

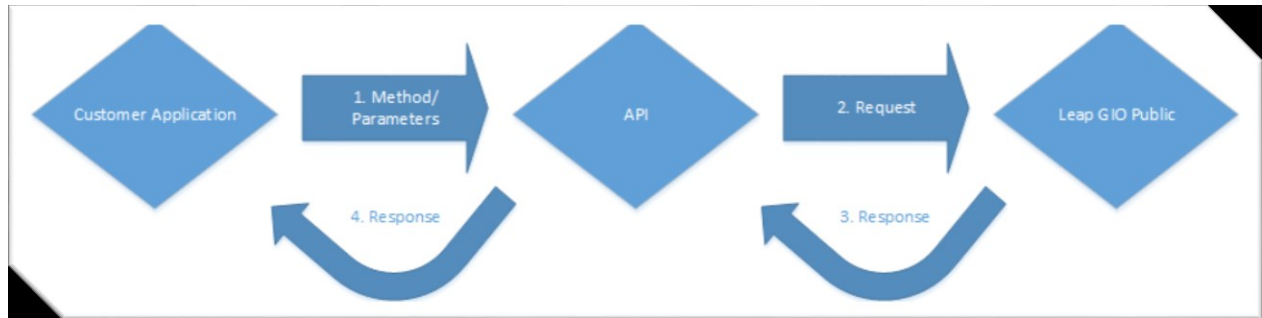
How to use the API

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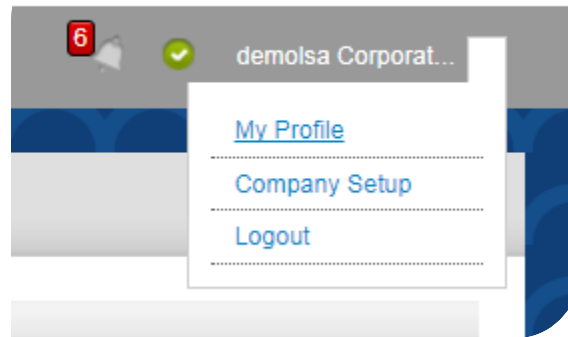
I. Introduction

- An application program interface (API) is a set of routines, protocols, and tools for building software applications. It is a set of clearly defined methods of communication between various software components. As such, Leap GIO Public provides the API feature that lets customers adapt Leap GIO Public to their software applications. In that sense, using the API feature allows customers to use Leap GIO Public without having to log in into their Leap GIO Public portals.

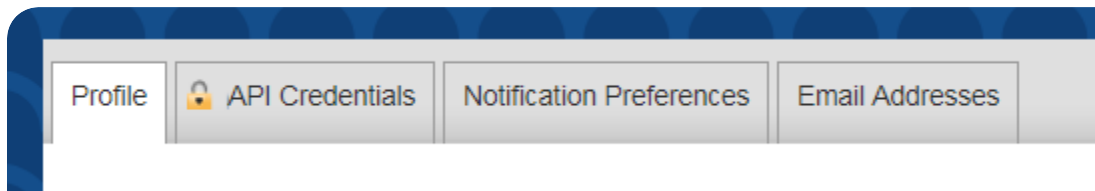


II. API credentials

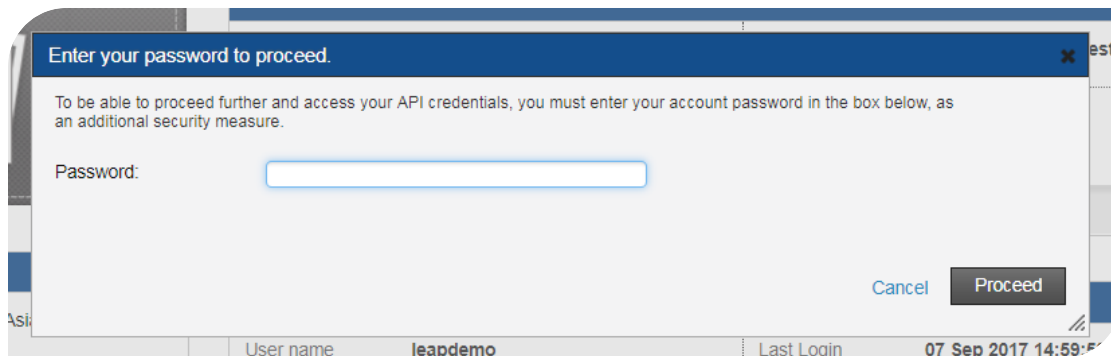
- You first need to get the API credentials in order to allow your application to connect to Leap GIO Public
- To get the API credentials, follow the below:
 - o Log into your **Web Portal**
 - o Click on **GIOCloud Portal**
 - o Click on the **small down arrow** on the top right corner and select **My Profile**



