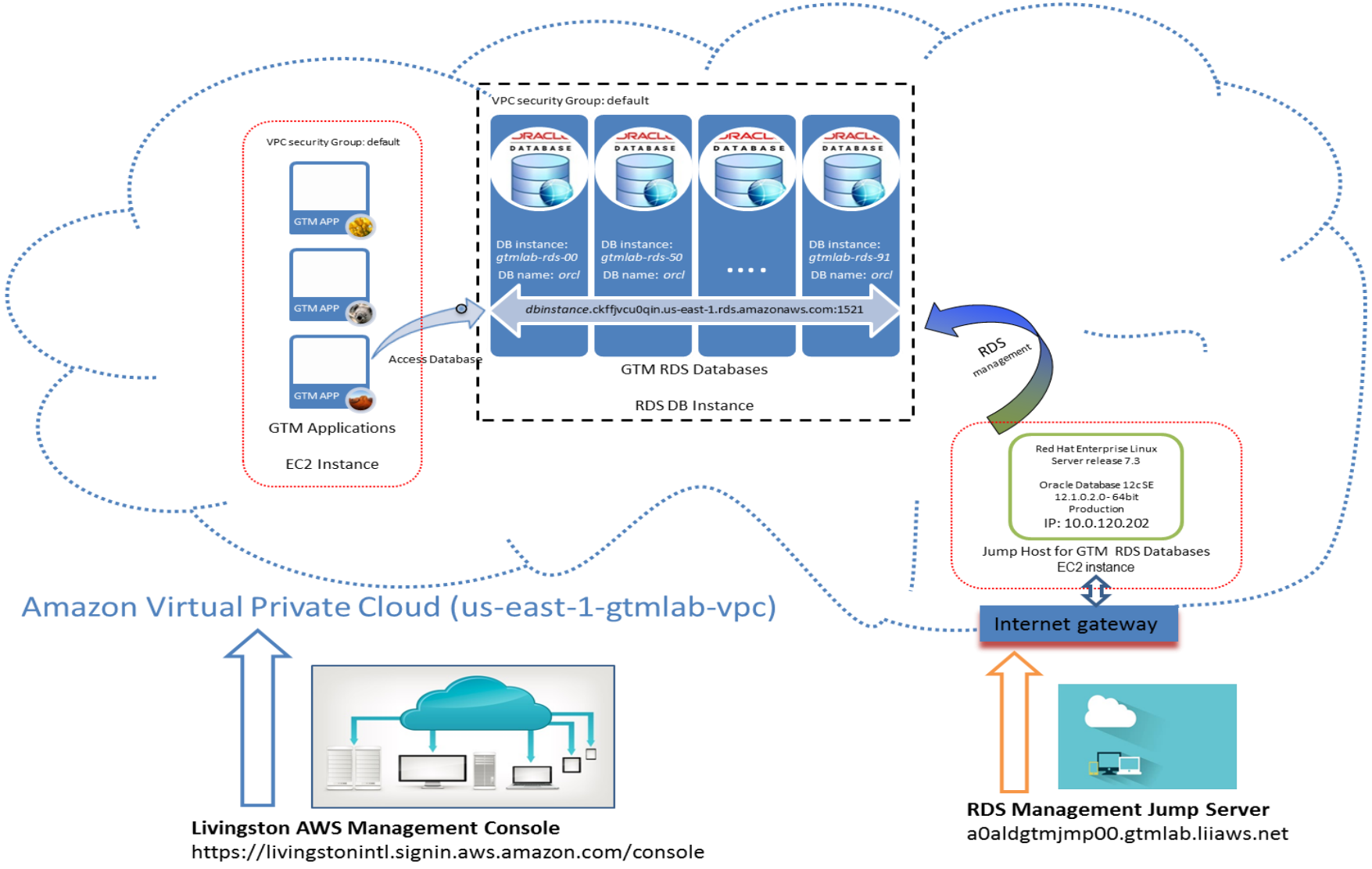
GTM AWS (RDS) Service

AWS Topology and Terminology for GTM

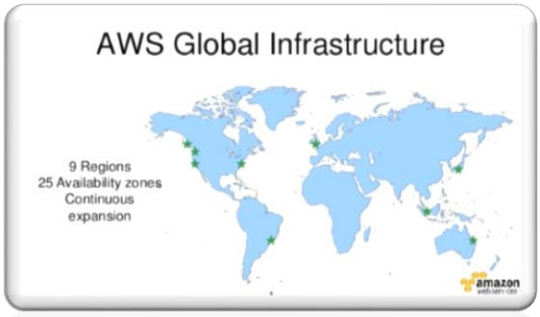
Livingston GTM Service System Database services use Amazon Relational Database Service (Amazon RDS), which is a web service that makes it easier to set up, operate, and scale a relational database in the cloud. It provides cost-efficient, resizable capacity for an industry-standard relational database and manages common database administration tasks.

GTM architecture on AWS



Regions and Availability Zones (us-east-1a/e)

