2.2 Azure Resource Manager

▼ Azure Resource

- Anything you create in an Azure subscription
- Example - virtual machines, Application Gateways, Database instances
- Good to have consistent naming convention

```
cloudarchitecture-prod-infrastructure-rg
```

- Easy to identify what it's used for and which environment
- Provides fine-grained access management through role-based access controls (RBAC)
- You can move some resources that supports move to a new resource group or subscription if they support move operation

Tagging

- Helps you better search, filter, and organize resources
- Name/value pairs of text data that you can apply to resources and resource groups
- Examples
  - department (like finance, marketing)
  - environment (prod, test, dev)
  - cost center
  - life cycle and automation (like shutdown and startup VMs)
- Good way to group your billing data
  - Example: VMs on production that belongs to a cost center A

- Help with monitoring
    - You can set up alerts based on tags (if a resource fails notification goes to finance dept)
- Helps with automation
    - Example: shutdown at 6pm ad startup at 7am tag to automate to save cost
- Help with automation Governance through Policies
    - Example: ensure that all resources have the Department tag associated with them and block creation if it doesn’t exist
- Limitations:
    - A resource can have up to 50 tags
    - Tags aren’t inherited from parent resources
    - Not all resource types support tags

Resource Locks

- Blocks modification (Read-only) or deletion (Delete) of the resource
- Read-only allows only HTTP GET requests
- You must remove the lock in order to perform forbidden activity
- Apply regardless of RBAC permissions
- Protects against accidental deletion
- Use to protect key resources that could have a large impact if they were removed or modified
    - ExpressRoute circuits, virtual networks, critical databases, and domain controllers
- Only “Owner” and “User Access Administrator” can create/delete locks
    - It requires access to Microsoft.Authorization/locks/*

▼ Azure Resource Group

- Also an Azure resource so it can have locks, tags, RBAC permissions
  - It’s free
- Logical container for resources deployed on Azure
- Tied to a region & subscription itself
  - But can contain resources from different regions
    - If region the RG goes down, the management of the RG would not work
- Helps you organize resources
  - You can place resources of similar usage, type, or location in same group
- If you delete a resource group, all resources contained within are also deleted
- Authorization
  - Scope for applying role-based access control (BRAC) permissions
  - Permissions are inherited in all resources that the group has
- All resources must be in a resource group and a resource can only be a member of a single resource group
  - Before any resource can be provisioned, you need a resource group
- Some services has specific limitations or requirements to move from one resource group to another
- Can’t be nested
- Can see history of the deployments to a resource group

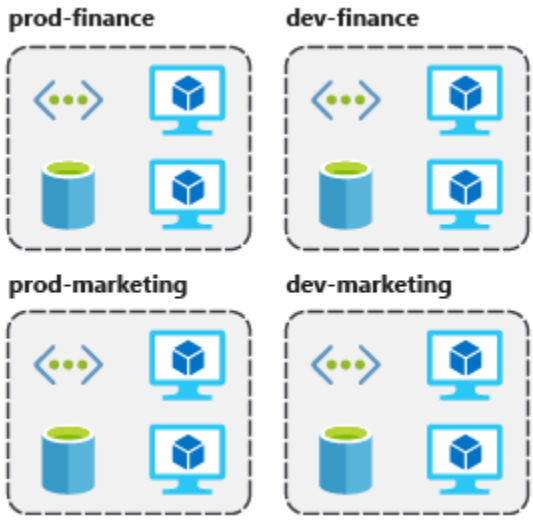
Organizing Resource Groups

- By type (virtual networks, virtual machines, cosmos dbs)

- By environment (prod, QA, dev)

- By department (marketing, finance, HR)

- Combining strategies



- By authorization
    - By who needs to administer them
- By life cycle
    - Allows you to delete after experimentation
- By billing

- A way to filter and sort the data to better understand where costs are allocated

▼ Management Group

- Groups multiple subscriptions
- Can have RBAC assignments and policies
  - Inherited by underlying subscriptions
- Good for enterprises
- Example: