avro Source Files for more information.
PUT_OBJECT Maximum File Transfer Size Increase	The <code>DBMS_CLOUD.PUT_OBJECT</code> procedure maximum size limit for file transfers to Oracle Cloud Infrastructure Object Storage is increased to 50 GB. See PUT_OBJECT Procedure for more information.
Customer Managed Oracle REST Data Services	You can use a customer managed environment to run Oracle REST Data Services (ORDS) if you want to control the configuration and management of ORDS. Installing and configuring a customer managed environment for ORDS allows you to run ORDS with configuration options that are not possible using the default Oracle managed ORDS available with Autonomous Database. See About Customer Managed Oracle REST Data Services on Autonomous Database for more information.

May 2020

Feature	Description
Move Selective Data to Object Store	You can export data to Oracle Data Pump dump files on Object Store by specifying a query to select the data to export. See Move Selective Data to Object Store Using DBMS_CLOUD.EXPORT_DATA for more information.
Obtain Tenancy Details for a Service Request	When you file a service request for Autonomous Database, you need to provide the tenancy details for your instance. Tenancy details for the instance are available on the Oracle Cloud Infrastructure console or you can obtain these details by querying the database. See Obtain Tenancy Details to File a Service Request for more information.
Upgrade Autonomous Database to Oracle Database 19c	If your Autonomous Database instance is on Oracle Database 18c, you can upgrade to Oracle Database 19c by clicking Upgrade to 19c .

April 2020

Feature	Description
SODA Documents and Collections	<p>Autonomous Database supports loading and using Simple Oracle Document Architecture (SODA) documents and collections. SODA allows you to store, search, and retrieve document collections, typically JSON documents, without using SQL. You can also access document collections with SQL/JSON operators, providing you with the simplicity of a document database but with the power of a relational database.</p> <p>See Using JSON Documents with Autonomous Database for more information.</p>
Load Data with Oracle Data Pump Access Driver Dump Files	<p>You can use Oracle Data Pump dump files in the Cloud as source files to load your data. The files for this load type must be exported from the source system using the <code>ORACLE_DATAPUMP</code> access driver in External Tables.</p> <p>See Create Credentials and Load Data Pump Dump Files into an Existing Table for more information.</p>
Create External Tables and Query Data with Oracle Data Pump Access Driver Dump Files	<p>You can query Oracle Data Pump dump files in the Cloud by creating an external table. The source files to create this type of external table must be exported from the source system using the <code>ORACLE_DATAPUMP</code> access driver in External Tables.</p> <p>See Query External Data Pump Dump Files for more information.</p>
Oracle Extensions for IDEs	<p>You can use Oracle extensions for IDEs to develop applications on Autonomous Database. Extensions are available for Eclipse, Microsoft Visual Studio, and Microsoft Visual Studio Code (VS Code). These extensions enable you to connect to, browse, and manage Autonomous Databases in Oracle Cloud directly from the IDE.</p> <p>See Use Oracle Extensions for IDEs to Develop Applications for more information.</p>
Per-Second Billing	<p>Autonomous Database instance CPU and storage usage is billed by the second, with a minimum usage period of 1 minute. Previously Autonomous Database billed in one-hour minimum increments and partial usage of an hour was rounded up to a full hour.</p>
Stateful Rule Support in Private Endpoints	<p>When you configure a private endpoint you define a security rule(s) in a Network Security Group (NSG); this creates a virtual firewall for your Autonomous Database and allows connections to the Autonomous Database instance. The NSG can now be configured with stateful rules.</p> <p>See Configure Private Endpoints with Autonomous Database for more information.</p>
Wallet zip File Contains README File	<p>The wallet file that contains client credentials (wallet files) for your Autonomous Database instance now also has a <code>README</code> file with wallet expiration information. Wallet files that were downloaded prior to April 2020 do not contain this file.</p> <p>See Download Client Credentials (Wallets) for more information.</p>