Amazon cloud computing resources are housed in highly available data center facilities in different areas of the world (for example, North America, Europe, or Asia). Each data center location is called a region.

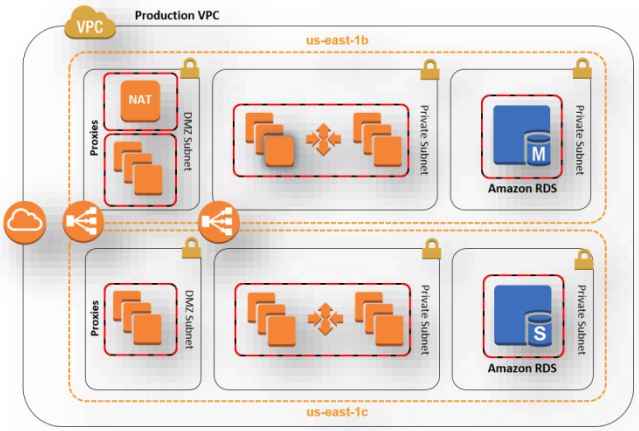


Each region contains multiple distinct locations called Availability Zones, or AZs. Each Availability Zone is engineered to be isolated from failures in other Availability Zones, and to provide inexpensive, low-latency network connectivity to other Availability Zones in the same region. By launching instances in separate Availability Zones, you can protect your applications from the failure of a single location.

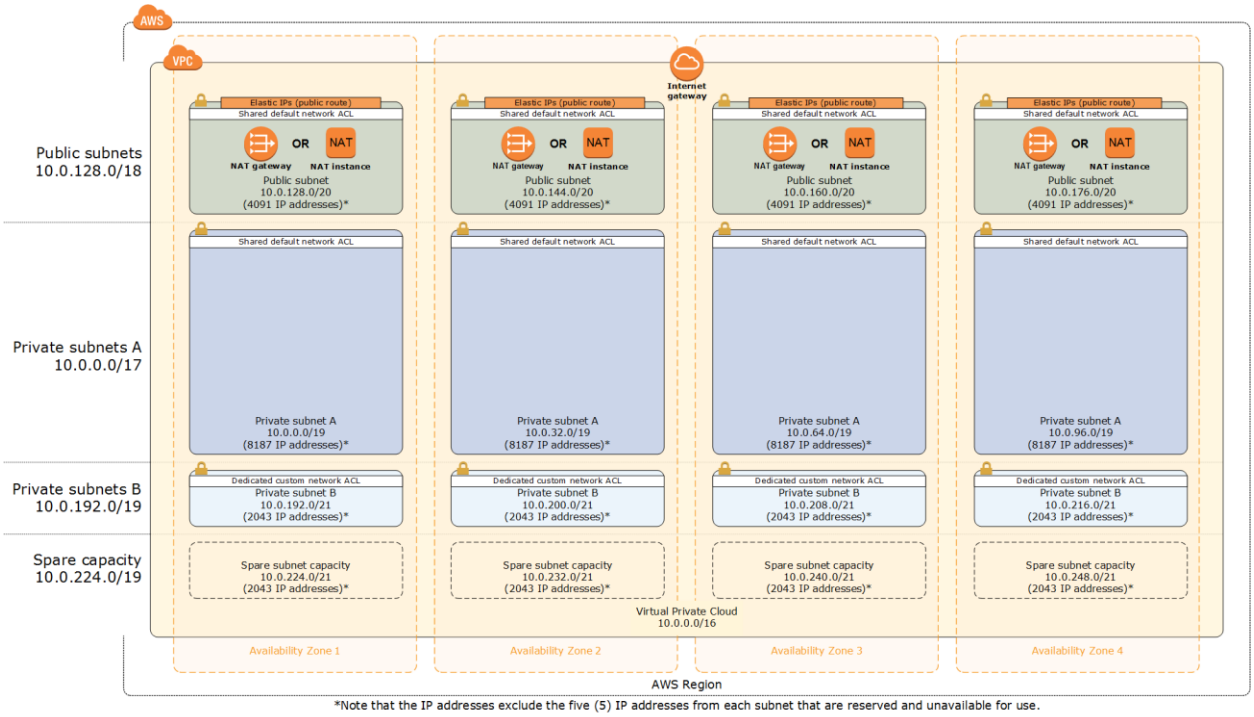
Amazon Virtual Private Cloud (VPC)

