Flex-VM - Administration Guide

Version 22.2

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Change Log

Date	Change Description
2022-06-28	Initial release.
2022-07-27	Added Program renewal on page 9

Introduction

Flex-VM allows you to easily manage VM usage entitlements. You can use the Flex-VM portal to create VM configurations, generate licensing tokens, and monitor resource consumption in the form of points.

Flex-VM subscribers can create multiple sets of a single VM entitlement that corresponds to a licensed virtual machine. Resource consumption is based upon predefined points that are calculated on a daily basis (PST/PDT time zone).

Virtual Machines with usage entitlements require a per-VM unique token to be installed on every VM. These tokens can be injected into the VM once the configurations and vCPU quantities are defined in the Flex-VM portal, and the VMs are deployed on the customer-managed platform in supported clouds and hypervisors.

Program guide

The topics in this section provide information about the Flex-VM program.

- Program requirements on page 7
- Registering Flex VM on page 7
- Points on page 10
- Version and feature support on page 11
- Service offerings on page 12

Program requirements

The Flex-VM program requires the following items:

- A primary FortiCloud account or IAM user account.
- Flex-VM Program SKU (either Enterprise/prepaid or MSSP/postpaid) purchased from Fortinet's resellers and distributors.
- Flex-VM Point Pack SKU (only applicable to Enterprise/prepaid) purchased from Fortinet's resellers and distributors.

Registering Flex VM

Flex VM is an annually contracted program that can be registered through the FortiCloud *Asset Management* portal.

Flex-VM program-related SKUs are available for purchase from Fortinet’s resellers and distributors. There may be certain conditions to be eligible to join the program. Consult your Fortinet sales representatives.

To register Flex VM:

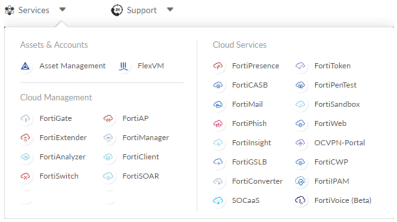
1. Log into your FortiCare account. The *Asset Management* portal opens.
2. Go to *Products* > *Product List*.
3. Click *Register More* and follow the steps in the registration wizard.
4. Log out of your account after the registration is complete.

For information about product registration, see *Registering products* in *Asset Management Administration Guide*.

The program begins on the date of registration. It may take up to four hours for the registration to validate in FortiCloud.

To access the Flex-VM portal:

1. Log in to your FortiCare account. The *Asset Management* portal opens.
2. In the banner, click *Services* > *Assets & Accounts* > *FlexVM*.