March 2020

Feature	Description
Restart Autonomous Database instance	Use Restart to restart an Autonomous Database instance. See Restart Autonomous Database for more information.
Oracle Data Pump Direct Export to Object Store	Depending on your cloud object store, you can use Oracle Data Pump to directly export to your object store to move data between Autonomous Database and other Oracle databases. See Move Data with Data Pump Export to Object Store for more information.
Oracle Data Pump Pre-authenticated URLs for Dump Files	If your source files reside on Oracle Cloud Infrastructure Object Storage, you can use pre-authenticated URLs with Oracle Data Pump. See Import Data Using Oracle Data Pump on Autonomous Database for more information.
Documentation Addition: Upgrade Autonomous Database to Oracle Database 19c	Provides information on upgrading to Oracle Database 19c if your Autonomous Database instance is on Oracle Database 18c.
Oracle Database Versions by Region	Depending on the region where you provision or clone your database, Autonomous Database supports one or more Oracle Database versions. Oracle Database 19c is available in all commercial regions.
Oracle Application Express Release 19.2	Autonomous Database supports Oracle Application Express Release 19.2. See Creating Applications with Oracle Application Express in Autonomous Database for more information.

February 2020

Feature	Description
Private Endpoints	This configuration option assigns a private endpoint, private IP and hostname, to a database and allows traffic only from the VCN you specify; access to the database from all public IPs or VCNs is blocked. This allows you to define security rules at the Network Security Group (NSG) level and to control traffic to your Autonomous Database. See About Network Access Options for more information.
Oracle Database Vault	Oracle Database Vault implements powerful security controls for your database. These unique security controls restrict access to application data by privileged database users, reducing the risk of insider and outside threats and addressing common compliance requirements. See Using Oracle Database Vault with Autonomous Database for more information.

Feature	Description
Oracle Application Express Release 19.2	If your database instance is an Always Free Autonomous Database or is a database with Oracle Database release 19c, then your database has Oracle Application Express Release 19.2. See Creating Applications with Oracle Application Express in Autonomous Database for more information.
Database Resident Connection Pool (DRCP)	Using DRCP provides you with access to a connection pool in your database that enables a significant reduction in key database resources required to support many client connections. See Use Database Resident Connection Pooling with Autonomous Database for more information.

January 2020

Feature	Description
Clone from a backup	Clone from a backup lets you create a clone by selecting a backup from a list of backups, or with a timestamp for a point-in-time to clone. See Clone Autonomous Database from a Backup for more information.
Check and set <code>MAX_STRING_SIZE</code> value	By default the database uses extended data types and the value of <code>MAX_STRING_SIZE</code> is set to the value <code>EXTENDED</code> . To support migration from older Oracle Databases or applications you can set <code>MAX_STRING_SIZE</code> to the value <code>STANDARD</code> . See Checking and Setting MAX_STRING_SIZE for more information.
Number of concurrent statements increased depending on the service you use	The maximum number of concurrent statements is increased, depending on the connection service you are using. See Predefined Database Service Names for Autonomous Database for more information.
Documentation addition showing available Oracle Database versions	The documentation shows the Oracle Database version available with Autonomous Database by region. See Oracle Database Version Availability by Region for more information.
<code>DBMS_CLOUD</code> REST API functions	The <code>DBMS_CLOUD</code> REST API functions allow you to make HTTP requests using <code>DBMS_CLOUD.SEND_REQUEST</code> . These functions provide a generic API that lets you call REST APIs from supported cloud services. See DBMS_CLOUD REST APIs for more information.
Documentation addition to describe sending mail with <code>UTL_SMTP</code>	The documentation is updated to provide the steps and sample code for sending email using <code>UTL_SMTP</code> . See Sending Mail with Email Delivery on Autonomous Database for more information.

