



AWSInstanceMonitor-Automation Anywhere

Readme

Version 1.0

October 25, 2019

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Introduction

This document contains all essential information for the user to make full use of the Bot or Digital worker. This manual includes a description of the functions and capabilities and step-by-step procedures for setup & configuration of the Bot.

Overview

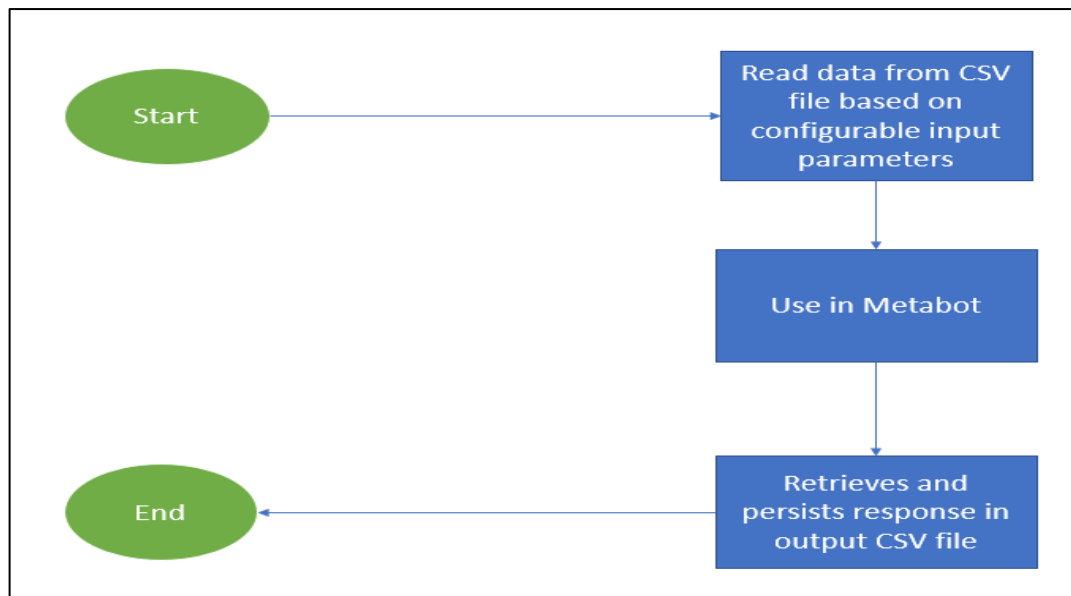
This Bot reads Information from a [CSV](#) Template for monitoring EC2 instances based on CPU Utilization and Network Out. If any of the mentioned instances in the CSV template is lower than the threshold value for any of the two conditions, it closes or terminates the instance based on the user's choice.

Detailed steps are as follows:

- 1) Reads data from a [CSV](#) file, e.g. InstanceInputFile.csv, MonitorParameterInputFile.csv.
- 2) Exports data to the [CSV](#) Template based on Filter conditions set by a user.

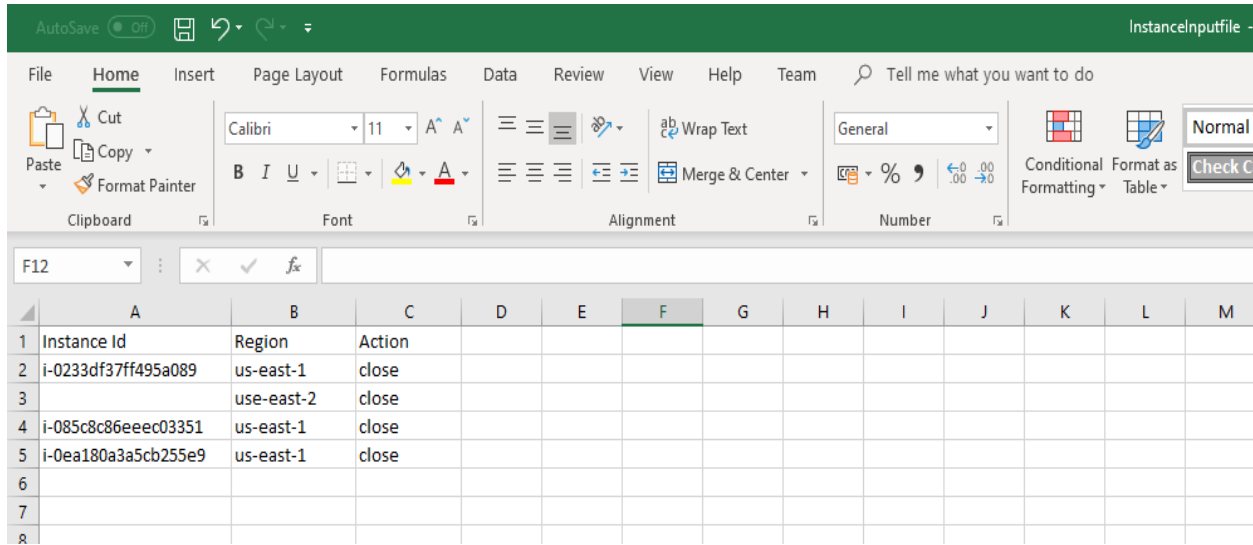
Filter conditions are as below (Click individual to read details)