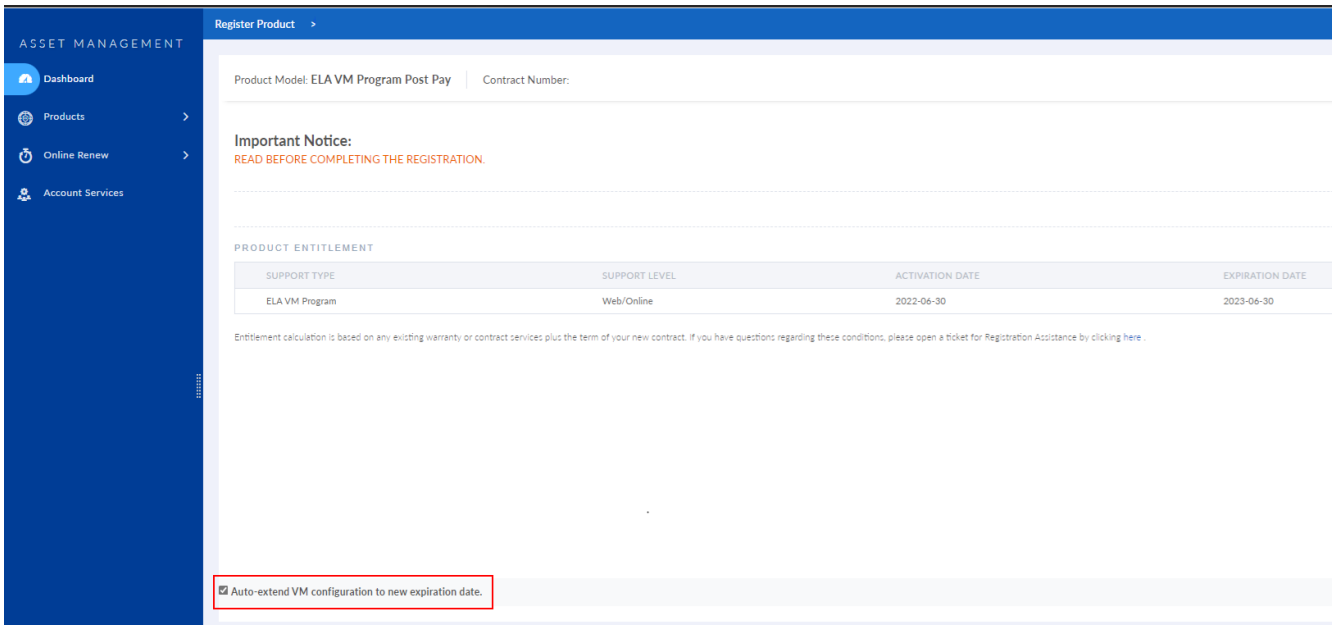


To view your Flex-VM license:

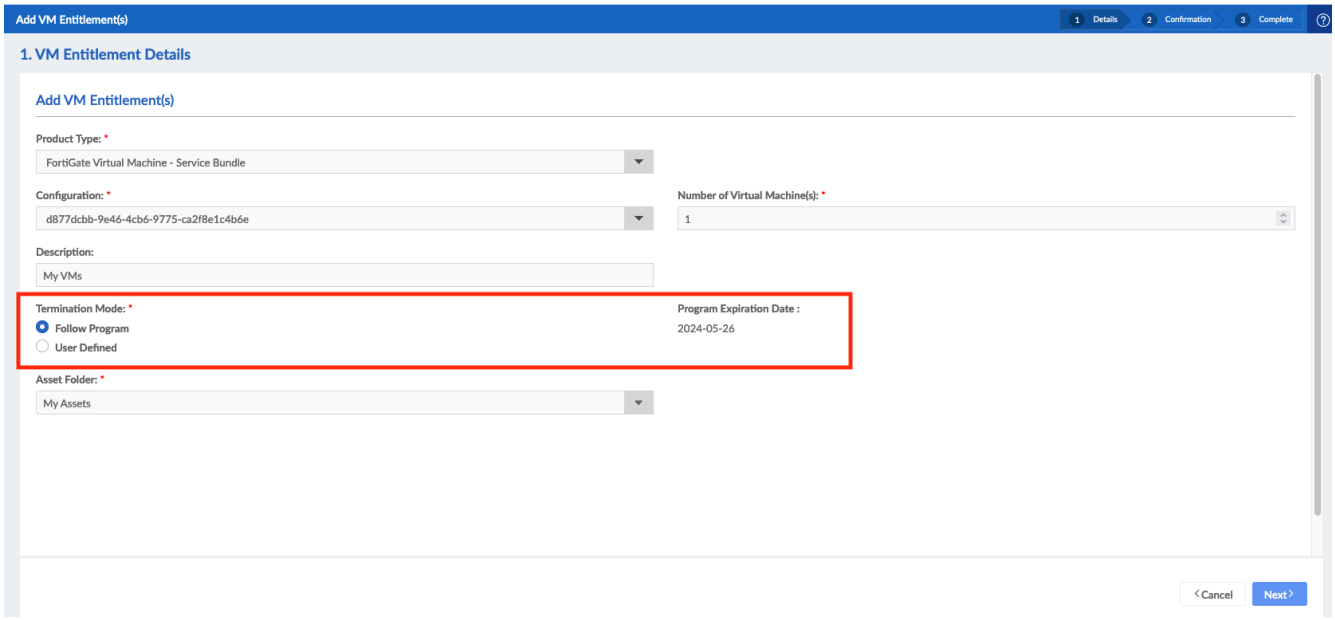
1. Log into your FortiCare account. The *Asset Management* portal opens.
2. Click *Account Services*.

Program renewal

When you register a new Flex-VM contract for renewal, you have the option of selecting *Auto-extend VM configuration*.