Amazon Virtual Private Cloud (Amazon VPC) lets you provision a logically isolated section of the Amazon Web Services (AWS) cloud where you can launch AWS resources in a virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways. You can use both IPv4 and IPv6 in your VPC for secure and easy access to resources and applications.

You can easily customize the network configuration for your Amazon Virtual Private Cloud. For example, you can create a public-facing subnet for your webservers that has access to the Internet, and place your backend systems such as databases or application servers in a private-facing subnet (**rds-us-east-1-dev-data**) with no Internet access. You can leverage multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet.



Additionally, you can create a Hardware Virtual Private Network (VPN) connection between your corporate datacenter and your VPC and leverage the AWS cloud as an extension of your corporate datacenter.



DB Instances

The basic building block of Amazon RDS is the DB instance. A DB instance is an isolated database environment in the cloud. You can run a DB instance on a virtual private cloud using the Amazon Virtual Private Cloud (VPC) service. When you use a virtual private cloud, you have control over your virtual networking environment: you can select your own IP address range, create subnets, and configure routing and access control lists. The basic functionality of Amazon RDS is the same whether it is running in a VPC or not; Amazon RDS manages backups, software patching, automatic failure detection, and recovery. There is no additional cost to run your DB instance in a VPC.

A DB instance can contain multiple user-created databases, and you can access it by using the same tools and applications that you use with a stand-alone database instance. You can create and modify a DB instance by using the AWS Command Line Interface, the Amazon RDS API, or the AWS Management Console.

Each DB instance runs a DB engine. Amazon RDS currently supports the MySQL, MariaDB, PostgreSQL, Oracle, and Microsoft SQL Server DB engines. Each DB engine has its own supported features, and each version of a DB engine may include specific features. Additionally, each DB engine has a set of parameters in a DB parameter group that control the behavior of the databases that it manages.

You can run your DB instance in several Availability Zones, an option called a Multi-AZ deployment. When you select this option, Amazon automatically provisions and maintains a synchronous standby replica of your DB instance in a different Availability Zone. The primary DB instance is synchronously replicated across Availability Zones to the standby replica to provide data redundancy, failover support, eliminate I/O freezes, and minimize latency spikes during system backups.

DB instance class

The computation and memory capacity of a DB instance is determined by its DB instance class. You can select the DB instance that best meets your needs. If your needs change over time, you can change DB instances.

For each DB instance, you can select from 5 GB to 6 TB of associated storage capacity. Each DB instance class has minimum and maximum storage requirements for the DB instances that are created from it. It's important to have sufficient storage so that your databases have room to grow and that features for the DB engine have room to write content or log entries.