- [Filter based on Column Value](#)
- [Visual flow](#)



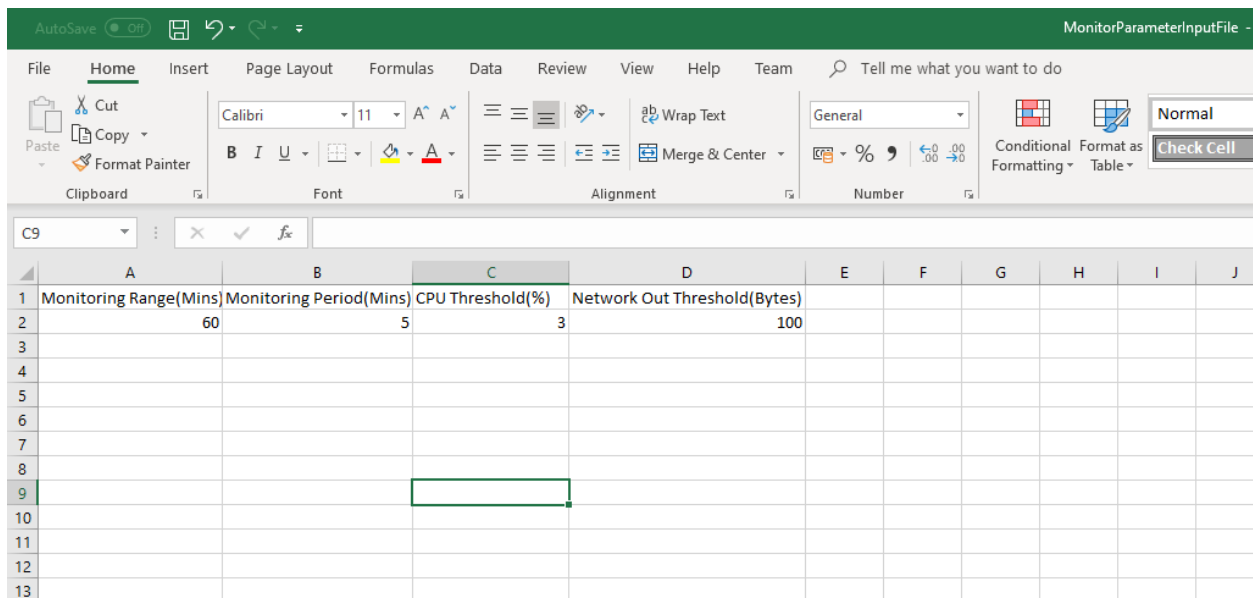
Input: Reads parameters from input csv file

InstanceInputfile.csv



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Instance Id	Region	Action										
2	i-0233df37ff495a089	us-east-1	close										
3		us-east-2	close										
4	i-085c8c86eeec03351	us-east-1	close										
5	i-0ea180a3a5cb255e9	us-east-1	close										
6													
7													
8													


MonitorParameterInputFile.csv



	A	B	C	D	E	F	G	H	I	J
1	Monitoring Range(Mins)	Monitoring Period(Mins)	CPU Threshold(%)	Network Out Threshold(Bytes)						
2	60	5	3	100						
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										

Output: Saves the result in the output CSV file

InstanceActionOutputFile.csv

AutoSave  InstanceActionOutputFile - Excel

File Home Insert Page Layout Formulas Data Review View Help Team Tell me what you want to do