This tells Flex-VM to update the expiration date of all VM entitlements that have the *Termination Mode* set to *Follow Program*, to the expiration date of the new contract that is being registered.



Points

Resource consumption is based upon predefined points that are calculated on a daily basis (PST/PDT time zone). Points can be purchased in advance or billed on a month basis based on the number of CPUs and service package.

Prepaid points

Prepaid points are available for Enterprise customers. Points are purchased in units of 10,000 and 50,000 points and are deducted on a daily basis based on resource consumption. Unused points can be rolled over upon the program registration anniversary date. See, Roll-over points.

One account can have only one Prepaid Flex-VM program. Multiple registrations can be performed to extend the existing program period.

Postpaid points

Points are calculated based on resource consumption and billed on a monthly basis. The detailed payment terms may be specified in your individual purchase agreements.

One account can have only one Postpaid Flex-VM program. Multiple registrations can be performed to extend the existing program period.

A Flex-VM account can only accommodate one prepaid program and one postpaid program at the same time.

Point calculation

Points are calculated daily based on PST/PDT time zones. Calculations are based on the number of CPUs and service package. You can change the per-VM entitlements as many time as you like in a day. The largest CPU size and service package for the day will be charged based on the PST/PDT time zone day count. It may take up to three hours for the change to be updated in FortiCloud.

Points are not calculated during a VM entitlement stoppage, even though the VM may still be running on the customer-managed environment.

Roll-Over points

Pre-paid points can be rolled-over on the service registration anniversary date. Unused points will be rolled over to the next year with the following conditions:

Program	Description
12 months	• Unused points that existed and were added before the 180th day in the year will be rolled over in half to the next year. • Unused points that were added on or after the 180th day in the year will be

Program	Description
	rolled over as the full amount.
36 months	• Unused points will be rolled over as the full amount.
60 months	• Unused points will be rolled over as the full amount.

Roll-over points do not apply to the post-paid program.

Version and feature support

Flex-VM is supported in the following Fortinet solutions.

Product support

Flex-VM can be used to create VM usage entitlements for the following products:

- FortiOS 6.4.3 and higher
- FortiWeb 7.0.1 and higher
- FortiManager 7.2.1 and higher

Version support

Flex VM licensed devices are supported in the physical and virtual versions of FortiManager and FortiAnalyzer.

- FortiManager 6.4.3 and higher
- FortiAnalyzer 6.4.3 and higher

VDOMs

Adding perpetual VDOM addition licenses is supported to work with FortiGate-VM, which is deployed with Flex-VM entitlements.

You can add and stack up to 500 VDOMs to FortiGate-VM regardless of its CPU capacity. The number of VDOMs to be added is determined by VDOM license you purchased.

FortiToken

FortiToken is supported on Flex-VM FortiGate-VMs.

Service offerings

The following table provides an overview of the available service packages.

For detailed information, see the FortiGate™ Virtual Appliances.

FortiGate Virtual Machine - Service Bundle

Bundles	Enterprise Protection	Unified Threat Protection	Advanced Threat Protection	FortiCare Only
FortiCare	24x7	24x7	24x7	24x7
FortiGuard App Control Service	✓	✓	✓	✓
FortiGuard IPS Service	✓	✓	✓	
FortiGuard Advanced Malware Protection (AMP) — Antivirus, Mobile Malware, Botnet, CDR, Virus Outbreak Protection, and FortiSandbox Cloud Service	✓	✓	✓	
FortiGuard Web and Video Filtering Service	✓	✓		
FortiGuard Antispam Service	✓	✓		
FortiGuard Security Rating Service	✓			
FortiGuard IoT Detection Service	✓			
FortiGuard Industrial Service	✓			
FortiConverter Service	✓			

FortiGate Virtual Machine - A La Carte Services

The A La Carte Service package allows you to pick and choose the services you want use.

