Run PowerShell Code from frontend on backend using Azure Function

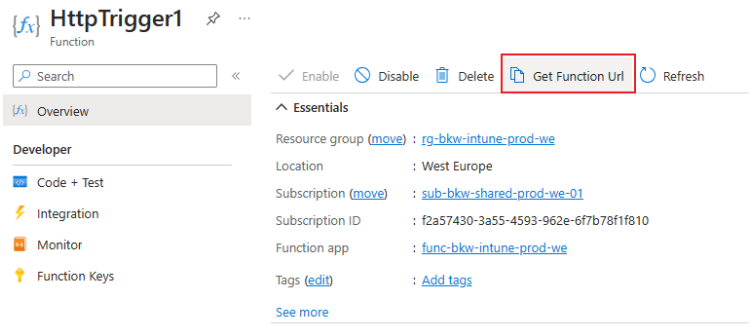
This tutorial shows how to build a REST API that executes PowerShell code using an Azure Function. This code can then return values and objects as JSON responses using "return".

Using Function

To use this function you need the following:

- Azure Function with server-side code (manual below).
- Entra ID App Registration credentials with the permissions you need: [Get app details and gr... | LNC DOCS (lucanoahcaprez.ch)]
- PowerShell code you want to run on the server (example below).

To execute the code on the server, you need to send a JSON to the function URL via POST request. It is important that the POST call goes to the correct URL. You can get this URL on the function level via this button:



The URL is structured as follows:

```
https://<yourfunctionappname>.azurewebsites.net/api/<yourfunctionname>?code=<yourfunctionkey>
```

The JSON which is needed consists of the main key "parameters", which then must have the following four keys. The keys starting with "microsoft" are needed for the authentication. The "powerShellCode"-key contains the final code which will be executed.

It is also useful to know that all other keys, which are created below "parameters", can be used as variables in the PowerShell script. As an example: If a new key named "UserLanguage" is added, the $UserLanguage variable can be used in PowerShell.

```
{
    "parameters":{
        "microsoftTenantID":"<yourtenantname>",
        "microsoftClientID":"<yourappregistrationclientid>",
        "microsoftClientSecret":"<yourappregistrationclientsecret>",
        "powerShellCode":"<yourpowershellcode>"
    }
}
```

Example Request

Here is a sample request that allows to fetch all user data from Microsoft Entra ID via Graph API.

