

# Azure Resource Manager templates and Azure SQL(slash)MI

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## Symptoms :

Azure Resource Manager templates enable you to define your infrastructure as code and deploy your solutions to Azure cloud. These can be used to deploy and configure Azure SQL databases.

Customers choose this supporting topic when they see, deployment failures with timeout error or need help with ARM template deployment.

## Analysis and Mitigation:

## What is ARM template?

Azure Resource Manager (ARM) templates provide the ability to deploy resources on Azure platform through the resource manager in [JSON](#) format. This format enables service providers or administrators to deploy Azure resources including but not limited to Azure SQL like Azure SQL Database, Managed Instance, PostgreSQL or MySQL.

Create and deploy your first Azure Resource Manager template

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-create-first-template>

## PowerShell cmdlet?

The primary PowerShell cmdlet used for the resource manager deployments through ARM template is New-AzureRmResourceGroupDeployment. And the parameter -TemplateFile points to the JSON based ARM template that can be built to suit the requirement.

New-AzureRmResourceGroupDeployment

<https://docs.microsoft.com/en-us/powershell/module/azurerm.resources/new-azurermresourcegroupdeployment>

## What if customer has issues like template deployment failures?

Most of the scenarios in this category relate to the scripts that customers may have developed. However, simple test can be done to confirm whether the issue lies with PaaS or the script customer uses. And this can be done via a test like below.

In following sample PowerShell script uses JSON that is inspired from this blog:

<https://blogs.msdn.microsoft.com/azuresqlsupport/2018/06/26/updated-arm-template-to-deploy-server-with-auditing-and--detection-turned-on/>

The JSON can be modified for better fitting scenarios to test functionality of PaaS for customer as appropriate. The PowerShell script below though should largely remain same or similar in most cases since it needs a few basic information to provision the Azure SQL server and DB property values.

PowerShell:

```
<# Connect to your tenant:#>
```

Connect-AzureRmAccount

```
<# Choose the right subscription, either pull subscription name or ID from portal or use "Get-AzureRmSubscription" to see this list in PowerShell. #>
```

Select-AzureRmSubscription -Subscription YOURSUBSCRIPTIONID

```
<# Create parameters list - this is based on the list of parameters the JSON is expecting - in this section:
```

```
{ "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "parameters": {}
}
```

Choices may need to change depending on a different scenario, for given sample JSON the current list with given parameters is sufficient.

```
$parameters = @{"databaseserver"="YOURSERVERNAME";
  "databaselist" = @(@{databaseName = "YOURDATABASE1NAME";
    collation = "SQL_Latin1_General_CP1_CI_AS";
    databaseEdition = "Standard";
    maxSizeBytes= "268435456000";},
  @{databaseName = "YOURDATABASE2NAME";
    collation = "SQL_Latin1_General_CP1_CI_AS";
    databaseEdition = "Standard";
    maxSizeBytes= "268435456000";})
  "firewallruleList" = @(@{name = "allowAll";
    startIpAddress = "0.0.0.0";
    endIpAddress = "255.255.255.255";})
  "sqladminLogin" = "YOURSQLADMIN";
```

```
"sqladminpassword" = "YOURPASSWORD!";
```

```
"emailaddresses" = "YOUREMAILID"}
```

<#Run the actual deployment through New-AzureRmResourceGroupDeployment, be sure to provide your choice of RG name that needs to be present already. If wanting to create RG from within PowerShell, use New-AzureRmResourceGroup with -Name and -Location options.#>

```
New-AzureRmResourceGroupDeployment -ResourceGroupName YOURRGNAME -
TemplateFile "YOURJSONFILELOCATION\armtemplates2.json" -TemplateParameterObject
$parameters
```

