

Pipeline Scheduling using AWS Lambda

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1. Automatic Push

This option allows LeapLogic to generate the AWS Lambda code dynamically and push that to the selected AWS cloud environment to generate the AWS Lambda function. It also allows you to trigger the pipeline execution or schedule pipelines. You can provide the credentials of the respective cloud environment in the given format.

- 1. Go to Operationalization > Parallel Run
- 2. Select the pipelines that needs to be scheduled

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Pipelines*	 Pipelines Based on the already executed assessments, input any custom-built SQL query to extract specific insights.
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	required insights.
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	required insights.
Schedule CANCEL CANCEL	 End date and unter Upload the filed template which acts as a metadata reference and searching anchor for extracting the required insights.

- 3. Click Advanced as schedule type
- 4. Select Environment for advance trigger. Select AWS
- 5. Click **Automatically**. You can upload properties file as per below format

accessKeyId=<Access key id with programmatic access to lambda> secretAccessKey=<Secret Access key with programmatic access to lambda> arnRole=<ARN Role with lambda creation and execution role> region=<Region eg. us-east-1> vpcSubNetId=<VPC subnet Id> vpcSecurityGroupId=<VPC Security Group Id>

Note

vpcSubNetId and vpcSecurityGroupId are optional. These fields are required if LeapLogic is deployed on AWS cloud and available only in closed network. You must use the same VPC details in which LeapLogic is deployed. If LeapLogic is available in an open network, then do not provide any inputs in these fields.

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	aws	Georgie Couch Ruthum		 TimeZone Upload the filled template which acts as a metadata reference and searching anchor for extracting the required insights. 	
R	AWS Azure	gcp		Schedule Pipeline Related documents	
	Manually Auton	natically		Here are a few quick links to some documents which may be handy for scheduling pipelines	
				Creating jobs manually	
Fr Pr	roperties File*			How to use download JAR?	
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	or	0 Bytes of 251 Bytes			
٥					
0	Only TXT. files you can upload.				
	i Schedule		CANCEL		\uparrow
schedule_1.zip				Show	

6. Click **Schedule**. This generates AWS Lambda on your cloud environment with the given AWS environment details.



2. Manual

This option allows LeapLogic to generate AWS Lambda function code dynamically. You can download the generated code in zip format and generate AWS Lambda manually.

- 1. Go to Operationalization > Parallel Run
- 2. Select pipelines that needs to be scheduled

← → C ▲ Not secure ec2-3-80-161-165.compute-1.amazonaws.com:13030/#/pipelineManagement/schedule/?app=vm	아 💿 순 🖈 🗈 💄 :
📕 Impetus 📕 LeapLogic 📕 gcp 📕 aws 📕 azure	192.168.41.93 1/1 ^ × ×
≡ leaplogic	R idwadmin +
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Image: Schedule_3 Image: Pipelines*	Schedule Input Pipelines Based on the already executed assessments, input any custom-built SQL query to extract specific
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Schedule Type* Basic Cron Expression	 Start Date and Time Upload the filled template which acts as a metadata reference and searching anchor for extracting the required insights.
Schedule your workflow at a particular frequency, for a particular time interval. Schedule	End Date and Time Upload the filled template which acts as a metadata reference and searching anchor for extracting the required insights.

- 3. Click Advanced as schedule type
- 4. Select Environment for advance trigger and then select AWS
- 5. Click Manually



6. Click Schedule. The download artifact option appears



- 7. Download the zip file if not automatically downloaded
- 2.1 Creating AWS Lambda Manually
 - 1. Go to AWS Lambda screen from AWS Console
 - 2. Click Create Function

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create runction	Info											Ľ.
AWS Serverless Application Rep	ository applications ha	ave moved to C	Create application.									1
Author from scratch		•	Use a blueprint		0	Containe	er image			0		
Start with a simple Hello Wo	rld example.		Build a Lambda app	lication from sample code and ts for common use cases	đ	Select a co	ntainer imag	je to deploy for	your function			
			configuration prese	is for common use cases.								
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- 3. Provide appropriate function name and runtime as Python 3.7
- 4. Choose VPC as required

Note

VPC details are optional. These fields are required if LeapLogic is deployed on AWS cloud and available only in closed network. You must use the same VPC details in which LeapLogic is deployed. If LeapLogic is available in open network, then do not provide these two fields.

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	🗰 Services 🔍 ec2 X 🖻 💠 🧒 N. Virginia 🔻 tanvit, prajapati @ 1290-84	73-784	5 🔻
	A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources, track your AWS costs, and enforce attribute-based access control.		(
	C Enable VPC Info		
	Connect your function to a VPC to access private resources during invocation.		
	VPC		
	Choose a VPC for your function to access.		
	vpc-138f4076 (172.31.0.0/16) 🔹 😋		
	Subnets		
	Select the VPC subnets for Lambda to use to set up your VPC configuration.		
	Choose subnets Choose subnets C		
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	We recommend that you choose at least 2 subnets for Lambda to run your functions in high availability mode. Security groups Choose the VPC security groups for Lambda to use to set up your VPC configuration. The table below shows the inbound and outbound rules for the security groups that you choose.		
	We recommend that you choose at least 2 subnets for Lambda to run your functions in high availability mode. Security groups Choose the VPC security groups for Lambda to use to set up your VPC configuration. The table below shows the inbound and outbound rules for the security groups that you choose. Choose security groups		
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- 5. Click Create. This generates function with dummy details
- 6. Click Upload from .zip File

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≡ ⊘ si	uccessfully created the fu	nction schedule_3. You	can now change its code	and configuration.	. To invoke your functi	on with a test event, cho	ose "Test".					١
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	schedule_3 - /	¢r 1 impor	json									

