Oracle in the Cloud: AWS and Azure

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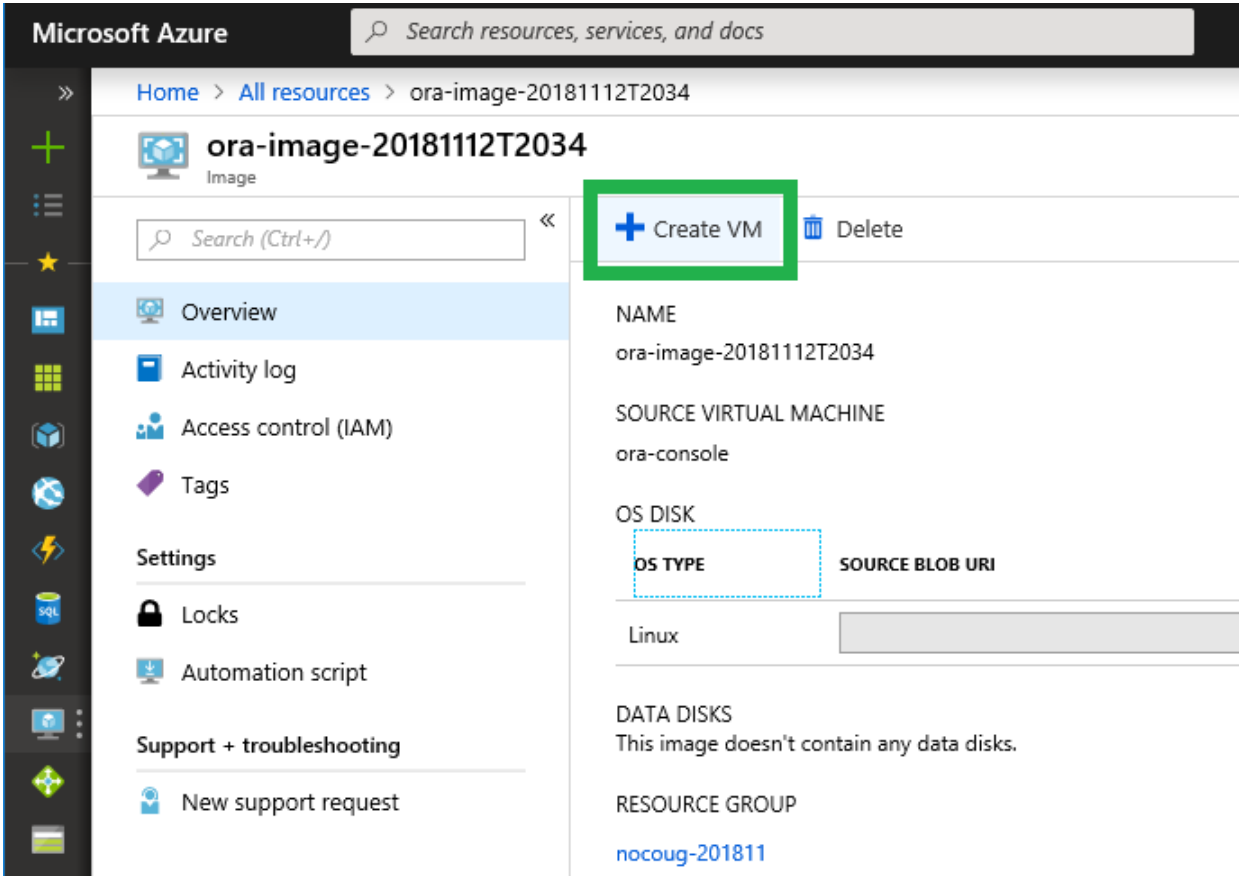Northern California Oracle User Group

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Goal: Create Oracle Databases Using…

- Azure Virtual Machine (unmanaged)

  - ~~Infrastructure as code: Resource Manager Templates~~

  - Manual: Azure Portal

- Amazon Relational Database Service (managed)