DB instance storage

DB instance storage comes in three types: Magnetic, General Purpose (SSD), and Provisioned IOPS (SSD). They differ in performance characteristics and price, allowing you to tailor your storage performance and cost to the needs of your database.

Security Groups

A security group controls the access to a DB instance. It does so by allowing access to IP address ranges or Amazon EC2 instances that you specify.

Amazon RDS uses DB security groups, VPC security groups, and EC2 security groups. In simple terms, a DB security group controls access to a DB instance that is not in a VPC, a VPC security group controls access to a DB instance inside a VPC, and an Amazon EC2 security group controls access to an EC2 instance and can be used with a DB instance.

DB Parameter Groups (default: oracle-se1-12-1)

You manage the configuration of a DB engine by using a DB parameter group. A DB parameter group contains engine configuration values that can be applied to one or more DB instances of the same instance type. Amazon RDS applies a default DB parameter group if you don't specify a DB parameter group when you create a DB instance. The default group contains defaults for the specific database engine and instance class of the DB instance.

Detailed configuration for each GTM RDS

DB Instance	Applications	vCPU	MEM	Storage	IP	DB Name	Engine Version	Character Set	Endpoint
gtmlab-rds-00	Jump server	1	3.75 GB	1500 GB	10.0.127.107	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-00.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-50	CMEU FORD	1	1.7 GB	50 GB	10.0.124.196	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-50.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-51	CMEU EU	1	1.7 GB	50 GB	10.0.124.178	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-51.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-52	PATCHTEST	1	1.7 GB	280 GB	10.0.124.140	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-52.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-53	AMWAY	1	1.7 GB	50 GB	10.0.124.37	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-53.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-54	ARROW#1	1	1.7 GB	50 GB	10.0.124.102	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-54.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-55	ARROW#2(Int)	1	1.7 GB	50 GB	10.0.125.85	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-55.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-56	CARDINAL	1	1.7 GB	50 GB	10.0.125.33	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-56.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-57	GEID	1	1.7 GB	100 GB	10.0.124.50	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-57.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-58	TSE DEMO	1	1.7 GB	50 GB	10.0.124.15	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-58.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-59	COMPLIANCE TSE	1	1.7 GB	50 GB	10.0.124.59	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-59.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-60	PATCH RELEASE	1	1.7 GB	50 GB	10.0.124.142	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-60.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-61	MY DYER	1	1.7 GB	50 GB	10.0.125.167	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-61.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-62	HELIONE	1	1.7 GB	50 GB	10.0.125.146	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-62.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-63	DEV1	1	1.7 GB	50 GB	10.0.124.228	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-63.ckffjvcu0qin.us-

									east-1.rds.amazonaws.com:1521
gtmlab-rds-64	DEV2	1	1.7 GB	50 GB	10.0.125.151	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-64.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-65	JTEKT TSE	1	1.7 GB	50 GB	10.0.125.187	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-65.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-66	JTEKT TSI	1	1.7 GB	50 GB	10.0.125.26	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-66.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
gtmlab-rds-67	TIMKEN	1	1.7 GB	50 GB	10.0.124.29	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-67.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
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gtmlab-rds-75	KERRY	1	1.7 GB	50 GB	10.0.125.149	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-75.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
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gtmlab-rds-78	CMEU ES	1	1.7 GB	50 GB	10.0.125.218	ORCL	Oracle SE One 12.1.0.1.v5	AL32UTF8	gtmlab-rds-78.ckffjvcu0qin.us-east-1.rds.amazonaws.com:1521
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gtm-content	GOLD CONTENT APPLICATION	4	15 GB	330 GB	10.0.170.166	ORCL	Oracle EE 11.2.0.4.v3	AL32UTF8	gtm-content.cbikvjun01go.us-east-1.rds.amazonaws.com:1521
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gtm-verification	GOLD VERIFICATION	4	15 GB	200 GB	10.0.178.31	ORCL	Oracle EE 11.2.0.4.v3	AL32UTF8	gtm-verification.cbikvjun01go.us-east-1.rds.amazonaws.com:1521