Clipboard Font Alignment Number Styles

Clipboard: Cut, Copy, Paste, Format Painter

Font: Calibri, 11, Bold, Italic, Underline, Text Color, Background Color

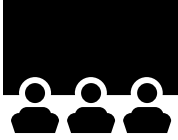
Alignment: Left, Center, Right, Indent, Wrap Text, Merge & Center

Number: General, Percentage, Decimals, Fractions, Text, Scientific

Styles: Normal, Bad, Good, Neutral, Check Cell, Explanatory..., Input, Linked Cell

Monitor Time(MMDDYYYY HH:MM:SS) TimeZone	Instance Id	Region	Network Out(Byte)	CPUUtilization(%)	Action	Status	Description
10232019 11:59:38 India Standard Time	i-0233df37ff495a089	us-east-1			none	Success	Instance is not in running state
10232019 11:59:43 India Standard Time		us-east-2			none	Failure	Region parameter is invalid
10232019 11:59:43 India Standard Time	i-085c8c86eeec03351	us-east-1	11850.7	11.03	none	Success	CPU Utilization And Network Out is more than threshold
10232019 11:59:43 India Standard Time	i-085c8c86eeec03351	us-east-1	11850.7	11.03	none	Success	CPU Utilization And Network Out is more than threshold
10232019 11:59:45 India Standard Time	i-0ea180a3a5cb255e9	us-east-1	14451.52	1.15	close	Success	CPU Utilization or Network Output is less than threshold

Common Use cases



The fields in the [CSV](#) can be changed to whatever data that needs to be added to the list. The use case of this bot is for monitoring instances based on CPU Utilization, Network Out of an AWS instance.

Requirements & Prerequisites

System Requirements



For the [PC](#) or server where the bot needs to run:

- ✓ [RAM](#): 8GB or higher
- ✓ PROCESSOR: Intel Core i5 or higher and equivalent for any other [OS](#)
- ✓ Hard Disk: Up to 2GB of overall free space in the [AA](#) Client installation drive.

Reference below for [Enterprise Client & Control Room system requirements](#).

Prerequisites



- **Software's needed -**
 - ✓ [AA](#) Enterprise Client 11.3.3
 - ✓ [AA](#) Enterprise Control Room 11.3.3
- **Accounts/License needed –**
 - ✓ AWS Account. AWS account can be opened [here](#)
 - ✓ [AA](#) Enterprise License

Security Measures



There are some security best practice recommendations that you may follow with your bot.

- It is not recommended to provide admin access to the Windows User Account executing the Bots, to avoid unintended data changes with the [CSV](#) Template.
- It is recommended to rotate Access key twice or more in a quarter using AWS IAM Console which ensures data safety.
 1. Delete the previous key.
 2. Generate new keys.
- It is recommended to update Access keys in credential vault regularly.

Authorization:

Actions	Description	Access Level	Resource Types (*required)	Condition Keys
DescribeInstances	Describes one or more of your instances	List		
StopInstances	Stops an Amazon EBS-backed instance.	Write	instance_*	ec2:AvailabilityZone ec2:EbsOptimized ec2:InstanceProfile ec2:InstanceType ec2:PlacementGroup ec2:Region

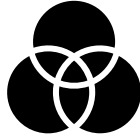
				ec2:ResourceTag/\${TagKey} ec2:RootDeviceType ec2:Tenancy
TerminateInstances	Shuts down one or more instances.	Write	instance*	ec2:AvailabilityZone ec2:EbsOptimized ec2:InstanceProfile ec2:InstanceType ec2:PlacementGroup ec2:Region ec2:ResourceTag/\${TagKey} ec2:RootDeviceType ec2:Tenancy
GetMetricStatistics	Gets statistics for the specified metric	Read		

Exception Handling:

Exception	Description	Action need to be taken
InvalidCredentialOrRegion	Either the credentials are wrong or Region is invalid.	Enter the valid region or credentials.
InvalidInputFileExtension	Input File extension is not valid.	Enter valid file extension for input file.
InputFileNotExistMessage	Input file with the given name does not exist.	Enter the valid file name.
OutputFilePathEmptyMessage	The Output File path is empty.Please enter valid one.	Enter the output file path.
InvalidOutputFileExtension	Output File extension is not valid.	Enter valid output file extension.
NoRecordFound	No Record Found in the input CSV file.	Insert entries in the input file.
InvalidPermission	Required permission is not granted for file.	Grant required permission for the file.
InvalidFilePath	Please provide the valid file path.	Enter the valid file path.
InvalidInstance	Instance Id is invalid.	Enter correct Instance Id.
InvalidInstanceState	Instance is not in the running state.	Enter valid Instance Id which is in running state.
InvalidRegionPoint	Region parameter is invalid.	Enter valid Region Parameter.

