



# AWS re:Invent

**D A T 4 0 1 - R**

# Running on-premises and cloud databases with Amazon RDS on VMware

**Bharath Pichai**

Software Development Manager  
Amazon Web Services

**Lavanya Ramani**

Software Development Manager  
Amazon Web Services

# Agenda

Introduction: What is Amazon Relational Database Service (Amazon RDS) on VMware?

Getting started – Using the installer

Creating your first database

Demo

Q&A

# Introduction

Customers want the **same** experience across on-premises and the cloud



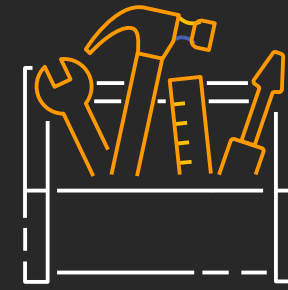
Managed,  
available, reliable,  
secure, and high-  
performance  
databases



Same  
operational  
consistency



Same services  
and APIs



Same tools for  
automation,  
deployments,  
and monitoring



Same pace of  
innovation as in  
the cloud

# Why Amazon RDS on-premises?



Databases that are managed, monitored, and operated by AWS.  
Reduce operational cost and improve DBA efficiency



Single pane of management using the same APIs, automation, and tools on premises and in AWS Regions



Easily manage a hybrid-cloud database fleet and future-proof your database investment

# Amazon RDS on VMware

Deploy managed databases in on-premises environments

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## **Easy to administer**

Easily deploy and maintain OS and DB software; built-in monitoring

## **Performant & scalable**

Scale compute and storage with a few clicks; minimal downtime for your application

## **Available & durable**

Health monitoring detects and recovers unhealthy instances; automated backup, snapshots, and failover

## **Leverages existing infrastructure**

Uses familiar VMware infrastructure and operations tooling

# Database engine versions supported

Available in us-east-1 (N. Virginia) Region

MySQL 5.7

PostgreSQL 10.9

Microsoft SQL  
Server 2016 SP2  
Enterprise Edition  
(On-premises  
customer provided  
media and license)




# Getting started

# Getting started to use the service

Create Custom AZ and download Installer to onboard on-premises vSphere cluster


RDS > Custom AZs

**You have unregistered custom AZs in us-east-1.**

Register a custom AZ using the Installer download for us-east-1. The installer validates your on-premises VMware setup and installs Amazon RDS on VMware components. The custom AZ is active after Amazon RDS on VMware installation is complete. [Info](#)

Download Installer


Custom AZs




Delete

Import media

Create custom AZ

 *Filter by custom AZ name*

< 1 >



Custom AZ name ▲	Custom AZ identifier	AZ Status ▼	VPN name	VPN gateway IP	VPN originator IP
------------------	----------------------	-------------	----------	----------------	-------------------

# Getting started – Using the installer

## Deploy installer VM in on-premises vCenter

### Deploy OVF Template

1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 Select storage

6 Ready to complete

#### Select an OVF template

Select an OVF template from remote URL or local file system

---

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

☐ URL

[http](#) | [https://remoteserver-address/filetodeploy.ovf](#) | .ova

☒ Local file

RDSonVMwareInstaller.ova

CANCEL

BACK

NEXT

# Getting started to use the service - continued

## Select the data center

### Deploy OVF Template

✓ 1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 Select storage


6 Ready to complete


Select a name and folder

Specify a unique name and target location

Virtual machine name: RDSonVMwareInstaller

Select a location for the virtual machine.

▼  [Redacted]

>  [Redacted]

CANCEL

BACK

NEXT

# Getting started to use the service - continued

## Select the cluster

Deploy OVF Template

✓ 1 Select an OVF template

✓ 2 Select a name and folder

✓ 3 Select a compute resource

4 Review details

5 License agreements

6 Select storage

7 Select networks

8 Ready to complete

Select a compute resource

Select the destination compute resource for this operation

> host1-vhost5-RP

> host1-vhost6-Cluster

> host1-vhost7-Cluster

> host1-vhost8-Cluster

> host2-vhost1-Cluster

> host2-vhost2-Cluster

> host2-vhost3-Cluster

> host2-vhost4-Cluster

> host2-vhost5-Cluster

> host2-vhost6-Cluster

> host2-vhost7-Cluster

> host2-vhost8-Cluster

> host3-vhost1-Cluster

> host3-vhost2-Cluster

> host3-vhost3-Cluster

> host3-vhost4-Cluster

Compatibility

✓ Compatibility checks succeeded.

CANCEL

BACK

NEXT

# Getting started to use the service - continued

## Review details

Deploy OVF Template

✓ 1 Select an OVF template

✓ 2 Select a name and folder

✓ 3 Select a compute resource

**4 Review details**

5 License agreements

6 Select storage

7 Select networks

8 Ready to complete

Review details

Verify the template details.

