



Azure Master Class:

Understanding the ARM Template Components



Expected Learning Outcomes

Azure Masterclass: Understanding the ARM Template Components



By the end of this section, you should be able to:

- ➔ **Define template limits for the ARM components**
- ➔ **Describe resource name limitations**
- ➔ **Explain best practices for using ARM components**
- ➔ **Define nested templates and how they are used**



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Recap: Structure of an ARM Template

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Here is the basic structure of an ARM template:

DeploymentTemplate.json* ✕

<http://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#>

```
{
  "$schema": "http://schema.management.azure.com/schemas/2014-04-01-preview/deploymentTemplate.json#",
  "contentVersion": "<version-number-of-template>",
  "parameters": { <parameter-definitions-of-template> },
  "variables": { <variable-definitions-of-template> },
  "resources": [ { <definition-of-resource-to-deploy> } ],
  "outputs": { <output-of-template> }
}
```



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Template size: 1MB

**Final state of template after all
components are added**

Parameter file size: 64 KB



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Azure ARM Template Structure

▶ DEMO



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You are also limited to:

256 parameters

256 variables

800 resources (including copy count)

64 output values

24,576 characters in a template expression



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Resource Name Limitations

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➡ There are three types of resource names in Resource Manager:



Generic Names



**Not Unique
(but with custom name)**



Unique Names



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Resource Names

▶ DEMO



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Parameters: Best Practices

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There are two strategies to having parameters in ARM templates:

Scenario 1:

User is technically equipped



Should have many parameters
Allows user to customize template

Scenario 2:

User is not technically equipped



Use minimum parameters
Develop a marketplace offering

*Would you use
parameters differently
for these two users?*



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- ➔ Minimize use of parameters
- ➔ Use camel case for parameter names
- ➔ Add description in metadata
- ➔ Define default values
- ➔ Use SecureString
- ➔ Don't use parameters to specify location
- ➔ Avoid parameter for API version

“Only use parameters for:

- SKU, size capacity
- Resource names
- Admin user name
- Secrets
- No. or array or values

”

Variables: Best Practices

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Use variables for values used multiple times in a template

Don't use reference function in variables section

Use variables for unique resource names

Group variables into complex objects



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Resources: Best Practices

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- Add resource metadata using tags
- Do not hard-code namespace
- Comments for each resource
- No namespace if storage account in same template
- Public namespace value reflects same function
- Public IP addresses only when required
- Unique DomainNameLabel property
 - `^[a-z][a-z0-9-]{1,61}[a-z0-9]$`



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Outputs: Best Practices

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- **Templates for public IP addresses should include an outputs section that returns IP address details**
- **Retrieve details about public IP addresses and FQDNs after deployment**
- **Use the API version used to create the resource when referencing it**



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Break down a solution into targeted components

Can have different main templates

Use parameters to conditionally link to nested templates



Useful Tips

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Pass templates through JSON validator

Format JSON for better readability



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Template Creation

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Quick Start Templates

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Sample ARM Template Walkthrough

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Deploying Sample Azure ARM Template

▶ DEMO



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