Feature	Description
Use ACLs to control access for Autonomous Database tools	<p>You can now use Virtual Cloud Network, Virtual Cloud Network (OCID), IP address, or CIDR block ACLs to control access to Oracle APEX (APEX), RESTful services, and SQL Developer Web.</p> <p>See Use an Access Control List with Autonomous Database for more information.</p>

2019 What's New

December 2019

Feature	Description
Support for UTL_HTTP and UTL_SMTP PL/SQL Packages with restrictions	<p>Autonomous Database supports the Oracle Database PL/SQL packages UTL_HTTP, UTL_SMTP, and DBMS_NETWORK_ACL_ADMIN with restrictions.</p> <p>See Restrictions for Database PL/SQL Packages for more information.</p>
Microsoft Active Directory Users	<p>You can configure Autonomous Database to authenticate and authorize Microsoft Active Directory users. This allows Active Directory users to access a database using their Active Directory credentials.</p> <p>See Use Microsoft Active Directory with Autonomous Database for more information.</p>
Validate external partitioned tables and hybrid partitioned tables	<p>You can validate individual partitions of an external partitioned table or a hybrid partitioned table with the procedures DBMS_CLOUD.VALIDATE_EXTERNAL_PART_TABLE and DBMS_CLOUD.VALIDATE_HYBRID_PART_TABLE.</p> <p>See Validate External Partitioned Data and Validate Hybrid Partitioned Data for more information.</p>
Use ACL IP address or CIDR block settings to control access for Autonomous Database tools	<p>You can now use IP address and CIDR based ACLs to control access to Oracle APEX (APEX), RESTful services, and SQL Developer Web.</p> <p>See Use an Access Control List with Autonomous Database for more information.</p>
Use Oracle Data Safe	<p>Oracle Data Safe provides features that help you protect sensitive and regulated data in your database.</p> <p>See Safeguard Your Data with Data Safe on Autonomous Database for more information.</p>

November 2019

Feature	Description
Use ACLs to specify Oracle Cloud Infrastructure VCNs	Use ACLs to specify Oracle Cloud Infrastructure VCNs that can connect to your Autonomous Database.
SQL Developer Web Data Loading	In SQL Developer Web in the Worksheet page, you can upload data from local files into an existing table.
Access APEX from Oracle Cloud Infrastructure Console	The Tools Tab provides access to APEX from Oracle Cloud Infrastructure Console. See Access Oracle Application Express Administration Services for more information.
Access SQL Developer Web from Oracle Cloud Infrastructure Console	The Tools Tab provides access to SQL Developer Web from Oracle Cloud Infrastructure Console. See Access SQL Developer Web as ADMIN for more information.
Access Oracle Machine Learning from Oracle Cloud Infrastructure Console	The Tools Tab provides access to Oracle Machine Learning User Administration from Oracle Cloud Infrastructure Console.
View Maintenance Schedule from Oracle Cloud Infrastructure Console	The Autonomous Database Information tab shows the schedule for upcoming maintenance. See About Autonomous Database Maintenance Windows for more information.
New fields with LIST_FILES and LIST_OBJECTS	The functions <code>DBMS_CLOUD.LIST_FILES</code> and <code>DBMS_CLOUD.LIST_OBJECTS</code> produce additional metadata for files and objects. See LIST_FILES Function and LIST_OBJECTS Function for more information.

October 2019

Feature	Description
Preview Version for Autonomous Database	Oracle periodically provides a preview version of Autonomous Database that allows you to test your applications and to become familiar with features in the next release of Autonomous Database. See Preview Versions for Autonomous Database for more information.
Download database specific instance wallets or regional wallets	You can download database specific instance wallets or regional wallets. See Download Client Credentials (Wallets) for more information.
Rotate database specific instance wallets or regional wallets	You can rotate database specific instance wallets or regional wallets. See Rotate Wallets for Autonomous Database for more information.

Feature	Description
Create partitioned external tables with DBMS_CLOUD	You can create and validate external partitioned tables with the <code>DBMS_CLOUD.CREATE_EXTERNAL_PART_TABLE</code> and <code>DBMS_CLOUD.VALIDATE_EXTERNAL_TABLE</code> statements. See Query External Partitioned Data for more information.
Numeric Formats	With the <code>numberformat</code> and <code>numericcharacters</code> format options Autonomous Database supports formats to interpret numeric strings correctly. See DBMS_CLOUD Package Format Options for more information.

