M365 Copilot
↓
Microsoft Graph (API)
M365
email
chat
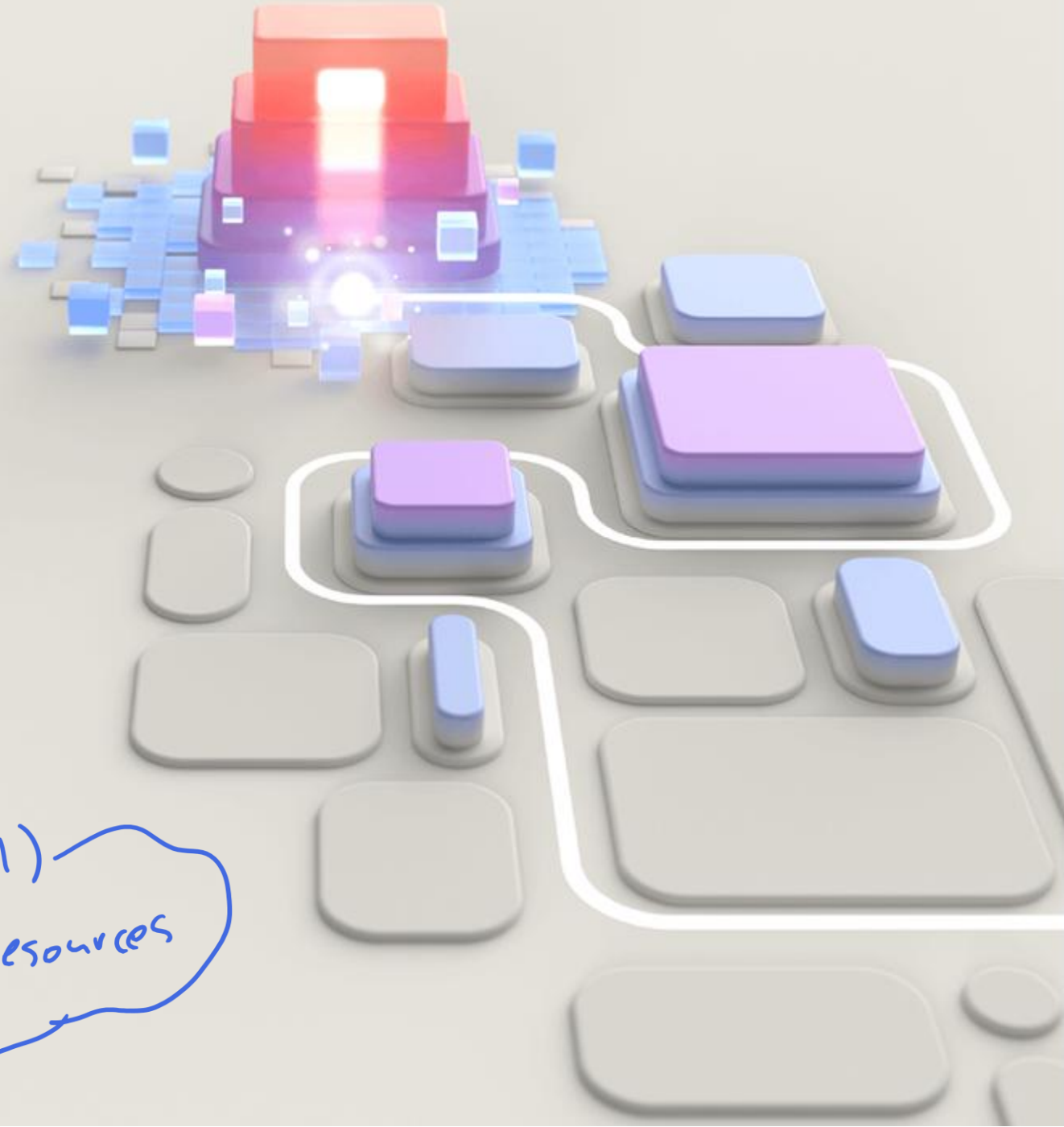SP