- o Click on the **API Credentials** tab

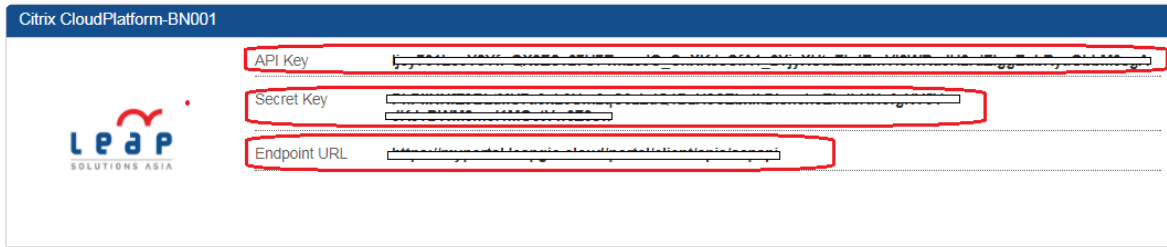


- o Enter your account **Password** again and **Proceed**



- In the **Citrix CloudPlatform-BN001** section, save **API Key**, **Secret Key**, and **Endpoint URL**


Citrix CloudPlatform-BN001



API Key

Secret Key

Endpoint URL



III. Set up your API (through example)

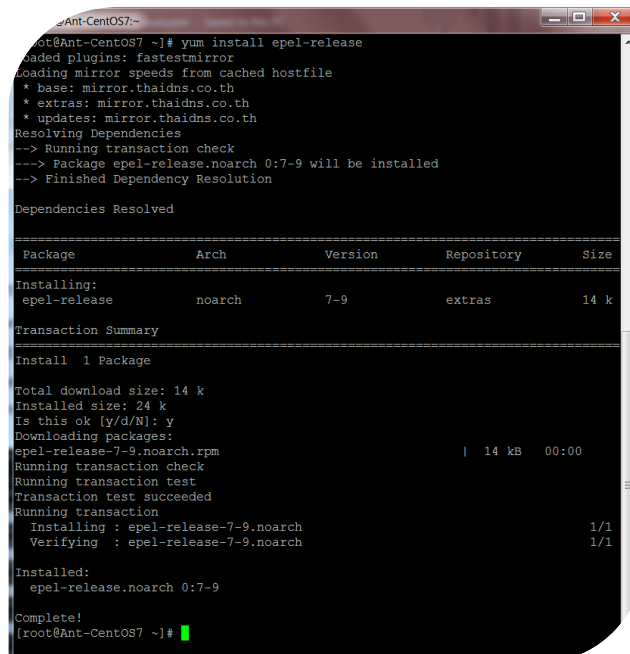
- We will use CentOS 7 as an example
- Create a new instance with CentOS 7 on your Leap GIO Public environment
- Make sure the VM has connection to the Internet and for easy use, assign a SSH key so that you can use putty to connect directly to the VM (optional)

A. Tools needed for the API setup

- **Pip:** it is a tool for installing and managing Python packages. Pip is part of Extra Packages for Enterprise Linux (EPEL), which is a community repository of non-standard packages for the RHEL distribution.
- Using Linux, you can use the below two Cloudstack API clients for Python and command-line:
 - o **CS** (<https://github.com/exoscale/cs>) => the tool that we will use in our example
 - o **Cloudmonkey**
(<https://cwiki.apache.org/confluence/display/CLOUDSTACK/CloudStack+cloudmonkey+CLI#CloudStack+cloudmonkeyCLI-Installation>)

B. Install the tools

- Connect to the VM with the **root** account
- First, install the **epel repository**:
 - o **# yum install epel-release**



```

[root@Ant-CentOS7 ~]# yum install epel-release
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.thaidns.co.th
 * extras: mirror.thaidns.co.th
 * updates: mirror.thaidns.co.th
Resolving Dependencies
--> Running transaction check
--> Package epel-release.noarch 0:7-9 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====================================================================================================================================
 Package                Arch          Version      Repository  Size
=====================================================================================================================================
Installing:
 epel-release            noarch       7-9          extras      14 k
Transaction Summary
-----
Install 1 Package

Total download size: 14 k
Installed size: 24 k
Is this ok [y/d/N]: y
Downloading packages:
 epel-release-7-9.noarch.rpm | 14 kB 00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : epel-release-7-9.noarch                1/1
  Verifying  : epel-release-7-9.noarch                1/1

Installed:
  epel-release.noarch 0:7-9

Complete!
[root@Ant-CentOS7 ~]#