	APPLICATION								
gtm-verification-uat	GOLD VERIFICATION APPLICATION UAT	4	15 GB	200 GB	10.0.178.179	ORCL	Oracle EE 11.2.0.4.v3	AL32UTF8	gtm-verification-uat.cbikvjun01go.us-east-1.rds.amazonaws.com:1521
qaverifytest		4	16 GB	200 GB	10.169.8.40	ORCL	Oracle EE 11.2.0.4.v3	AL32UTF8	qaverifytest.cbikvjun01go.us-east-1.rds.amazonaws.com:1521

Common DBA Tasks for Oracle DB Instances

This section describes the Amazon RDS-specific implementations of some common DBA tasks for DB instances running the Oracle database engine. To deliver a managed service experience, Amazon RDS doesn't provide shell access to DB instances, and restricts access to certain system procedures and tables that require advanced privileges.

The following are common DBA tasks for DB instances running Oracle:

System Tasks

Disconnecting a Session	Amazon RDS method: disconnect Oracle method: alter system disconnect session
Killing a Session	Amazon RDS method: kill Oracle method: alter system kill session
Enabling and Disabling Restricted Sessions	Amazon RDS method: restricted_session Oracle method: alter system enable restricted session
Flushing the Shared Pool	Amazon RDS method: flush_shared_pool Oracle method: alter system flush shared_pool
Flushing the Buffer Cache	Amazon RDS method: flush_buffer_cache Oracle method: alter system flush buffer_cache
Granting SELECT or EXECUTE privileges to SYS Objects	Amazon RDS method: grant_sys_object Oracle method: grant
Granting Privileges to Non-Master Users	Amazon RDS method: grant Oracle method: grant
Modifying DBMS_SCHEDULER Jobs	Amazon RDS method: dbms_scheduler.set_attribute Oracle method: dbms_scheduler.set_attribute
Creating Custom Password Verification Functions	Amazon RDS method: create_verify_function Oracle method: —
Setting Up a Custom DNS Server	—

Database Tasks

Changing the Global Name of a Database	Amazon RDS method: rename_global_name Oracle method: alter database rename
Creating and Sizing Tablespaces	Amazon RDS method: create tablespace Oracle method: alter database
Setting the Default Tablespace	Amazon RDS method: alter_default_tablespace Oracle method: alter database default tablespace
Setting the Default Temporary Tablespace	Amazon RDS method:alter_default_temp_tablespace Oracle method: alter database default temporary tablespace

Checkpointing the Database	Amazon RDS method: checkpoint Oracle method: alter system checkpoint
Setting Distributed Recovery	Amazon RDS method: enable_distr_recovery Oracle method: alter system enable distributed recovery
Setting the Database Time Zone	Amazon RDS method: alter_db_time_zone Oracle method: alter database set time_zone
Working with Automatic Workload Repository (AWR)	—
Adjusting Database Links for Use with DB Instances in a VPC	—

Log Tasks

Setting Force Logging	Amazon RDS method: force_logging Oracle method: alter database force logging
Setting Supplemental Logging	Amazon RDS method: alter_supplemental_logging Oracle method: alter database add supplemental log
Switching Online Log Files	Amazon RDS method: switch_logfile Oracle method: alter system switch logfile
Adding Online Redo Logs	Amazon RDS method: add_logfile Oracle method: —
Dropping Online Redo Logs	Amazon RDS method: drop_logfile Oracle method: —
Resizing Online Redo Logs	—
Retaining Archived Redo Logs	Amazon RDS method: set_configuration Oracle method: —

Miscellaneous Tasks

Creating New Directories in the Main Data Storage Space	Amazon RDS method: create_directory Oracle method: create directory
Listing Files in a DB Instance Directory	Amazon RDS method: listdir Oracle method: —
Reading Files in a DB Instance Directory	Amazon RDS method: read_text_file Oracle method: —