Microsoft

AZ-104

Administer Azure Resources

Azure Copilot
↓
Resource Graph
KQL
Kusto
DB
ARM (API)
Azure Resources

AZ-104 Course Outline

01: Administer Identity

02: Administer Governance and Compliance

03: Administer Azure Resources ← ARM API ← Tools

04: Administer Virtual Networking

05: Administer Intersite Connectivity

06: Administer Network Traffic Management

07: Administer Azure Storage

08: Administer Azure Virtual Machines

09: Administer PaaS Compute Options

10: Administer Data Protection

11: Administer Monitoring

Learning Objectives – Azure Resources

- Configure Azure Resources with Tools
  - Manage services with the Azure portal
  - Introduction to PowerShell
  - Introduction to Bash
- Configure Resources with ARM Templates
- Lab 03b – Manage Azure resources by Using ARM Templates

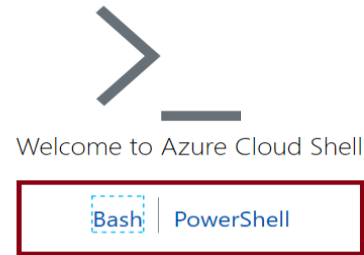# Configure Azure Resources with the Azure Portal, PowerShell, and the CLI

Compare Administrator tools

Azure Portal
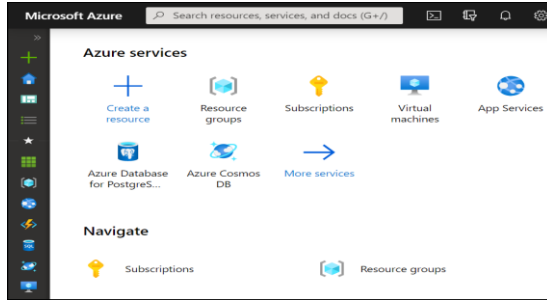
- View and manage resources
- Visual interface
- Unified hub – training and documentation
- Personalize your experience
- Mobile app
- Access the Cloud Shell
- One-off creation scenarios

Azure Cloud Shell

Welcome to Azure Cloud Shell

Bash | PowerShell

- Interactive and browser-accessible with file storage
- Offers Bash or PowerShell
- Authenticates automatically
- Provided on a per-session and per-user basis
- Temporary - times out after 20 minutes

Azure PowerShell and CLI

```
az vm restart -g
MyResourceGroup -n MyVm
```

- Command line programs
- Interactive and scripting modes
- Cross-platform
- Good for repeatable deployments
- Familiar coding experience
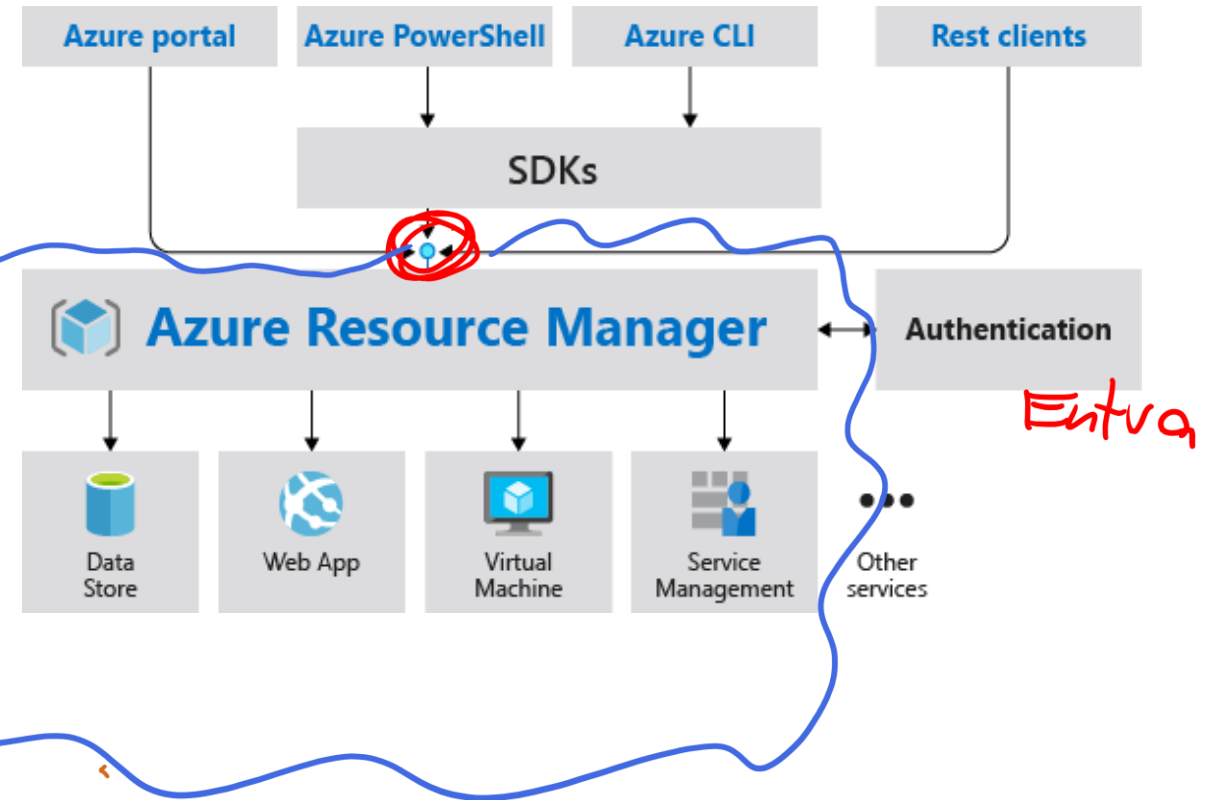
Review Resource Manager Benefits