## Walk-through of this sample JSON and script execution:

### Connect to tenant and select subscription

<Connect to your tenant:#>

```
Connect-AzureRmAccount
```

<Choose the right subscription, either pull subscription name or ID from portal or use "Get-AzureRmSubscription" to see this list in PowerShell. #>

```
Select-AzureRmSubscription -Subscription YOURSUBSCRIPTIONID
```

```
Microsoft ASE PowerShell Cmdlets, version 2.1.0.5, have loaded successfully.
PS C:\Users\tapanm> Connect-AzureRmAccount
```

```
Account          : 
SubscriptionName : Microsoft Azure Internal Consumption
SubscriptionId    : 
TenantId         : 72f988bf-86f1-41af-91ab-2d7cd011db47
Environment      : AzureCloud
```

```
PS C:\Users\tapanm> Select-AzureRmSubscription -Subscription "Microsoft Azure Internal Consumption"
```

```
Name              : Microsoft Azure Internal Consumption - 95d5acb3-e6fa-47ab-a8a2-9ed64cba9ac3
Account           : tapanm@microsoft.com
SubscriptionName  : Microsoft Azure Internal Consumption
TenantId         : 72f988bf-86f1-41af-91ab-2d7cd011db47
Environment      : AzureCloud
```

### Create parameters

<Create parameters list - this is based on the list of parameters the JSON is expecting - in this section:

```
{ "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
```

```
"contentVersion": "1.0.0.0",
```

```
"parameters": {}
```

```
}
```

Choices may need to change depending on a different scenario, for given sample JSON the current list with given parameters is sufficient.

Parameters in PowerShell	JSON portion of parameters list
<pre> \$parameters = @{"databaseserver"="YOURSERVERNAME";      "databaselist" = @(@{databaseName = "YOURDATABASE1NAME";      collation = "SQL_Latin1_General_CP1_CI_AS";      databaseEdition ="Standard";      maxSizeBytes= "268435456000"};      @{databaseName = "YOURDATABASE2NAME";      collation = "SQL_Latin1_General_CP1_CI_AS";      databaseEdition ="Standard";      maxSizeBytes= "268435456000"};      "firewallruleList" = @(@{name = "allowAll";      startIpAddress = "0.0.0.0";      endIpAddress = "255.255.255.255"};      "sqladminLogin" = "YOURSQLADMIN";      "sqladminpassword" = "YOURPASSWORD!";      "emailaddresses" = "YOUREMAILID"} </pre>	<pre> {   "\$schema": <a href="https://schema.management.azure.com/schemas/2019-01-01/deploymentTemplate.json#">"https://schema.management.azure.com/schemas/2019-01-01/deploymentTemplate.json#"</a>,   "contentVersion": "1.0.0.0",   "parameters": {     "databaseserver": {       "type": "string"     },     "databaselist": {       "type": "array",       "metadata": {       }     },     "firewallruleList": {       "type": "array",       "metadata": {       }     },     "sqladminLogin": {       "type": "string"     },     "sqladminpassword": {       "type": "securestring"     },     "emailaddresses": { </pre>

```
"type": "string"
```

```
}
```

```
},
```

```
PS C:\Users\tapanm> $parameters = @{"databaseserver"="tapanmtestsqlserver";
    "databaselist" = @(@{databaseName = "tapanmtestdb1";
        collation = "SQL_Latin1_General_CP1_CI_AS";
        databaseEdition = "Standard";
        maxSizeBytes= "268435456000";},
        @{databaseName = "tapanmtestdb2";
        collation = "SQL_Latin1_General_CP1_CI_AS";
        databaseEdition = "Standard";
        maxSizeBytes= "268435456000";})
    "firewallruleList" = @(@{name = "allowAll";
        startIpAddress = "0.0.0.0";
        endIpAddress = "255.255.255.255";})
    "sqladminLogin" = "tapanm";
    "sqladminpassword" = "AzureSQLDB!";
    "emailaddresses" = "tapanm@microsoft.com"}

PS C:\Users\tapanm> $parameters
```