September 2019

Feature	Description
Always Free Autonomous Database	You have the option to create a limited number of Always Free Autonomous Databases that do not consume cloud credits. Always Free databases can be created in Oracle Cloud Infrastructure accounts that are in a trial period, have paying status, or are always free. See Always Free Autonomous Database for more information.
Autonomous Database Metrics	You can monitor the health, capacity, and performance of your databases with metrics, alarms, and, notifications. You can use Oracle Cloud Infrastructure console or Monitoring APIs to view metrics. See Monitor Performance with Autonomous Database Metrics for more information.
Object Store Using Public URL	If your source files reside on an Object Store that provides public URLs, you can use public URLs with <code>DBMS_CLOUD</code> procedures. Public means the Object Storage service supports anonymous, unauthenticated access to the Object Store files. See URI Format Using Public URL for more information.
Work Requests	Work Requests are available in the Oracle Cloud Infrastructure console. Work Requests let you track progress of database lifecycle management operations such as creating, terminating, backing up (manual), restoring, scaling, and cloning an Autonomous Database. Work requests allow you to track the progress and steps completed in a database operation. See About Work Requests for more information.

August 2019

Feature	Description
Create Directory and Drop Directory commands	The <code>data_pump_dir</code> directory is available in a database. You can use <code>CREATE DIRECTORY</code> to create additional directories. To drop a directory, you can use the <code>DROP DIRECTORY</code> command. See Creating and Managing Directories for more information.

July 2019

Feature	Description
Performance Hub	Oracle Cloud Infrastructure console includes Performance Hub for Autonomous Database. You can view real-time and historical performance data from the Performance Hub. See Monitor Autonomous Database with Performance Hub for more information.
Oracle Cloud Infrastructure Native Object Store Authentication	Autonomous Database supports native authentication with Oracle Cloud Infrastructure Object Store. Using native authentication you can use key based authentication to access the Object Store (instead of using a username and password). See CREATE_CREDENTIAL Procedure for more information.
Move to a different Compartment	You can move a database to a different Oracle Cloud Infrastructure compartment. See Move an Autonomous Database to a Different Compartment for more information.

June 2019

Feature	Description
Application Express (APEX)	Oracle APEX (APEX) is a low-code development platform that enables you to build scalable, secure enterprise applications with world-class features that can be deployed anywhere. Each Autonomous Database instance includes a dedicated instance of Oracle APEX; you can use this instance to create multiple workspaces. A workspace is a shared work area where you can build applications. See About Oracle Application Express for more information.
SQL Developer Web	Oracle SQL Developer Web provides a provides a development environment and a data modeler interface for Autonomous Database. See About SQL Developer Web for more information.
Oracle REST Data Services (ORDS)	You can develop and deploy RESTful Services with native Oracle REST Data Services (ORDS) support on a database See Developing RESTful Services in Autonomous Database for more information.
Auto Scaling	Enabling auto scaling allows a database to use up to three times more CPU and IO resources than the currently specified CPU Core Count. When auto scaling is enabled, if your workload requires additional CPU and IO resources the database automatically uses the resources without any manual intervention required.
Azure object store with Data Pump	Autonomous Database now supports Microsoft Azure cloud storage with Oracle Data Pump. See Import Data Using Oracle Data Pump on Autonomous Database for more information.

May 2019

Feature	Description
Support for creating database links	You can create database links with <code>DBMS_CLOUD_ADMIN.CREATE_DATABASE_LINK</code> to access objects on another database. See <i>Use Database Links with Autonomous Database</i> for more information.
Oracle Spatial and Graph with limitations	See <i>Restrictions for Oracle Spatial and Graph</i> for more information.
Oracle Text with limitations	See <i>Restrictions for Oracle Text</i> for more information.
Oracle Cloud Infrastructure Native URI Format Supported with Oracle Data Pump	For importing data from Data Pump files using <code>impdp</code> , if your source files reside on the Oracle Cloud Infrastructure Object Storage you can use the Oracle Cloud Infrastructure native URIs in addition to the Swift URIs. See <i>DBMS_CLOUD Package File URI Formats</i> for more information.
Oracle Cloud Infrastructure Pre-Authenticated URI Format Supported with <code>DBMS_CLOUD</code>	If your source files reside on the Oracle Cloud Infrastructure Object Storage you can use the Oracle Cloud Infrastructure Pre-Authenticated URIs. When you create a pre-authenticated request, a unique URL is generated. You can use a pre-authenticated URL in any <code>DBMS_CLOUD</code> procedure that takes a URL to access files in the Oracle Cloud Infrastructure object store, without the need to create a credential. See <i>DBMS_CLOUD Package File URI Formats</i> for more information.
Oracle XML DB with limitations	Oracle XML DB is a high-performance, native XML storage and retrieval technology that is delivered as a part of Oracle Database. Limitations apply to Oracle XML DB with Autonomous Database database. See <i>Restrictions for Oracle XML DB</i> for more information.
Oracle Management Cloud support	Oracle Management Cloud allows you to monitor your Autonomous Database database availability and performance. See <i>Using Oracle Database Management for Autonomous Databases</i> for more information.
Modify CPU/IO Shares from Service Console	Autonomous Database comes with predefined CPU/IO shares assigned to different consumer groups. You can modify predefined CPU/IO shares if your workload requires different CPU/IO resource allocations. You can change CPU/IO shares from the Service Console or using a PL/SQL package. See <i>Manage CPU/IO Shares on Autonomous Database</i> for more information.