Provides a consistent management layer

Enables you to work with the resources in your solution as a group

Deploy, update, or delete in a single, coordinated operation

Provides security, auditing, and tagging features

Choose the tools and APIs that work best for you

Use Azure Cloud Shell

Interactive, browser-accessible shell

Offers either Bash or PowerShell

Is temporary and provided on a per-session, per-user basis

Requires a resource group, storage account, and Azure File share

Authenticates automatically
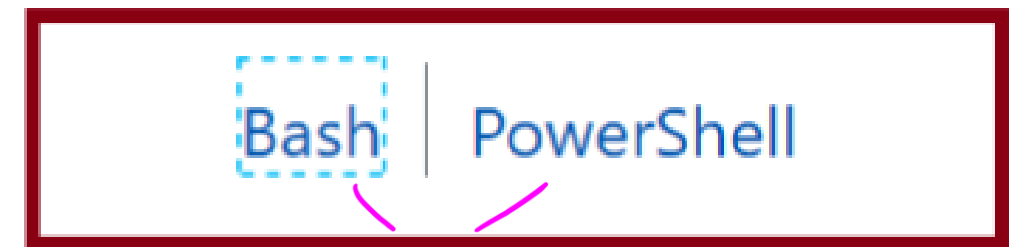
Integrated graphical text editor

Is assigned one machine per user account

Times out after 20 minutes

https://portal.azure.com
shell.azure.com

Welcome to Azure Cloud Shell

Bash | PowerShell

PS

ACI

Use Azure PowerShell

```
New-AzVm `
  -ResourceGroupName "CrmTestingResourceGroup" `
  -Name "CrmUnitTests" `
  -Image "UbuntuLTS" `
...
```

- Connect to your Azure subscription and manage resources

- Adds the Azure-specific commands

- Available inside a browser via the Azure Cloud Shell

- Available as a local installation on Linux, macOS, or Windows

- Has an interactive and a scripting mode

Use Azure CLI

```
az vm restart -g MyResourceGroup -n MyVm
```

- Cross-platform command-line program

- Runs on Linux, macOS, and Windows

- Can be used interactively or through scripts

- Commands are structured in _groups_ and _subgroups_

- Use *find* to locate commands

- Use *--help* for more detailed information

Learning Recap – Azure Resources with Tools

Check your knowledge questions and additional study

- Manage services with the Azure portal
- Introduction to PowerShell
- Introduction to Bash
- Use Azure Resource Manager

Terraform (IBM)   HCL

Microsoft   Bicep → json mit Functions   ARM
                                                        API