Getting Started

Skill Matrix



The functionality of the Bot has been divided into a set of skills.

Below is an overview of how the task bots and meta bots map to these skills:

Skill	Task Files	MetaBot Files
Monitors AWS Instances on the basis of CPU Utilization, Network Out.	AWSInstanceMonitor.atmx	AWSOperation.mbot

Installation Hierarchy



Once the bot is downloaded and installed, the installer creates the files in the folder structure as shown below.

Folder Structure on your Machine

Folder Structure	Description
<p><AA Application Path></p> <p>1. My Tasks</p> <p>1.1. Bot Store</p> <p>1.1.1. AWSInstanceMonitor-AutomationAnywhere</p> <ul style="list-style-type: none"> ➤ Error Folder <ul style="list-style-type: none"> • Logs <ul style="list-style-type: none"> ○ Error logs Month-Day-Year.txt • Snapshots <ul style="list-style-type: none"> ○ Error Snap Month-Day-Year HourMinSec.png ➤ Input Folder <ul style="list-style-type: none"> • InstanceInputfile.csv • MonitorParameterInputFile.csv 	<p><AA Application Path> is the location where AA files are stored on your machine</p> <p>1. My Tasks</p> <p>My Task Folder is the default directory where Bot Files are saved.</p> <p>1.1 Bot Store</p> <p>Bot Store Folder contains the Bot Name Folder which the installer creates while installation of the Bot.</p> <p>1.1.1 AWSInstanceMonitor-AutomationAnywhere</p> <p>This folder gets created by the installer and contains files and folders that are needed for the bot execution.</p> <p>➤ Error folder is where logs and snapshots of screens will be placed if something goes wrong with the bot during execution</p> <p>➤ Input Folder is where the input files are saved that are needed by the task bot for its execution.</p> <ul style="list-style-type: none"> • InstanceInputfile.csv Stores Instance Id, Region (where instances are located) and Action (that needs to be taken when the monitoring parameters are less than some minimum value (Threshold value)). • MonitorParameterInputFile.csv Stores Monitoring range (in Minutes), Monitoring

<div> <ul style="list-style-type: none"> ➤ Output Folder <ul style="list-style-type: none"> • InstanceActionOutputFile.csv ➤ My Tasks <ul style="list-style-type: none"> • AWSInstanceMonitor.atmx </div> <div> <p>2. My MetaBots</p> <ul style="list-style-type: none"> ➤ AWSOperation.mbot </div>	<p>period (in Minutes) and Threshold values for CPU Utilization (in %) and Network Out (in Bytes).</p> <ul style="list-style-type: none"> ➤ Output Folder is where the output files are saved that are created by the bot during its execution. InstanceActionOutputFile.csv stores Instance Action response generated by task bot. ➤ My Tasks folder contains all the developed Platform Source Code <p>2.My MetaBots folder contains the developed Metabots needed for the bot execution.</p>
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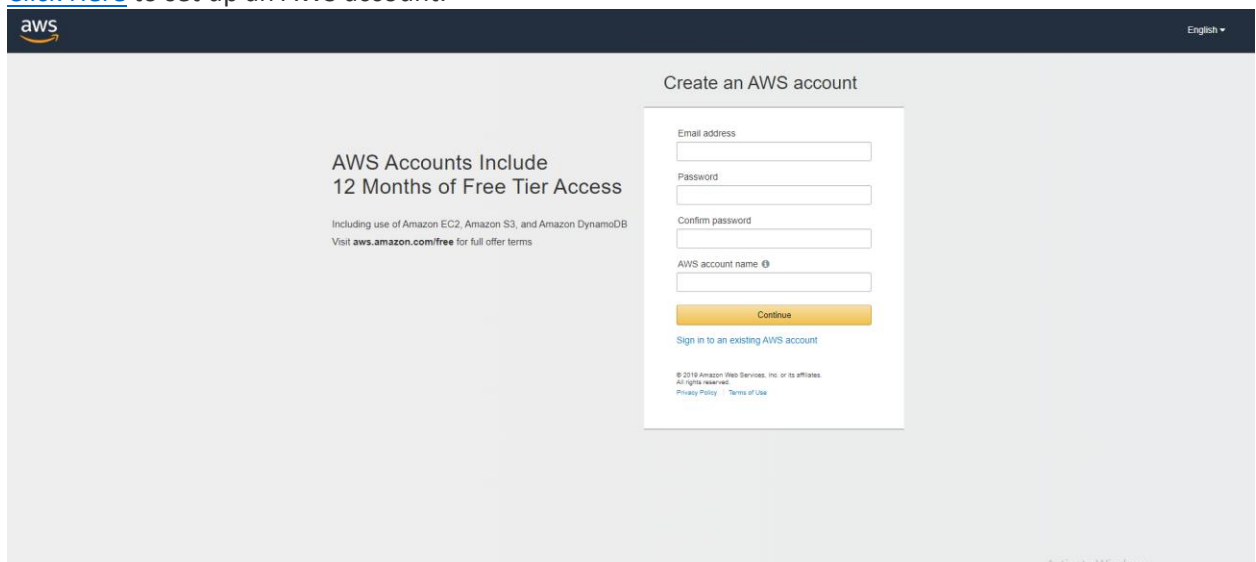
Quick Start