```

- Then, install **python-pip**:
 - o # **yum -y install python-pip**

```

Ant-CentOS7~
python2-pip.noarch 0.9.8-4.el7 base 396 k
Transaction Summary
-----
Install 1 Package (+3 Dependent packages)

Total download size: 2.1 M
Installed size: 9.1 M
Downloading packages:
(1/4): python-backports-1.0-8.el7.x86_64.rpm | 5.8 kB 00:00
(2/4): python-backports-ssl_match_hostname-3.4.0.2-4.el7.noarch.rpm | 12 kB 00:00
(3/4): python2-setuptools-0.9.8-4.el7.noarch.rpm | 396 kB 00:00
warning: /var/cache/yum/x86_64/7/epel/packages/python2-pip-8.1.2-5.el7.noarch.rpm:
Header V3 RSA/SHA256 Signature, key ID 352c64e5: NOKEY
Public key for python2-pip-8.1.2-5.el7.noarch.rpm is not installed
(4/4): python2-pip-8.1.2-5.el7.noarch.rpm | 1.7 MB 00:04
-----
Total 452 kB/s | 2.1 MB 00:04
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Importing GPG key 0x352c64e5:
Userid : "Fedora EPEL (7) <epel@fedoraproject.org>"
Fingerprint: 91e9 7d7e 4a5e 96f1 7f3e 88bf 622f aea2 352c 64e5
Package : epel-release-7-9.noarch (@extras)
From : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : python-backports-1.0-8.el7.x86_64 1/4
  Installing : python-backports-ssl_match_hostname-3.4.0.2-4.el7.noarch 2/4
  Installing : python2-setuptools-0.9.8-4.el7.noarch 3/4
  Installing : python2-pip-8.1.2-5.el7.noarch 4/4
  Verifying : python2-pip-8.1.2-5.el7.noarch 1/4
  Verifying : python2-setuptools-0.9.8-4.el7.noarch 2/4
  Verifying : python-backports-1.0-8.el7.x86_64 3/4
  Verifying : python-backports-ssl_match_hostname-3.4.0.2-4.el7.noarch 4/4

Installed:
  python2-pip.noarch 0:8.1.2-5.el7

Dependency Installed:
  python-backports.x86_64 0:1.0-8.el7
  python-backports-ssl_match_hostname.noarch 0:3.4.0.2-4.el7
  python2-setuptools.noarch 0:0.9.8-4.el7

Complete!
[root@Ant-CentOS7 ~]#

```

- Finally, install **cs**, and upgrade it to the latest version (optional):
 - o **Pip install cs**

```

Ant-CentOS7~
[root@Ant-CentOS7 ~]# pip install cs
Collecting cs
  Downloading cs-1.1.1-py2.py3-none-any.whl
Collecting requests (from cs)
  Downloading requests-2.18.4-py2.py3-none-any.whl (88kB)
    100% |#####| 92kB 1.4MB/s
Collecting chardet<3.1.0,>=3.0.2 (from requests->cs)
  Downloading chardet-3.0.4-py2.py3-none-any.whl (133kB)
    100% |#####| 143kB 2.4MB/s
Collecting certifi>=2017.4.17 (from requests->cs)
  Downloading certifi-2017.7.27.1-py2.py3-none-any.whl (349kB)
    100% |#####| 358kB 1.7MB/s
Collecting urllib3<1.23,>=1.21.1 (from requests->cs)
  Downloading urllib3-1.22-py2.py3-none-any.whl (132kB)
    100% |#####| 133kB 2.6MB/s
Collecting idna<2.7,>=2.5 (from requests->cs)
  Downloading idna-2.6-py2.py3-none-any.whl (56kB)
    100% |#####| 61kB 3.2MB/s
Installing collected packages: chardet, certifi, urllib3, idna, requests, cs
Successfully installed certifi-2017.7.27.1 chardet-3.0.4 cs-1.1.1 idna-2.6 requ
sts-2.18.4 urllib3-1.22
You are using pip version 8.1.2, however version 9.0.1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
[root@Ant-CentOS7 ~]# pip install --upgrade pip
Collecting pip
  Downloading pip-9.0.1-py2.py3-none-any.whl (1.3MB)
    100% |#####| 1.3MB 673kB/s
Installing collected packages: pip
Found existing installation: pip 8.1.2
Uninstalling pip-8.1.2:
  Successfully uninstalled pip-8.1.2
Successfully installed pip-9.0.1
[root@Ant-CentOS7 ~]#