Configure Resources with
ARM Templates

Review ARM Template Advantages

Improves consistency and promotes reuse

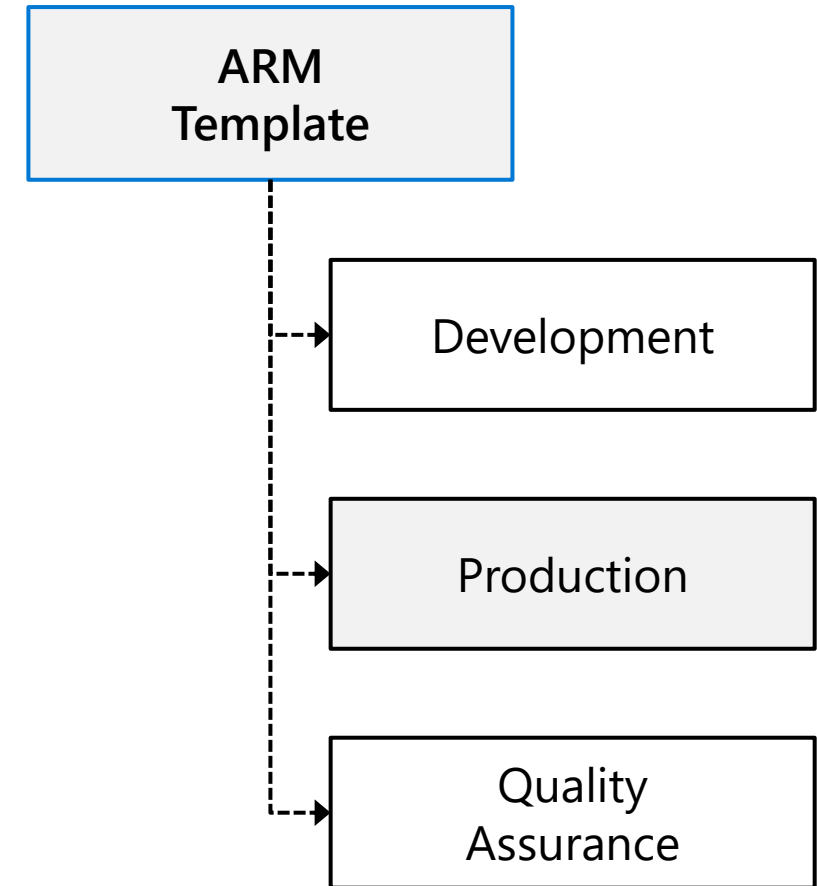Reduce manual, error prone, and repetitive tasks

Express complex deployments

Express requirements through code

Provides validation tasks

Modular and can be linked

Simplifies orchestration

ARM
Template

Development

Production

Quality
Assurance

Explore the JSON Template Schema

Defines all the Resource manager resources in a deployment

Written in JSON

A collection of key-value pairs

Each key is a string

Each value can be a string, number, Boolean expression, list of values, object

```json
{
    "$schema":
        "http://schema.management.
        azure.com/schemas/2019-04-
        01/deploymentTemplate.json#",
    "contentVersion": "",
    "parameters": {},
    "variables": {},
    "functions": [],
    "resources": [],
    "outputs": {}
}
```

Explore the JSON Template Parameters

- Specifies which values are configurable when the template runs

- This example has two parameters: one for a VM's username (adminUsername), and one for its password (adminPassword)

```json
"parameters": {
  "adminUsername": {
    "type": "string",
    "metadata": {
      "description": "Username for the VM."
    }
  },
  "adminPassword": {
    "type": "securestring",
    "metadata": {
      "description": "Password for the VM."
    }
  }
}
```

Consider Azure Bicep Files

Simpler syntax for writing templates

Smaller module files you can reference from a main template

Automatically detect dependencies between your resources

Visual Studio Code extension with validation and IntelliSense

Bicep file

```
resource storageAccount
'Microsoft.Storage/storageAccounts@
2021-01-01' = {
  name: storageAccountName
  location: location
  tags: {
    displayName: storageAccountName
  }
  kind: 'StorageV2'
  sku: {
    name: 'Standard_LRS'
} }
```