Setup



STEP 1 (Create an AWS account):

- If you already have a form created, then you can skip this step
- [Click Here](#) to set up an AWS account.



- For more information [click here](#)

Step 2 (Generating Secret access key and Secret key access id):

- [Log in to your AWS Management Console.](#)
- Click on your user name at the top right of the page.
- Click on the Security Credentials link from the drop-down menu.
- Find the Access Credentials section, and copy the latest Access Key ID.
- Click on the Show link in the same row, and copy the Secret Access Key.

For more information [click here](#)

Configuration



STEP 1 (Configuring Credential in Control Room's Credential Vault)

Passwords and other sensitive information such as Server URL, Username and password used in automation tasks, should be stored as credentials centrally in the Credential Vault.

These sensitive data items are secured (stored in CR) and can't be accessed locally which is used by the bots when it executes in the machine.

Below are the step-by-step instructions for what needs to be done to set up the Server Uri, Username and Password for AWS IAM Users in the Credential Vault.

- 'Locker Consumer Role' needs to be assigned to the [AA](#) user (bot runner) which ensures the user has full access to the locker.
- Locker needs to be created with name as "AWS Instance Monitor"
- Credential needs to be created with name as "AWS" where the Access key id and Access key needs to be saved.

Locker Name	Credentials Name	Attribute Name	Value
AWS Instance Monitor	AWS	aws_access_key_id	Access key id of the AWS account.
AWS Instance Monitor	AWS	aws_secret_access_key	Access key of the AWS account.

For more information on how to set up credentials in the Control Room, please visit this [link](#) on the Automation Anywhere Product Documentation portal.

STEP 2 (Configuring Parameters with an External File)

External file can be configured at -

AA Application Path > My Tasks > Bot Store > AWSInstanceMonitor–AutomationAnywhere > Input Folder > InstanceInputFile.csv

AA Application Path > My Tasks > Bot Store > AWSInstanceMonitor-AutomationAnywhere > Input Folder > MonitorParameterInputFile.csv

This is where the input values for variables are stored that are needed by the bot at the time of execution. (Sensitive variables – like Access Key and Access key id will be an input in the Credential vault).

Below is a table that summaries what the variable name is, what it does, and an example of the input & output:

Input variables:

<u>INPUT VARIABLES: NEEDS TO BE CONFIGURED BY THE USERS FOR INPUT PARAMETER</u>				
Variable Name	Type	Mandatory (Yes/No)	Purpose	Example Input
vErrorFolder	Text	Yes	Location where Error folder is located	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere\Error Folder
vInputFolder	Text	Yes	Location where Output folder is located.	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere \Input Folder
vOutputFolder	Text	Yes	Location where Output folder is located.	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere \Output Folder
vSnapshotFolder	Text	Yes	Location where Snapshot folder is located	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere \Error Folder\Snapshots
vInstanceInputFilePath	Text	Yes	File Location where InstanceInputFile.csv is located	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere\Input Folder\InstanceInputFile.csv