Service Type	Services
FortiGuard Services	Intrusion Prevention
	Advanced Malware

Service Type	Services
	Web & Video Filtering
	IOT Detection
	Security Rating
	Industrial Security
Support Services	FortiCare Premium
	FortiCare Elite

FortiWeb Virtual Machine - Service Bundle

Service type	Advanced Bundle	Standard Bundle
24 x 7 FortiCare plus AV	✓	✓
FortiWeb Security Service	✓	✓
IP Reputation	✓	✓
FortiWeb Cloud Sandbox	✓	
Crential Stuffing Defense Service	✓	

FortiManager Virtual Machine

The FortiManager Virtual Machine allows you to set the number of managed devices and ADOMs.

Deploying Flex-VM

The topics in this section provide information about creating VM entitilements and injecting licenses.

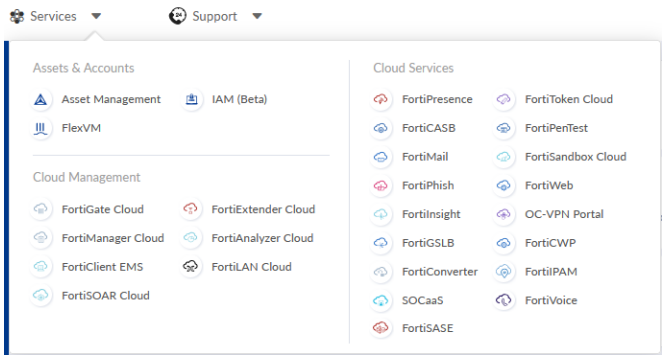
- Getting started on page 15
- Dashboard on page 15
- VM Entitlements on page 16
- Configurations on page 28
- Points on page 32
- Reports on page 33

Flex-VM Portal

The Flex-VM portal allows you to monitor point consumption, configure virtual machine entitlements, create licensing tokens, and run reports.

Accessing the portal

You can access the Flex-VM portal from the *Services* menu in Asset Management. The Flex-VM option appears in the Asset & Accounts section when there is a valid Flex-VM license.



Adding a secondary user

The Flex-VM portal supports the Master account in FortiCloud. To add secondary accounts, create an IAM User. For information, see Adding IAM users.

The Flex-VM portal does not support FortiCloud sub user accounts. To grant access to a FortiCloud sub user, migrate the user in the IAM portal. See, Migrating sub users.

Getting started

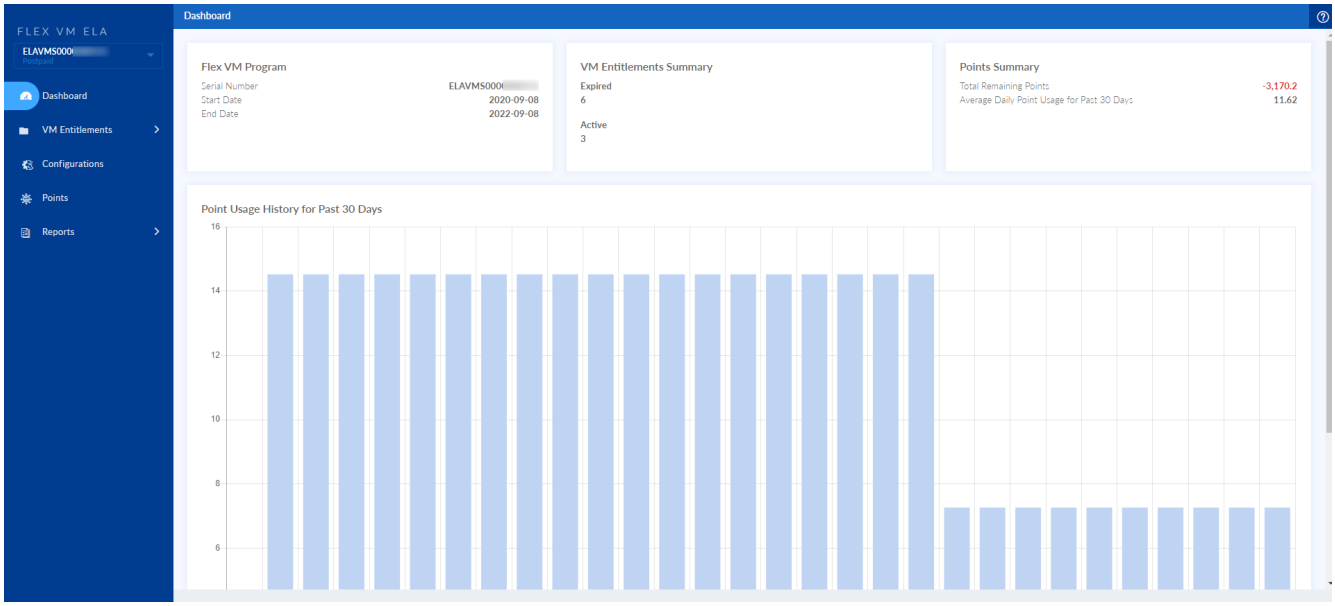
To deploy Flex-VM, create a VM configuration and use it to create a new VM entitlement. After the entitlement is created, inject the licensing token into the virtual machine. This will trigger the VM to download the corresponding license file.