Name	Value
sqladminpassword	AzureSQLDB!
databaselist	{System.Collections.Hashtable, System.Collections.Hashtable}
firewallruleList	{System.Collections.Hashtable}
emailaddresses	tapanm@microsoft.com
sqladminLogin	tapanm
databaseserver	tapanmtestsqlserver

```
PS C:\Users\tapanm>
```

## Create Resource Group

```
PS C:\Users\tapanm> New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeRG -TemplateFile "c:\data\CaseData\ARMTemplate-CreateSQLServerDB-WithAuditing.json"
New-AzureRmResourceGroupDeployment : Resource group 'tapanmdeletemeRG' could not be found.
At line:1 char:1
+ New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeR ...
+ ~~~~~
+ CategoryInfo          : (Error) (New-AzureRmResourceGroupDeployment) [New-AzureRmResourceGroupDeployment], CloudException
+ FullyQualifiedErrorId : Microsoft.Azure.Commands.ResourceManager.Cmdlets.Implementation.NewAzureResourceGroupDeploymentCmdlet

PS C:\Users\tapanm>
```


**Resource group created**
3:32 PM

Creating resource group 'tapanmdeletemeRG' in subscription 'Microsoft Azure Internal Consumption' succeeded.

[Go to resource group](#)
[Pin to dashboard](#)

## Deploy template and create resources using ARM template

New-AzureRmResourceGroupDeployment -ResourceGroupName YOURRGNAME -TemplateFile  
 "YOURJSONFILELOCATION\armtemplates2.json" -TemplateParameterObject \$parameters

```
PS C:\Users\tapanm> New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeleteRG -TemplateFile "c:\data\CaseData\ARMTemplate-CreateSQLServerDB-WithAuditing.json" -TemplateParameterObject $parameters
```

```
DeploymentName      : ARMTemplate-CreateSQLServerDB-WithAuditing
ResourceGroupName  : tapanmdeleteRG
ProvisioningState   : Succeeded
Timestamp          : 7/17/2018 9:05:57 PM
Mode               : Incremental
TemplateLink       :
Parameters         :
                    Name      Type      Value
                    =====
databaseserver     String    tapanmtestsqlserver
databaselist       Array     [
  {
    "databaseName": "tapanmtestdb1",
    "collation": "SQL_Latin1_General_CP1_CI_AS",
    "databaseEdition": "Standard",
    "maxSizeBytes": "268435456000"
  },
  {
    "databaseName": "tapanmtestdb2",
    "collation": "SQL_Latin1_General_CP1_CI_AS",
    "databaseEdition": "Standard",
    "maxSizeBytes": "268435456000"
  }
]
firewallruleList   Array     [
  {
    "startIpAddress": "0.0.0.0",
    "name": "allowAll",
    "endIpAddress": "255.255.255.255"
  }
]
sqladminLogin      String    tapanm
sqladminpassword    SecureString
emailaddresses      String    tapanm@microsoft.com

Outputs            :
DeploymentDebugLogLevel :
```

```
PS C:\Users\tapanm>
```

Successful creation on Azure portal



Subscriptions: 1 of 6 selected – Don't see a subscription? [Open Directory](#) + [Subscription settings](#)

Filter by name...

Microsoft Azure Internal C... ▾

tapanmdeleteRG ▾





All types ▾

All locations ▾

No filter ▾

No grouping ▾

4 items ☐ Show hidden types ⓘ

<input type="checkbox"/>	NAME ↑↓	TYPE ↑↓	RESOURCE GROUP ↑↓	LOCATION ↑↓	SUBSCRIPTION ↑↓
<input type="checkbox"/>	 tapanmtestsqlserver	SQL server	tapanmdeleteRG	East US	Microsoft Azure Internal Consump... ***
<input type="checkbox"/>	 tapanmtestsqlserver	Storage account	tapanmdeleteRG	East US	Microsoft Azure Internal Consump... ***
<input type="checkbox"/>	 tapanmtestdb1 (tapanmtestsqlserver/tapanmtestdb1)	SQL database	tapanmdeleteRG	East US	Microsoft Azure Internal Consump... ***
<input type="checkbox"/>	 tapanmtestdb2 (tapanmtestsqlserver/tapanmtestdb2)	SQL database	tapanmdeleteRG	East US	Microsoft Azure Internal Consump... ***

Appendix:

Sample JSON:

ARMTemplate-CreateSQLServerDB-WithAuditing.json

< <ARMTemplate-CreateSQLServerDB-WithAuditing.json> >

Deployment error due to region not allowed for subscription

If the execution fails with this error, be sure to change the region since the region in JSON provided may not be allowed to create resources in your subscription:

```

PS C:\Users\tapan> New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeRG -TemplateFile "c:\data\CaseData\ARMTemplate-CreateSQLServerDB-WithAuditing.json" -TemplateParameterObject $parameters
New-AzureRmResourceGroupDeployment : 5:18:56 PM - Resource Microsoft.Sql/servers 'tapanmtestsqlserver' failed with message '{
  "status": "Failed",
  "error": {
    "code": "ResourceDeploymentFailure",
    "message": "The resource operation completed with terminal provisioning state 'Failed'.",
    "details": [
      {
        "code": "ProvisioningDisabled",
        "message": "Microsoft Internal subscriptions are restricted from provisioning in this region. Please choose a different region. For exceptions to this rule please contact Microsoft Support."
      }
    ]
  }
}'
At line:1 char:1
+ New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeR ...
+ ~~~~~
+ CategoryInfo          : NotSpecified: (:) [New-AzureRmResourceGroupDeployment], Exception
+ FullyQualifiedErrorId : Microsoft.Azure.Commands.ResourceManager.Cmdlets.Implementation.NewAzureResourceGroupDeploymentCmdlet

New-AzureRmResourceGroupDeployment : 5:18:56 PM - Microsoft Internal subscriptions are restricted from provisioning in this region. Please choose a different region. For exceptions to this rule please contact Microsoft Support.
At line:1 char:1
+ New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeR ...
+ ~~~~~
+ CategoryInfo          : NotSpecified: (:) [New-AzureRmResourceGroupDeployment], Exception
+ FullyQualifiedErrorId : Microsoft.Azure.Commands.ResourceManager.Cmdlets.Implementation.NewAzureResourceGroupDeploymentCmdlet

New-AzureRmResourceGroupDeployment : 5:19:14 PM - Template output evaluation skipped: at least one resource deployment operation failed. Please list deployment operations for details. Please see https://aka.ms/arm-debug for usage details.
At line:1 char:1
+ New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeR ...
+ ~~~~~
+ CategoryInfo          : NotSpecified: (:) [New-AzureRmResourceGroupDeployment], Exception
+ FullyQualifiedErrorId : Microsoft.Azure.Commands.ResourceManager.Cmdlets.Implementation.NewAzureResourceGroupDeploymentCmdlet

New-AzureRmResourceGroupDeployment : 5:19:14 PM - Template output evaluation skipped: at least one resource deployment operation failed. Please list deployment operations for details. Please see https://aka.ms/arm-debug for usage details.
At line:1 char:1
+ New-AzureRmResourceGroupDeployment -ResourceGroupName tapanmdeletemeR ...
+ ~~~~~
+ CategoryInfo          : NotSpecified: (:) [New-AzureRmResourceGroupDeployment], Exception
+ FullyQualifiedErrorId : Microsoft.Azure.Commands.ResourceManager.Cmdlets.Implementation.NewAzureResourceGroupDeploymentCmdlet

```

Change this portion to the region as required in JSON file:

"databaseServerLocation": "East US",

"defaultSecondaryLocation": "West US",

## Internal Reference :

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-create-first-template>

## Classification

Root cause path - CRUD/User issue/error/Uncoded

## How good have you found this content?