vInstanceOutputFilePath	Text	Yes	File Location where InstanceOutputFile.csv is located	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere \Output Folder\InstanceOutputFile.csv
vMonitorInputFilePath	Text	Yes	File Location where MonitorInputFile.csv is located	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere \Input Folder\MonitorInputFile.csv
vLogFolder	Text	Yes	Location where Log folder is located.	\$AAApplicationPath\$\Automation Anywhere\MyTasks\Bot Store\AWSInstanceMonitor-AutomationAnywhere \Error Folder \Error Folder\Logs
vWaitTime	Text	Yes	Time interval after which bot again reads from CSV file(mins).	15

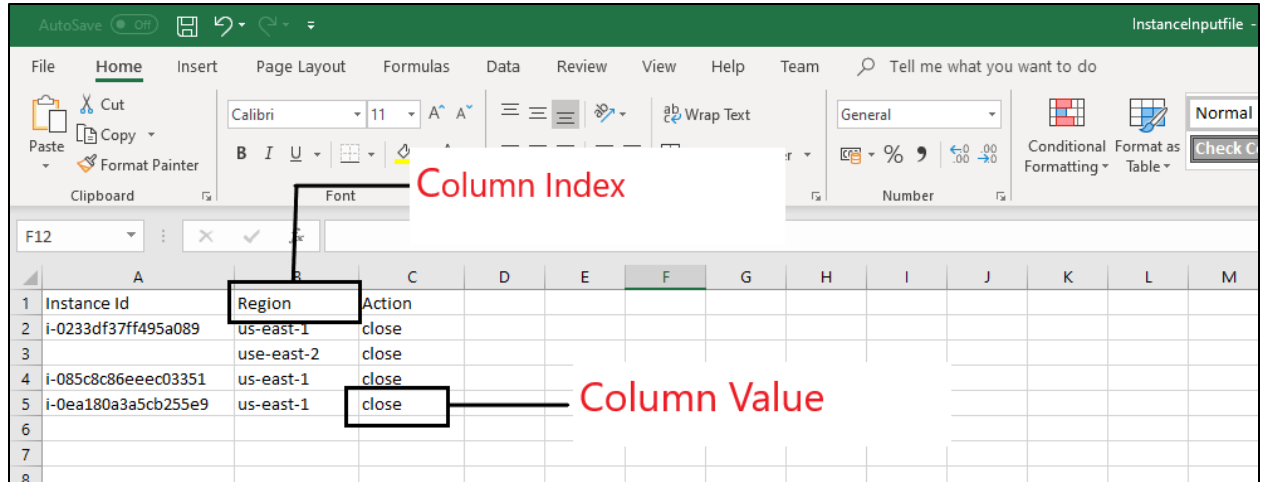
Guidance for configuring Filter conditions are described below:

a. Filter based on Column Value

vColumnIndex and **vColumnValue** variables are needed to configure this.

'**vColumnIndex**' is the column name that needs to be defined in the config file.

'**vColumnValue**' is the value that needs to be matched against the mentioned Column name.



Instance Id	Region	Action
i-0233df37ff495a089	us-east-1	close
	use-east-2	close
i-085c8c86eeec03351	us-east-1	close
i-0ea180a3a5cb255e9	us-east-1	close

Input CSV Files-

InstanceInputfile.csv

- Required Parameters-**

File Parameter Name	Type	Description	Example Input
Region	Text	Region where EC2 resources are located	Us-east-1

- Optional Parameters -**

(If you don't want to add any value in the parameter leave it empty)

File Parameter Name	Type	Description	Example Input
Instance Id	Text	Instance ID is the 36-character alphanumeric string used to uniquely identify EC2 instances.	i-0233df37ff495a078

Action	Text	Action performed on the EC2 instance if CPU Utilization or Network Out is less than the threshold value. Allowed Values(close/terminate)	close
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Note: If Instance Id is not provided in a row all the instances which are running, and available in that particular region are fetched.