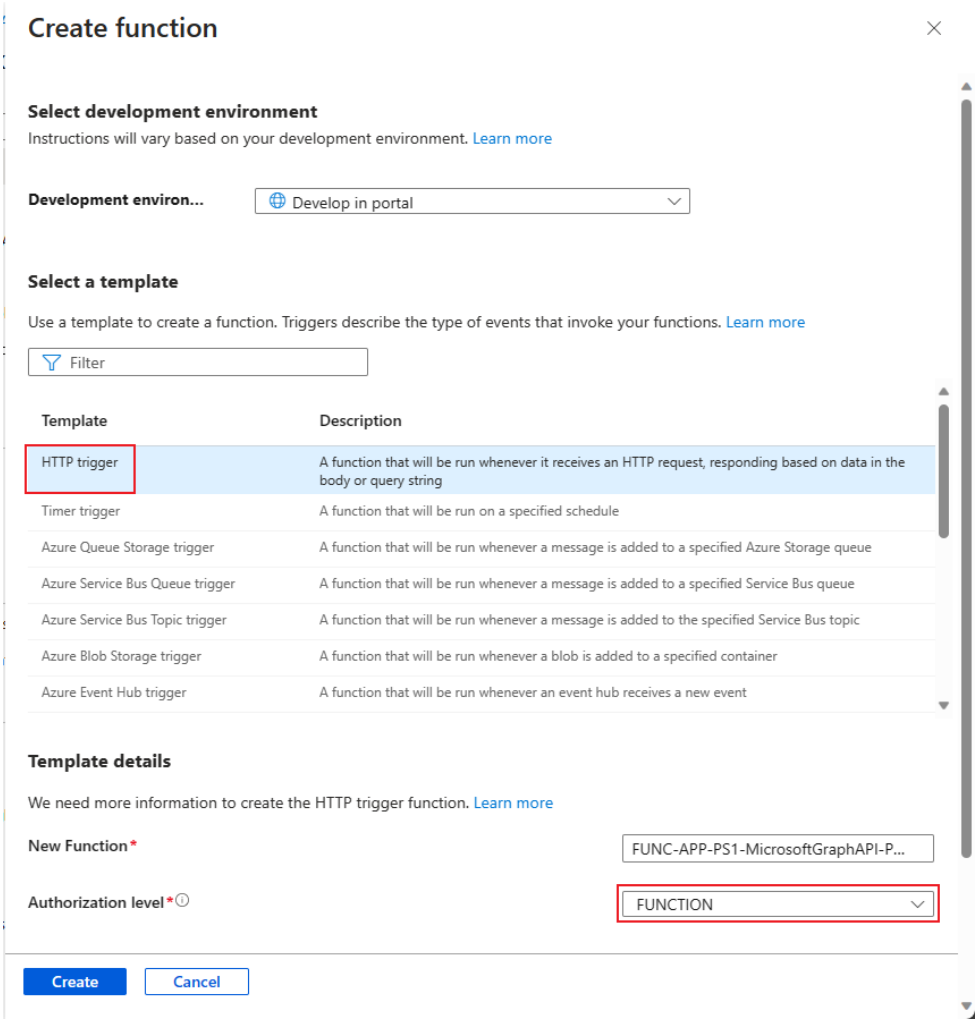
```
POST
https://<yourfunctionappname>.azurewebsites.net/api/<yourfunctionname>?code=<yourfunctionkey>

{
    "parameters":{
        "microsoftTenantID":"<yourtenantname>",
        "microsoftClientID":"<yourappregistrationclientid>",
        "microsoftClientSecret":"<yourappregistrationclientsecret>",
        "powerShellCode":"$Uri = \"https://graph.microsoft.com/v1.0/users\"\n$Result = Invoke-
RestMethod -Uri $Uri -Body $requestBody -Headers @{Authorization = $Global:AzureADAccessToken;
ConsistencyLevel = 'eventual' } -Method GET -ContentType 'application/json'\n$Members =
$Result.value\nwhile ($Result.'@odata.nextLink') {\n    $Result = Invoke-RestMethod -Uri
$Result.'@odata.nextLink' -Headers $Header\n    $Members += $Result.value\n}\nreturn $Members"
    }
}
```

Setup Function

For this Azure Function you will need an Azure Function App. It must be able to execute PowerShell code. In the Function App you have to create a Function with the HTTP triiger and FUNCTION

Authorization level.



This function then acts as the container where the server-side code runs. The Azure Function framework then accepts the REST calls and does the load balancing and handling of the HTTP requests.