Publisher	No certificate present
Product	RDS on VMware Deployer
Version	1.0.0.33209
Vendor	<a href="#">VMware Inc.</a>
Description	RDS on VMware Deployer
Download size	4.0 GB
Size on disk	4.5 GB (thin provisioned)
	12.0 GB (thick provisioned)

CANCEL

BACK

NEXT

# Getting started to use the service - continued

## Select the networks

Deploy OVF Template

✓ 1 Select an OVF template

✓ 2 Select a name and folder

✓ 3 Select a compute resource

✓ 4 Review details

✓ 5 License agreements

✓ 6 Select storage

**✓ 7 Select networks**

8 Ready to complete

Select networks

Select a destination network for each source network.

Source Network	Destination Network
Cluster Control Network	
Internet Network	
Application Network	
Management Network	

4 items

IP Allocation Settings

IP allocation:

Static - Manual

IP protocol:

IPv4

CANCEL

BACK

NEXT

# Run installer – Configuration

## Enter AWS configuration

RDS on VMware Installer

1 AWS Configuration

2 Network Configuration

3 vCenter Configuration

4 Placement Details

5 Validation Status

6 Summary

7 Installation Status

AWS Configuration

Select Region

Other

Other Region

RETRIEVE AZS

✓ Connection to AWS site is successful.

Select Custom AZs

CANCEL

NEXT



# Run installer – Configuration

## Enter network configuration

RDS on VMware Installer

1 AWS Configuration

2 Network Configuration

3 vCenter Configuration

4 Placement Details

5 Validation Status

6 Summary

7 Installation Status

Network Configuration

ESXI Management Static IP Address

1 192.168.1.100

DNS Server

192.168.1.1

ESXI Management Netmask

255.255.255.0

ESXI Management Default Gateway

192.168.1.1

NTP Server

ntp.aliyun.com

CANCEL

BACK

NEXT

# Run installer – Configuration

## Enter vCenter configuration

RDS on VMware Installer

1 AWS Configuration

2 Network Configuration

3 vCenter Configuration

4 Placement Details

5 Validation Status

6 Summary

7 Installation Status

vCenter Configuration

FQDN

XXXXXXXXXXXXXXX.XXX.XXX.XXX.XXX

Administrator Username

XXXXXXXXXXXXXXX@XXXX.XXX.XXX.XXX

Administrator Password

XXXXXXXXXXXXXXX

TEST CONNECTION

CANCEL

BACK

NEXT

# Run installer – Configuration

## Enter placement details

RDS on VMware Installer

1 AWS Configuration

2 Network Configuration

3 vCenter Configuration

4 Placement Details

5 Validation Status

6 Summary

7 Installation Status

Placement Details

Select Datacenter

Select Cluster

Select Datastore

Select Resource Pool

CANCEL

BACK

VALIDATE

# See installer setting up onboarding environment for you

## Validate your settings

RDS on VMware Installer

1 AWS Configuration

2 Network Configuration

3 vCenter Configuration

4 Placement Details

5 Validation Status

6 Summary

7 Installation Status

Validation Status

⚠ Minimum number of ESXi hosts on the cluster

✓ vCenter Version

✓ DRS on Cluster

✓ Shared Datastore

✓ Free space on Datastore

✓ Replication enabled

⚠ NTP Server

✓ Application and Cluster Control Network on distributed switch

✓ DHCP on Application network

✓ DHCP on Internet Network

✓ Unique VLAN id for Cluster Control Network

✓ Cluster Control Network has no DHCP

CANCEL

BACK

NEXT

RDS on VMware Installer

1 AWS Configuration

2 Network Configuration

3 vCenter Configuration

4 Placement Details

5 Validation Status

6 Summary

7 Installation Status

Summary

AWS Configuration

Region

Custom AZ

Network Configuration

ESXi Management Static IP Address

DNS Server

ESXi Management Netmask

ESXi Management Default Gateway

NTP Server

vCenter Configuration

FQDN

Host IP

Administrator Username

Placement Details

CANCEL

BACK

INSTALL

# Custom AZ is active

## Installer will bring the custom AZ active

**You have unregistered custom AZs in us-east-2.**  
Register a custom AZ using the Connectivity Suite download for us-east-2. The custom AZ is active after you download and deploy the images contained in the Connectivety Suite to a VMware cluster. [Info](#)

[Download Connectivity Suite](#)

### Custom AZs

Refresh

Delete

Import media

Create custom AZ

1

Settings

	Custom AZ name ▲	Custom AZ id	Status ▼	VPN name	VPN originator IP
<input type="radio"/>	CustomAZ2	rds-caz-3EMilhQm	Active	VPN-Lavanya	10.10.10.10
<input type="radio"/>	CustomAZ3	rds-caz-xSBseHIE	Active	VPN-NEW	10.10.10.10
<input type="radio"/>	us-east-NYDC-AZ	rds-caz-3ZIWK1C	Active	us-east-NYDC-VPN	10.10.10.10