To deploy Flex VM:

1. Create a VM configuration.
2. Create VM entitlements.
3. Inject the Flex-VM license.
4. Monitor the points consumed.
5. Run reports to manage points and serial numbers.

Dashboard

The *Dashboard* view provides an overview of activity in your Flex-VM account. Use the dashboard to quickly monitor active and expired virtual machines, as well points consumed.



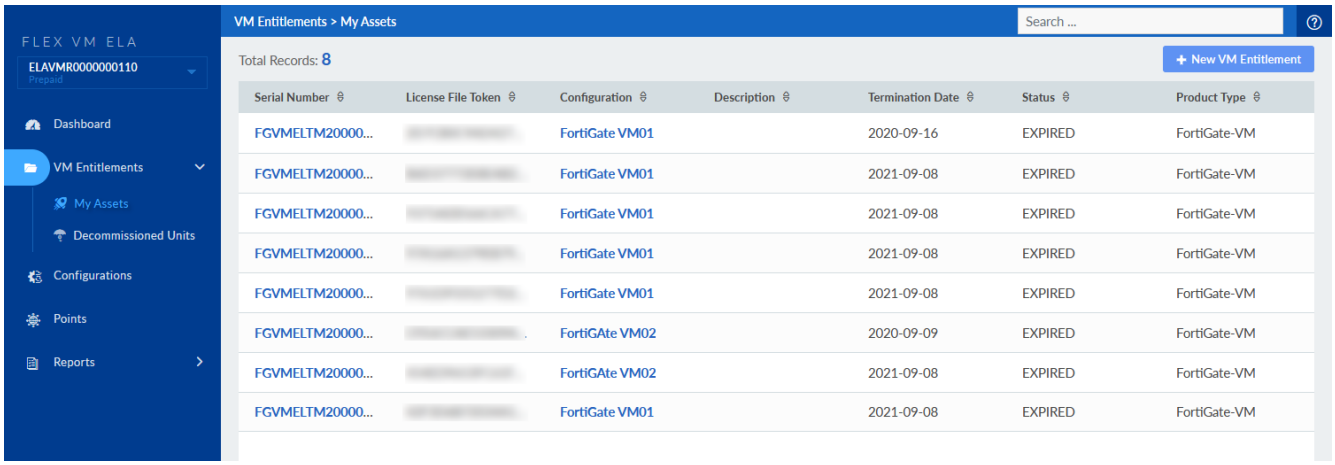
The *Dashboard* contains the following monitors:

Monitor	Description
Flex VM Program(s)	Displays the program serial number and the program start and end dates.
VM Entitlements Summary	Displays the number of *Active*, *Stopped* and *Expired* virtual machines.
Points Summary	Displays the *Total Remaining Points* and *Average Daily Point Usage for Past 30 Days*.
Point Usage History for Past 30 Days	Displays the daily point usage for the past thirty days as a chart. Hover over a bar in the chart to see the points used for a specific day.

VM Entitlements

Use the *VM Entitlements* page to create and manage VM license entitlements which are consumed via the license tokens. You can also disable compromised license entitlements or change the configuration of a virtual machine.

A License Token is a one-time code used to activate a VM instance. A new token must be re-generated if the VM needs to be re-activated. See Managing VM Entitlements on page 25.