Server-side PowerShell Code

This code is used on the Function to handle the requests. It is important to know that this is specifically for handling the incoming JSON and responses.

```
using namespace System.Net

# Input bindings are passed in via param block.
param($Request, $TriggerMetadata)

# Function for returning Values to Request
function Return-FunctionValue{
    param(
        [boolean] $Error,
```

```
        [string] $StatusCodeString,
        $OutputBody
    )
    switch -exact ($StatusCodeString.ToUpper()) {
        "OK" {
            $StatusCode = [System.Net.HttpStatusCode]::OK
        }
        "NOTFOUND" {
            $StatusCode = [System.Net.HttpStatusCode]::NotFound
        }
        "NOCONTENT" {
            $StatusCode = [System.Net.HttpStatusCode]::NoContent
        }
        "BADREQUEST" {
            $StatusCode = [System.Net.HttpStatusCode]::BadRequest
        }
        "INTERNALSERVERERROR" {
            $StatusCode = [System.Net.HttpStatusCode]::InternalServerError
        }
        default {
            $StatusCode = $null
        }
    }
    if($Error){
        $OutputBody = @{
            "statusCode" = $StatusCode
            "errorMessage" = $OutputBody
        }
    }
    Write-Output $StatusCode
    Write-Output $OutputBody
    Push-OutputBinding -Name Response -Value ([HttpResponseContext]@{
        StatusCode = $StatusCode
        Body = $OutputBody
    })
    Exit
}

try{
    $BodyParameters = [PSCustomObject]$Request.Body.parameters
```

```
    Foreach($BodyParameter in $Bodyparameters.PSObject.Properties) {
        New-Variable -Name $BodyParameter.Name -Value $BodyParameter.Value
    }
}
catch{
    Return-FunctionValue -StatusCodeString "InternalServerError" -OutputBody "Parameters
provided could not be converted to variable" -Error $True
}

$powerShellCode = $powerShellCode.Replace('\n', "`n")

# Function for getting Azure AD Access Header
Function Build-MicrosoftEntraIDApplicationAccessHeader(){
    param(
        [Parameter(Mandatory=$true)]
        [string] $TenantID,
        [string] $ClientID,
        [string] $ClientSecret,
        [string] $refreshtoken
    )

    $authenticationurl = "https://login.microsoftonline.com/$TenantID/oauth2/v2.0/token"

    if($refreshtoken -and $TenantID){
        $tokenBodySource = @{
            grant_type = "refresh_token"
            scope = "https://graph.microsoft.com/.default"
            refresh_token  = $refreshtoken
        }
    }
    elseif($TenantID -and $ClientID -and $ClientSecret){
        $tokenBodySource = @{
            grant_type = "client_credentials"
            scope = "https://graph.microsoft.com/.default"
            client_id  = $ClientID
            client_secret = "$ClientSecret"
        }
    }
    else{
        Return-FunctionValue -StatusCodeString "BadRequest" -OutputBody "Authentication
```

```
failed: Not all parameters provided for authentication" -Error $True
    }

    while ([string]::IsNullOrEmpty($AuthResponse.access_token)) {
        $AuthResponse = try {
            Invoke-RestMethod -Method POST -Uri $authenticationurl -Body $tokenBodySource
        }
        catch {
            $ErrorAuthResponse = $_.ErrorDetails.Message | ConvertFrom-Json
            if ($ErrorAuthResponse.error -ne "authorization_pending") {
                Write-Output "error"
                Return-FunctionValue -StatusCodeString "BadRequest" -OutputBody
"Authentication failed: Error while posting body source: $($ErrorAuthResponse.error)" -Error
$True
            }
        }
    }

    if($AuthResponse.token_type -and $AuthResponse.access_token){
        $global:MicrosoftEntraIDAccessToken = "$($AuthResponse.token_type)
$($AuthResponse.access_token)"
        $global:Header = @{
            "Authorization" = "$global:MicrosoftEntraIDAccessToken"
        }
        Write-Output "Authorization successful! Token saved in variable."
    }
    else{
        Return-FunctionValue -StatusCodeString "BadRequest" -OutputBody "Authentication
failed: Not all parameters provided for authentication" -Error $True
    }
}


# Authorization Header with ClientId & ClientSecret
try{
    if(($microsoftTenantID) -and ($microsoftClientID) -and ($microsoftClientSecret)){
        Build-MicrosoftEntraIDApplicationAccessHeader -tenantid $microsoftTenantID -clientid
$microsoftClientID -clientSecret $microsoftClientSecret
    }
    else{
```

```
        Return-FunctionValue -StatusCodeString "BadRequest" -OutputBody "Authentication
failed: Not all parameters provided for authentication" -Error $True
    }
} catch{
    Return-FunctionValue -StatusCodeString "InternalServerError" -OutputBody "Bearer token
could not be created with provided parameters" -Error $True
}

# Run PowerShell Code
try{
    if($PowerShellCode){
        $OutputBody = Invoke-Expression $PowerShellCode
        Return-FunctionValue -StatusCodeString "OK" -OutputBody $OutputBody -Error $False
    }
    else{
        Return-FunctionValue -StatusCodeString "BadRequest" -OutputBody "PowerShell Code
failed: No PowerShell Code provided for runtime" -Error $True
    }
}
catch{
    Return-FunctionValue -StatusCodeString "InternalServerError" -OutputBody "PowerShell Code
provided did not run correctly" -Error $True
}

# Return-FunctionValue -StatusCodeString "NOCONTENT" -OutputBody ""
```

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