7. Upload the zip file downloaded at the time of scheduling

← 0	https://us-east-1.console.aws.ama	zon.com/lambda/home?region=us-east-1#/functions/schedule_3?newFunction=true&tab=code		A 🏠 🗲 🔁 🛓 💶 🗤
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aws	Services Q Search	[Alt+S]	» (¢	N. Virginia 🔻 tanvi.prajapati @ 1290-8473-7846 🔻
≡ ⊙	Successfully created the function schedule_3	. You can now change its code and configuration. To invoke your function with a test event, ch	ioose "Test".	× 0
		Upload a .zip file	×	
		() When you upload a new .zip file package, it overwrites the existing code.		
		Dupload schedule_3.zip (738.0 byte)		
		For files larger than 10 MB, consider uploading using Amazon S3.		
			Cancel Save	

8. This creates the function as shown below



9. You can edit the name of handler as shown below

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kit 🥌 KT	 [IDW-23892] As a d Q Search 	Ceaplogic 📌 How to Debug Rei	n VIDALHEALTH •• Create and Deploy •• Dynamic Task sche [Alt+S]	python - Google CL	N. Virginia 🔻 t	anvi.prajapati @ '	1290-8473-7846
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Runtim	e settings Info					Edi	t
Runtime			Handler Info	Architecture Info			
Python 3.7	7		lambda_function.lambda_handler	x86_64			
Layers	Info				Edit	Add a laye	r
Merge ord	ler Name		Layer version Compatible runtimes	Compatible architectures	Version ARN		
			There is no data to display.				

10. Provide handler name as <ScheduleName>.lambda_handler (In above example, Schedule name was schedule_3, so handler name is schedule_3.lambda_handler)

t runtime settings	
Runtime settings Info	
Runtime hoose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and	Ruby.
Python 3.7 New runtime available	×
Python 3.7 New runtime available A new runtime is available for your function's language: Python 3.9 Handler Info	×
Python 3.7 New runtime available A new runtime is available for your function's language: Python 3.9 Handler Info schedule_\$Lambda_handler	×
Python 3.7 New runtime available A new runtime is available for your function's language: Python 3.9 Handler Info schedule_\$Lambda_handler rchitecture Info hoose the instruction set architecture you want for your function code. ve6.64	×

11. This completes the process of creating AWS Lambda in a manual way

2.2 Using AWS Lambda to Schedule/Execute Pipeline

You can now execute or schedule the pipelines as per your requirement by triggering AWS Lambda with appropriate JSON. You can also provide its credentials in JSON to authorize/authenticate beforehand.

You can execute/trigger AWS Lambda by creating trigger events on AWS resources like S3 or by creating API Gateway endpoint.

Example: Execute AWS Lambda is by creating API Gateway POST Request

- 1. Go to API Gateway in AWS Console
- 2. Create **REST API**

aws Services Q Se	arch [/	Alt+S]	D 4	0	N. Virginia 🔻	tanvi.prajapati @ 1290-	8473-7846 🔻	٩
🟥 Amazon API Gateway	APIs > Create					Show hints	0	+
APIs	Choose the protocol							
Custom Domain Names	Select whether you would like to create a REST API or a WebSocket	API.						•
VPC Links	REST O WebSocket							
	Create new API							
	In Amazon API Gateway, a REST API refers to a collection of resource	ces and methods that can be invoked through	ugh HTTPS endpoints.					
	New API Clone from existing API	○ Import from Swagger or Open AF	PI 3 O Example API					
	Settings							
	Choose a friendly name and description for your API.							
	API name*	Schedule-API						
	Description							
	Endpoint Type	Regional ~	0					
	* Required						Create API	

- 3. From Actions, click Create Method and choose POST request
- 4. Choose appropriate region and Lambda function and save

APIs > Schedule-API (fh7aup3rhg) > Resources > / (5b8o503	i7k) > POST	Show hints	8
Resources Actions - / - POST - Setup			
/ Choose the integration point for your in POST	new method.		
Integration type	I Lambda Function 0		
	O HTTP 0		
	O Mock 0		
	O AWS Service 1		
	O VPC Link 0		
Use Lambda Proxy integration	•••		
Lambda Region	us-east-1 v		
Lambda Function	Schedule-1672654361556		
Use Default Timeout	0		
		Save	

5. From Actions, click **Deploy API**



6. Once deployed, you receive an API URL which can be executed from postman with appropriate JSON



i.	JSON to execute pipelines
	{
	"username": "idwadmin",
	"password": "Password@123",
	"scheduleJson": {},
	"cronSchedule": false,
	"cronExpression": ""
	}
ii.	JSON to schedule with basic details
	{
	"username": "idwadmin",
	"password": "Password@123",
	"scheduleJson": {
	"startDate": "2022-12-27",
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```
"endDate": "2022-12-27",
"startTime": "18:05",
"endTime": "18:06",
"minutes": 0,
"timezone": "Asia/Calcutta",
"frequency": "NONE"
},
"cronSchedule": false,
"cronExpression": ""
}
```

Note

Frequency can be NONE(Once), DAILY, WEEKLY, MONTHLY, YEARLY, CUSTOM. With CUSTOM, you can provide minutes to indicate interval of minutes for schedule.

iii. JSON to schedule with cron expression

```
{
    "username": "idwadmin",
    "password": "Password@123",
    "scheduleJson": {},
    "cronSchedule": true,
    "cronExpression": "0 30 18 27 12 ? 2022"
}
```

- 7. You can curl the API URL as well
- 8. You can integrate the API URL in this application as well

3. Getting Help

Contact LeapLogic technical support at info@leaplogic.io