MonitorParameterInputFile.csv

- Optional Parameters -**

(If you don't want to add any value in the parameter leave it empty)

File Parameter Name	Type	Description	Example Input
Monitoring Range (Mins)	Text	The Time range for which the monitoring of instances take place.	60
Monitoring Period (Mins)	Text	Continuous-Time Period for which average of CPUUtilization and Network Out is taken for monitoring.	5
CPU Threshold(%)	Text	Minimum allowed value of CPU utilization for EC2 instance. The Instance is closed or terminated if value is lesser than the Threshold.	3
Network Out Threshold(Bytes)	Text	Minimum allowed value of Network Out for EC2 instance. The Instance is closed or terminated if value is lesser than the Threshold.	1000

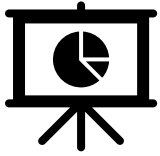
Note: The default value for Monitoring Range is 60 minutes, Monitoring Period is 5 minutes, CPU Threshold is 5% and Network Out Threshold is 4000 bytes.

If the user does not provide Column values in the CSV file for Monitoring Range, Monitoring Period, CPU Threshold, Network Out Threshold then bot takes these values as input in file parameters.

The maximum number of data points returned from a single call is 1,440. If you request more than 1,440 data points, CloudWatch returns an error. To reduce the number of data points, you can narrow the specified time range and make multiple requests across adjacent time ranges, or you can increase the specified period.

For More information [click here](#).

Reports



There are no Bot Insight Reports generated for this Bot.

Logs





In case of Errors, Error Logs & Screenshots are generated within Error Folder (Highlighted below in yellow)

- My Tasks
 - Bot Store
 - Bot Name
 - Error Folder
 - Logs (Folder)
 - Error Logs Month-Day-Year.txt
 - Snapshots (Folder)
 - Error Snap Month-Day-Year HourMinSec.png

Error Logs will contain the below information -

- Task Name
- Error Line Number
- Error Description
- Generated Timestamp

Example:

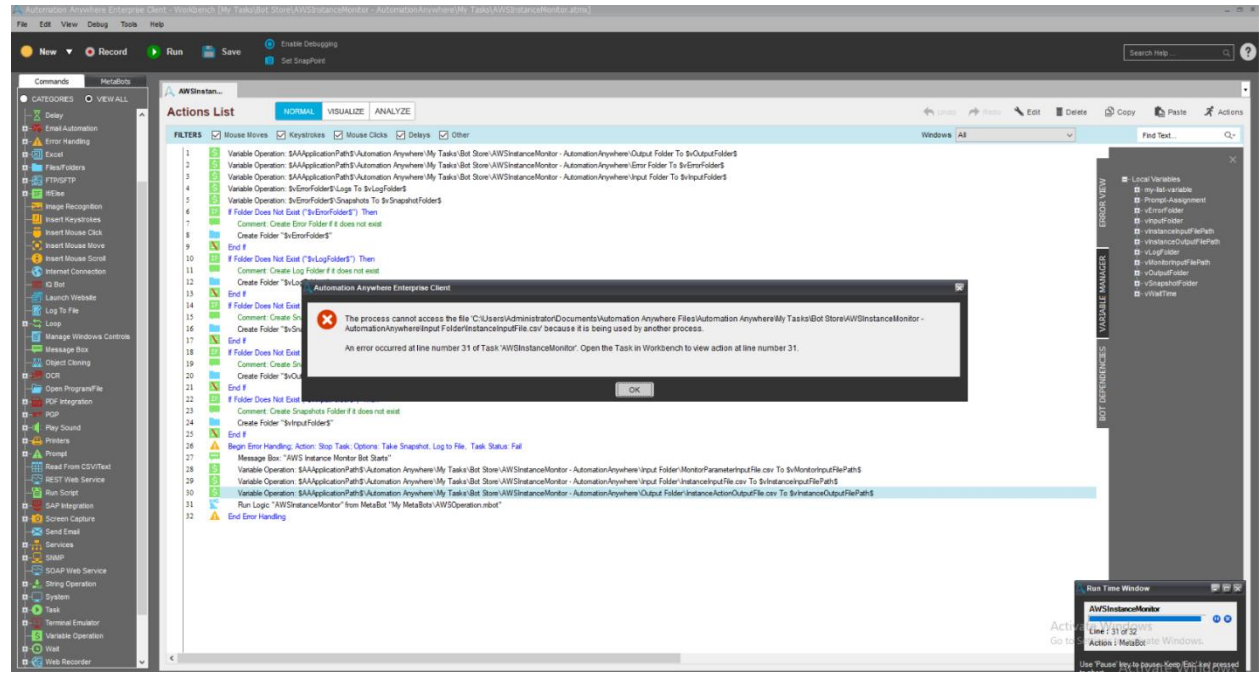
Automation Anywhere > My Tasks > Bot Store > AWSInstanceMonitoring-AutomationAnywhere > Error Folder > Logs			
Name	Date modified	Type	Size
 Error Logs 10-21-2019.txt	21-10-2019 15:47	Text Document	13 KB
 Error Logs 10-22-2019.txt	22-10-2019 11:35	Text Document	1 KB

```
(22-10-2019 12:13:33)
=====
Task : C:\Users\Administrator\Documents\Automation Anywhere Files\Automation Anywhere\My Tasks
\Bot Store\AWSInstanceMonitoring-AutomationAnywhere\My Tasks\AWSInstanceMonitor.atmx
Error Line Number: "27"
Error Description: 'Anywhere' not a valid key=value pair (missing equal-sign) in Authorization header: 'AWS4-HMAC-SHA256
Credential=C:\Users\Administrator\Documents\Automation Anywhere Files\Automation Anywhere\My Tasks\Bot Store
\AWSInstanceMonitoring-AutomationAnywhere\Input Folder\InstanceInputFile.csv\20191022/us-east-1/monitoring/aws4_request,
SignedHeaders=content-type;host;user-agent;x-amz-content-sha256;x-amz-date,
Signature=cd892b1c415c2faf169bbff03a62f01bf49d4b8b646eeaa57f43c523f7619522'.
=====
```