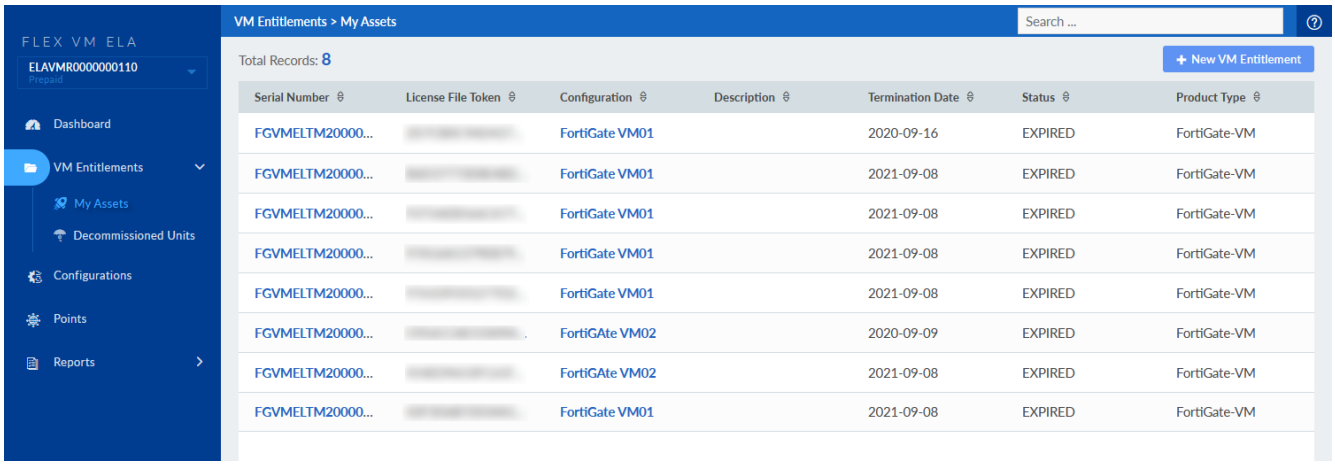
The table displays the following information:

Serial Number	The serial numbers generated when you configure a VM.
License File Token	The available License File Tokens that can be injected into a VM to leverage consumption entitlements.
Configuration	The VM configuration assigned to the serial number.
Description	The description of the entitlement you entered when the VM was created.
Termination Date	The expiry date for the token. The token can be stopped, edited, or reactivated.
Status	The status of the VM entitlement.

- *Active* means the VM is being charged for daily consumption (PST/PDT time zone).
- An *Active* status with a strikethrough indicates the entitlement is in use.
- If the status is *Stopped* for the entire day, the VM will not be charged for the day.

My Assets

The *My Assets* view shows the Asset Folders assigned to a VM entitlement. You will only see the asset folders you have permission to view. Asset folders are created in the Asset Management portal. Flex-VM only shows VMs inside each folder except for when creating new VMs. For information about creating Asset Folders in Asset Management, see *Asset Management > Creating custom views*.



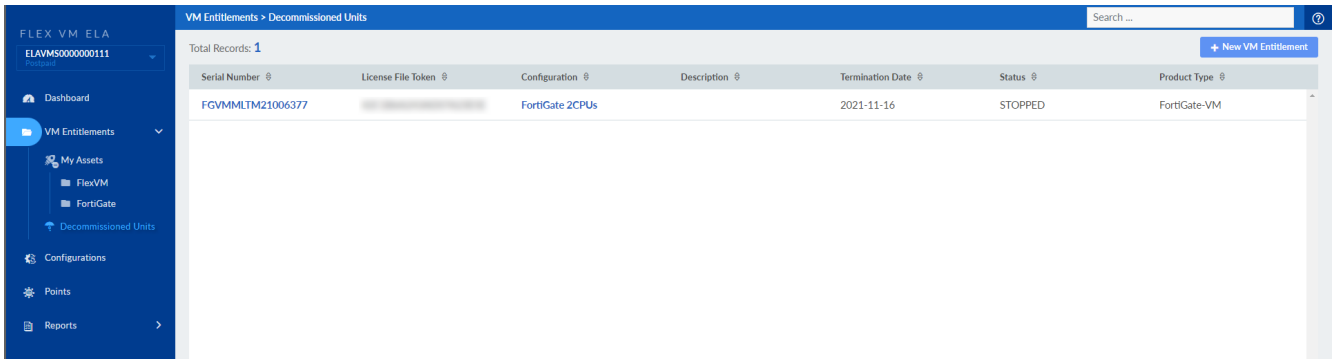
Asset folder permissions

Asset folder permissions are assigned in the Identity & Access Management (IAM) portal. For more information about Asset Folder permissions, see *Identity & Access Management (IAM) > Asset and portal permissions*.