  - Infrastructure as code: CloudFormation

  - Manual: AWS Console

- Amazon Elastic Compute Cloud (unmanaged)

  - Infrastructure as code: CloudFormation

  - Manual: AWS Console

Compare Configuration Approaches

- Brainstorm advantages and disadvantages of:

    1. Manual approach

    2. Cloud vendor's proprietary infrastructure-as-code system

    3. Generic infrastructure-as-code system
       (Chef, Puppet, Ansible, SaltCloud, Terraform, etc.)

Azure Portal: Create VM from Image

Azure Portal: Review VM Details

Not Shown: Creating the Image

- Azure does not offer a managed Oracle service

- You must first:

  1. Create a virtual machine from a stock Linux image

  2. Download, install and configure Oracle

  3. Capture an image of the virtual machine

- Oracle supplies *commercial* images in the Azure Marketplace; you must bring your own license.

- Oracle does not supply a *free* image (Express Edition) in the Marketplace.

Amazon RDS CloudFormation Template Excerpt

```yaml
[...]
  DbInst:
    Type: "AWS::RDS::DBInstance"
    Properties:
      DBInstanceClass: "db.t2.medium"
      AllocatedStorage: 20  # GiB
      StorageType: "gp2"  # General-purpose SSD
      StorageEncrypted: true
      LicenseModel: "license-included"
      VPCSecurityGroups:
        - !Ref DbServerGenExVpcSecGrp
      MasterUserPassword: !Ref DbPassword
      BackupRetentionPeriod: 1  # days
      [...]
```

Amazon Console: Create Database

Amazon Console: Launch EC2 Instance

Amazon Console: Review Details

Not Shown: Creating the Image

- Amazon offers managed Oracle as a service,
  but you can also choose an unmanaged installation.

- You must first:

    1. Create an EC2 instance from a stock Linux image

    2. Download, install and configure Oracle

    3. Create an Amazon Machine Image (AMI) of the instance

- Oracle image coverage in the Amazon Marketplace is spotty,
  with many unofficial or third-party images.

Amazon EC2 CloudFormation Template Excerpt

```yaml
[...]
  DbInst:
    Type: "AWS::EC2::Instance"
    Properties:
      InstanceType: "t2.small"
      ImageId: "ami-0cd9e1310775f5ff8"
      BlockDeviceMappings:
        - DeviceName: "/dev/sda1"
          Ebs:
            VolumeSize: 50   # GiB
      SecurityGroupIds:
        - !Ref DbServerGenExVpcSecGrp
      KeyName: "lenovo-201807"
      Tags:
        - { Key: "Name" , Value: "oracle-cfn" }
        [...]
```

Compare Unmanaged and Managed Cloud

- Brainstorm advantages and disadvantages of:

  1. Oracle on a cloud-based virtual machine

  2. Oracle as a cloud-based service

Learning Resources

- Azure

  - Azure Linux Virtual Machines
    docs.microsoft.com/en-us/azure/virtual-machines/#5-minute-linux-quickstarts

  - Azure Resource Manager Templates
    *docs.microsoft.com/en-us/azure/azure-resource-manager/
    resource-group-authoring-templates*

- Amazon

  - Relational Database Service (RDS) Oracle
    *docs.aws.amazon.com/AmazonRDS/latest/UserGuide/
    CHAP_GettingStarted.CreatingConnecting.Oracle.html*

  - CloudFormation
    docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/GettingStarted.html

  - AWS Loft (free training and advice)
    aws.amazon.com/start-ups/loft/sf-loft/

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Thank you for attending.
Questions and comments are appreciated.
The AWS RDS CloudFormation template
was previously published, at:
https://github.com/sqlxpert/infra-as-code-aws-nocoug-journal/
Please e-mail me if you wish a copy of the
AWS EC2 template (not Oracle-specific).