Example of Screenshot Generated Error File:

This PC > Documents > Automation Anywhere Files > Automation Anywhere > My Tasks > Bot Store > AWSInstanceMonitoring-AutomationAnywhere > Error Folder > Snapshots

Name	Date	Type	Size	Tags
Error Snap 10-22-20...	22-10-2019 11:25	PNG File	189 KB	
Error Snap 10-22-20...	22-10-2019 11:35	PNG File	229 KB	
Error Snap 10-22-20...	22-10-2019 12:13	PNG File	214 KB	



The screenshot displays the Automation Anywhere Enterprise Client interface. A central error dialog box is open, indicating a file access conflict. The error message reads: "The process cannot access the file C:\Users\Administrator\Documents\Automation Anywhere\Files\Automation Anywhere\My Tasks\Bot Store\AWSInstanceMonitor - Automation Anywhere\Input Folder\InstanceInputFile.csv because it is being used by another process." Below this, it specifies "An error occurred at line number 31 of Task 'AWSInstanceMonitor'. Open the Task in Workbench to view action at line number 31." The background shows the 'Actions List' with various tasks like 'Variable Operation', 'If Folder Does Not Exist', 'Create Folder', 'Begin Error Handling', etc.

Troubleshooting & Support



Support



Free bots are currently not supported directly.



Questions on Bot Functionality or Feature can also be posted to our Community site [Apeople](#)



Automation Anywhere provides a [Product Documentation portal](#) which can be accessed for more information about [AA](#)'s products and guidance on building bots and Digital Workers.

The "Build" section of the portal includes these sections:

- Getting Started - information on building bots recommended practices (including use of the Credential Vault)
- Build Advanced Bots - details on MetaBots and the approach to integrating code into them
- Build Digital Workers - high level architecture
-

FAQs



Q: The 'Create Locker' button not visible in the Credential Vault Page. What do I do?

A: Please check if the role 'Locker Consumer' is assigned to the user and you are using an Enterprise Client version.

Appendix A: Record of Changes

No.	Version Number	Date of Change (DD/MM/YYYY)	Author	Notes
1	1.0	<i>October 25, 2019</i>	Nikhil Gupta Pankaj Goyal	Version 1 Release

Appendix B: Acronyms

No.	Acronym	Description
1	AA	Automation Anywhere
2	CSV	Comma Separated File
3	DW	Digital Worker
4	CR	Credential Vault
5	CRM	Customer Relationship Management
6	API	Application Programming Interface
7	PC	Personal Computer
8	RAM	Random Access Memory
9	OS	Operating System

Appendix C: References

No.	Topic	Reference Link
1	System Requirements - Client	Click here
2	System Requirements – Control Room	Click here
3	How to create credential & Locker?	Click here
4	Credential Overview	Click here
5	Apeople Community Site	Click here
6	Product Documentation portal	Click here