April 2019

Feature	Description
Support for Network Access Control Lists	Autonomous Database now supports setting a network Access Control List (ACL) to restrict access to a specific Autonomous Database database. When you set a network ACL the database only accepts connections from addresses specified on the ACL and rejects all other client connections. See Configuring Network Access with Access Control Rules (ACLs) for more information.
Support for Updating License Type	You can now update your license type from the Oracle Cloud Infrastructure console Actions list. See Update License Type on Autonomous Database for more information.
Access Avro files in Object Stores	Autonomous Database allows you to directly query and load data stored as Apache Avro format files (Apache Parquet format files are also supported). You can create external tables for Parquet or Avro format data files. See DBMS_CLOUD Package Format Options for Parquet and Avro and CREATE_EXTERNAL_TABLE Procedure for Parquet or Avro Files for more information.
Enhanced newline handling for file record delimiter with DBMS_CLOUD	Now, when reading a file, by default DBMS_CLOUD tries to automatically find the correct newline character to use as the record delimiter, either for Windows, newline character "\r\n", or for UNIX/Linux newline character "\n". If DBMS_CLOUD finds one of these it sets the record delimiter for the file. You can specify the record delimiter explicitly if you want to override the default behavior. See DBMS_CLOUD Package Format Options for more information.
Modify CPU/IO Shares	Autonomous Database comes with predefined CPU/IO shares assigned to different consumer groups. You can modify these predefined CPU/IO shares if your workload requires different CPU/IO resource allocations. See Manage CPU/IO Shares on Autonomous Database for more information.

March 2019

Feature	Description
Clone Your Database	Autonomous Database provides cloning where you can choose to clone either the full database or only the database metadata. See Cloning a Database with Autonomous Database for more information.

Feature	Description
Oracle Cloud Infrastructure Native URI Format Supported with DBMS_CLOUD	If your source files reside on the Oracle Cloud Infrastructure Object Storage you can use the Oracle Cloud Infrastructure native URIs in addition to the Swift URIs. See DBMS_CLOUD Package File URI Formats for more information.
UI/API Unification and Workload Type field	Oracle Cloud Infrastructure Console and the Oracle Cloud Infrastructure APIs for Autonomous Data Warehouse and Autonomous Transaction Processing are converged to a single, unified framework. These changes allow you to more easily manage both types of Autonomous Databases. There is a new Workload Type field on the console showing values of either “Transaction Processing” or “Data Warehouse”, depending on the type of database you are viewing. You can also select a Workload Type when you provision an Autonomous Database. See Workload Types for more information.
Service Gateway	You can now set up a Service Gateway with Autonomous Database. A service gateway allows connectivity to Autonomous Database from private IP addresses in private subnets without requiring an Internet Gateway in your VCN. See Access Autonomous Database with Service Gateway and Access to Oracle Services: Service Gateway for more information.
Documentation changes	The procedure <code>DBMS_CLOUD.DELETE_ALL_OPERATIONS</code> is now documented. See DELETE_ALL_OPERATIONS Procedure for more information.