JSON

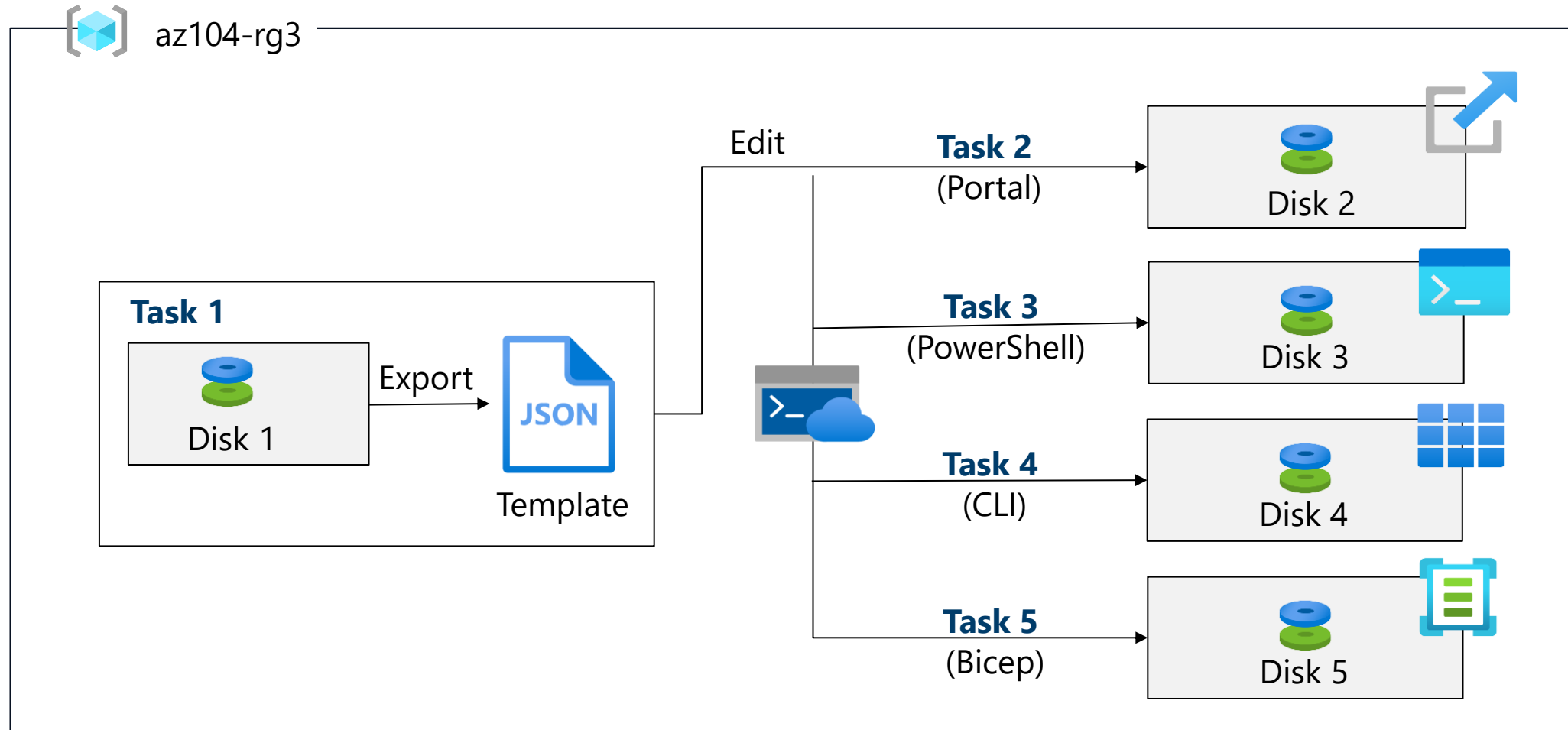# Learning Recap – Azure Resource Manager templates

Check your knowledge questions and additional study

- Create Azure resources using Azure Resource Manager templates
- Deploy Azure infrastructure by using JSON ARM templates
- Introduction to infrastructure as code using Bicep
- Build your first Bicep template

Lab - Manage Azure resources by Using ARM Templates

Lab 03 – Architecture diagram

az104-rg3

Task 1

Disk 1 → Export → JSON Template

Edit

Task 2 (Portal) → Disk 2

Task 3 (PowerShell) → Disk 3

Task 4 (CLI) → Disk 4

Task 5 (Bicep) → Disk 5

End of presentation