# Create on-premises database

Select your active custom AZ and choose the database type

The screenshot shows the AWS Management Console interface for creating a database. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information 'LavanyaRDS @ 6958-1957-72...' with a dropdown arrow, 'Ohio' with a dropdown arrow, and 'Support' with a dropdown arrow. The main content area is divided into three sections: 'Choose a location to meet your use case', 'Availability Zone', and 'Engine options'. In the 'Choose a location' section, 'On-premises' is selected with a radio button, and its description reads: 'Use a custom AZ to create a DB instance with an on-premises VMware cluster.' The 'Availability Zone' section shows 'Custom Availability Zone' with a dropdown menu set to 'us-east-NYDC-AZ'. A warning box below states: 'After the DB instance is created, you can't change the availability zone selection.' The 'Engine options' section shows 'Engine type' with three options: 'MySQL' (selected with a radio button and icon), 'PostgreSQL' (with a radio button and icon), and 'Microsoft SQL Server' (with a radio button). Below the engine options, the 'Version' is listed as 'mysql 5.7.26'. On the right side, a 'Create database' sidebar is open, containing explanatory text about 'Quick create' and links to 'Learn more' about creating RDS and Aurora instances.

aws Services Resource Groups

LavanyaRDS @ 6958-1957-72... Ohio Support

Choose a location to meet your use case

☐ Amazon Cloud  
Use Amazon's cloud to store and provision a database instance with RDS.

☒ On-premises  
Use a custom AZ to create a DB instance with an on-premises VMware cluster.

**Availability Zone**


Custom Availability Zone [Info](#)


us-east-NYDC-AZ

After the DB instance is created, you can't change the availability zone selection.

**Engine options**

Engine type [Info](#)

☒ MySQL 

☐ PostgreSQL 

☐ Microsoft SQL Server

Version [Info](#)

mysql 5.7.26

**Create database**

In Database settings, enable Quick create to specify the minimum set of configuration options to create a database. With Quick create enabled, you specify only the DB engine type, DB instance size, and DB instance identifier. Quick create uses the default setting for other configuration options.

Disable Quick create to specify more configuration options when you create a database. If Quick create isn't enabled, you can choose other configuration options, including ones for availability, security, backups, and maintenance.

You can always modify configuration options after the database is created.

Learn more

- [Creating an Amazon RDS DB Instance](#)
- [Creating an Amazon Aurora DB Cluster](#)

# Database is active

## After a few minutes, database is active

Amazon RDS

Dashboard

Databases

Query Editor

Performance Insights

Snapshots

Automated backups

Reserved instances

Subnet groups

Parameter groups

Option groups

Custom Availability Zones

Events

Event subscriptions

Recommendations

RDS > Databases

Databases

Group resources

Refresh

Modify

Actions

Restore from S3

Create database

Filter databases

< 1 >

Settings

	DB identifier	Role	Engine	Region & AZ	Size	Status	CF
<input type="radio"/>	us-east-nydc-loan-db2	Instance	PostgreSQL	us-east-NYDC-AZ	db.cv11.small	Available	-
<input type="radio"/>	us-east-nydc-mortgage-db1	Instance	MySQL	us-east-NYDC-AZ	db.cv11.small	Available	-
<input type="radio"/>	████████████████████	Instance	MySQL	CustomAZ2	db.cv11.small	Available	-
<input type="radio"/>	████████████████████	Instance	PostgreSQL	CustomAZ2	db.cv11.small	Available	-
<input type="radio"/>	████████████████████	Instance	MySQL	CustomAZ3	db.cv11.small	Deleting	-

# Other features once the database is active

Take snapshot

Take point-in-time recovery

See Amazon CloudWatch metrics for your on-premises database

Reboot, rename your database



# Demo

# Questions?

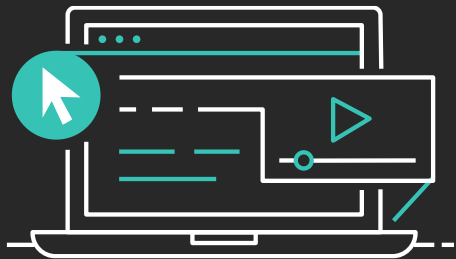
# Related breakouts

[DAT401-R1 - [Running on-premises databases with Amazon RDS on VMware] 12-4-2019, 3:15 PM, Mirage, Antigua B

Feel free to reach out at [rds-hybrid@amazon.com](mailto:rds-hybrid@amazon.com)

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# Thank you!

**Bharath Pichai**

bharathp@amazon.com  
rds-hybrid@amazon.com

**Lavanya Ramani**

lrramani@amazon.com  
rds-hybrid@amazon.com



Please complete the session  
survey in the mobile app.