February 2019

Feature	Description
Application Continuity	You can now enable and disable Application Continuity. Application Continuity masks outages from end users and applications by recovering the in-flight work for impacted database sessions following outages. Application Continuity performs this recovery beneath the application so that the outage appears to the application as a slightly delayed execution. See Using Application Continuity on Autonomous Database for more information.
Documentation changes	Autonomous Database documentation includes a new chapter that describes moving data to other Oracle databases. See Moving Data from Autonomous Database to Other Oracle Databases for more information.

January 2019

Feature	Description
Access Parquet files in Object Stores	Autonomous Database allows you to directly query and load data stored as parquet files in object stores. You can also create external parquet format tables in object stores. See <code>COPY_DATA</code> Procedure for Parquet Files and <code>CREATE_EXTERNAL_TABLE</code> Procedure for Parquet Files for more information.

2018 What's New

October 2018

Feature	Description
Oracle Cloud Infrastructure Console changes	The Autonomous Database console has a new layout and provides new buttons that improve the usability of Autonomous Database. These changes include a new DB Connection button that makes it easier to download client credentials.

September 2018

Feature	Description
Table compression methods	In addition to Hybrid Columnar Compression all table compression types are now available in Autonomous Database. For more information, see Managing DML Performance and Compression .
Partitioned tables, indexes, and materialized views	Autonomous Database now allows users to create partitioned tables, indexes, and materialized views. For more information, see Managing Partitions, Indexes, and Materialized Views .
Idle timeout changes	The idle timeout of 60 minutes is now lifted. Idle sessions that do not hold resources required by other sessions will not be terminated after 60 minutes now. For more information, see Manage Concurrency and Priorities on Autonomous Database .

August 2018

Feature	Description
The Oracle Cloud Infrastructure page has a new option Autonomous Transaction Processing	The sign in for Oracle Cloud Infrastructure now lists the new product, Oracle Autonomous Transaction Processing, in addition to Oracle Autonomous Database.

July 2018

Feature	Description
SQL Developer 18.2.0 and later without Keystore Password field for connections	When you connect to Autonomous Database with SQL Developer 18.2.0 or later, you do not need to supply a keystore password. The keystore password was required in previous SQL Developer versions.

June 2018

Feature	Description
New management interfaces	Autonomous Database is now provisioned and managed using the native Oracle Cloud Infrastructure. This provides a more intuitive user interface to make managing your Autonomous Database instances easier with additional capabilities including sorting and filtering. For more information, see Oracle Help Center .
Better authorization management	With OCI Identity and Access Management (IAM) you can better organize and isolate your Autonomous Database instances using Compartments and control what type of access a user or group of users have.
Built-in auditing	The OCI Audit service records use of Autonomous Database application programming interface (API) endpoints as log events in JSON format. You can view, copy, and analyze audit events with standard log analysis tools or using the Audit service Console, the Audit APIs, or the Java SDK.
Availability of the Phoenix region	Autonomous Database is now available in the Phoenix region in addition to Ashburn and Frankfurt regions.
User Assistance changes	The documentation, videos, and examples are updated on the Oracle Help Center to include the procedures to create and control Autonomous Database instances with the Oracle Cloud Infrastructure Console. A new Related Resources page shows related resources including the Autonomous Data Warehouse Forum .

Feature	Description
Idle timeouts in database services	The idle timeouts for three database services, high, medium, and low, have now been relaxed. The previous idle timeout setting of 5 minutes will now apply to only idle sessions that hold resources needed by other active users. See Manage Concurrency and Priorities on Autonomous Database.

May 2018

Feature	Description
Oracle Cloud Infrastructure Object Storage Credentials	The name Swift Password is now Auth token. Use of Swift password in the documentation is now replaced with Auth token.

April 2018

Feature	Description
Microsoft Azure Blob Storage integration	Autonomous Database now supports Microsoft Azure Blob Storage for data loading and querying external data. You can load data from or run queries on files residing on Azure Blob Storage. See Loading Data from Files in the Cloud.
Manage files on the local file system	You can now list files residing on the local file system on Autonomous Database, see LIST_FILES Function. You can also remove files from the local file system. See DELETE_FILE Procedure.

Documentation Accessibility

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