```

C. Create a configuration file

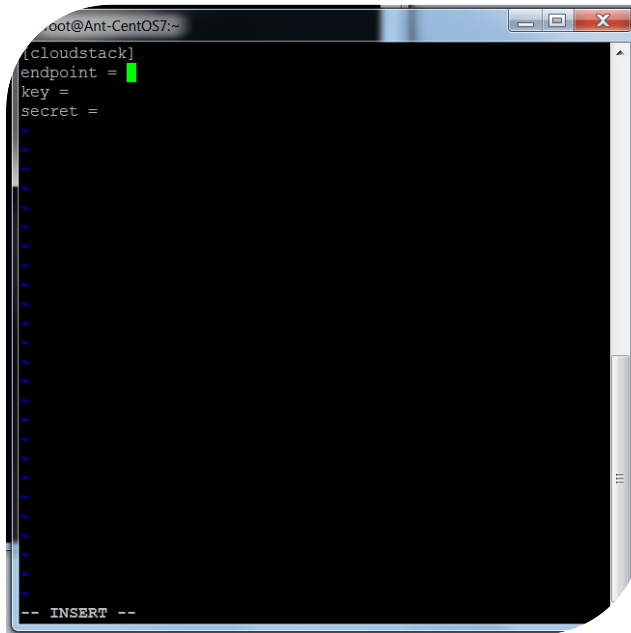
- Create a configuration file called **Cloudstack.ini**:
 - o **# vi cloudstack.ini**
- Enter the API credentials that you have previously saved from your **GIOCloud Portal**. You may want to enter optional parameters, but for our example, we will keep it to a strict minimum to make it simple

[Cloudstack]

endpoint = xx

key = xx

secret = xx



- **Save and quit.** Your setup is now completed. You can now make API calls.

IV. Example of API calls

A. List VMs on your Leap GIO Public

1. List all the virtual machines

- # cs listVirtualMachines



```


root@Ant-CentOS7 ~]# cs listVirtualMachines

"count": 4,
"virtualmachine": [
  {
    "account": " ",
    "affinitygroup": [],
    "cpunumber": 1,
    "cpuspeed": 500,
    "cpuused": "0%",
    "created": "2017-09-08T11:11:55+0700",
    "diskioread": 0,
    "diskiowrite": 0,
    "diskkbsread": 0,
    "diskkbswrite": 0,
    "displayname": " ",
    "domain": " ",
    "domainid": " ",
    "guestosid": " ",
    "haenable": false,
    "hypervisor": " ",
    "id": " ",
    "isdynamicallyscalable": false,
    "keypair": " ",
    "memory": 512,
    "memoryintfreekbs": 0,
    "memorykbs": 524288,
    "memorytargetkbs": 524288,
    "name": " ",
    "networkkbsread": 0,
    "networkkbswrite": 0,
    "nic": [
      {
        "broadcasturi": " ",
        "gateway": " ",
        "id": " ",
        "ipaddress": " ",
        "isdefault": true,
        "isolationuri": " ",
        "macaddress": " ",
        "netmask": "255.255.255.0",
        "networkid": " "
      }
    ],
    "networkname": " ",
    "secondaryip": [],
    "traffictype": "Guest",
    "type": "Isolated"
  }
]

```


2. Stop a virtual machine

- # cs stopVirtualMachines id="xx"
- To get the id of the VM, use the command cs listVirtualMachines



```

Ant-CentOS7:~
root@Ant-CentOS7 ~]# cs stopVirtualMachine id="61xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx"
Polling result... ^C to abort
{
  "accountid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
  "cmd": "org.apache.cloudstack.api.command.user.vm.StopVMCmd",
  "created": "2017-09-08T13:53:33+0700",
  "jobid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
  "jobinstanceid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
  "jobinstancetype": "VirtualMachine",
  "jobprocstatus": 0,
  "jobresult": {
    "virtualmachine": {
      "account": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "affinitygroup": [],
      "cpunumber": 4,
      "cpuspeed": 2000,
      "cpuused": "1607%",
      "created": "2017-09-04T11:15:30+0700",
      "diskioread": 0,
      "diskiowrite": 0,
      "diskkbsread": 0,
      "diskkbswrite": 0,
      "displayname": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "domain": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "domainid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "group": "VPN",
      "groupid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "guestosid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "haenable": false,
      "hypervisor": "VMware",
      "id": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "isdynamicallyscalable": false,
      "jobid": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "jobstatus": 0,
      "memory": 8192,
      "memoryintfreekbs": 0,
      "memorykbs": 8388608,
      "memorytargetkbs": 8388608,
      "name": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
      "networkkbsread": 0,
      "networkkbswrite": 0,
      "nic": [
        {
          "gateway": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
          "id": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
          "ipaddress": "10.055.0.114",
          "isdefault": true,
          "macaddress": "08:00:0A:00:00:00"
        }
      ]
    }
  }
}

```

- Once this command has completed, if you go to your Web Portal, the VM that you have tried to stop, should be in a **stopped** status. In our example above, we have successfully stopped a Windows OS VM from the CentOS 7 VM using API command.

4. API commands

- For a list of API commands, please visit: http://cloudstack.apache.org/api/apidocs-4.7/TOC_User.html

If you have any questions please check our FAQ section. If you still cannot find what you are looking for or believe that there is a careless mistake in this document, please contact our support at support@leapsolutions.co.th or send us your inquiry through our [Inquiry Form](#) located on your Web Portal.