You can use an asset folder to request the next available serial number with the API. See, Creating a license pool group on page 28.

Decommissioned units

The *Decommissioned Units* view shows the VM serial numbers that were decommissioned in the Asset Management portal. When a VM is decommissioned in Asset Management, it is moved to the *Decommissioned Units* folder in Flex-VM and its status is changed to *STOPPED*. For information about decommissioning units in Asset Management, see Asset Management > Viewing decommissioned units.



Creating entitlements

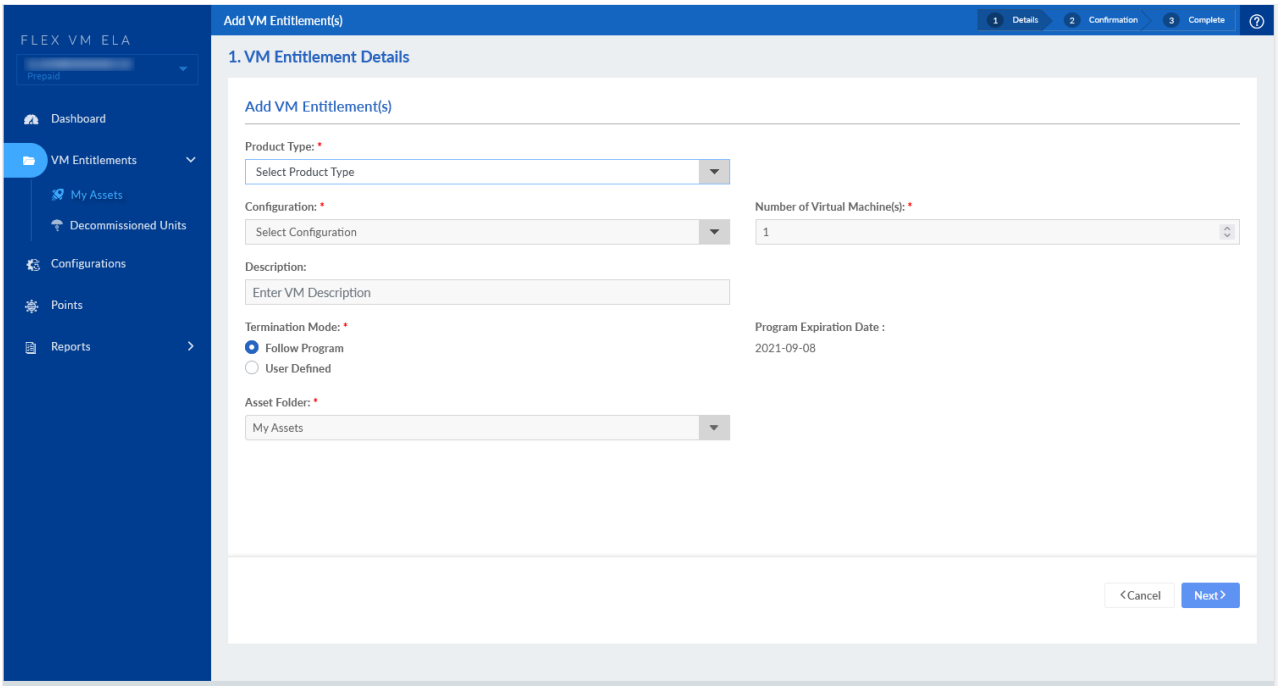
Create a VM entitlement to be used with a FortiGate-VM or FortiWeb-VM. The program requires a positive point balance to create entitlements.

When you create a VM on Flex-VM, you are creating the Per-VM entitlement that is to be injected to every VM node. The consumption for the VM starts the day it is created.

It is recommended that you define a VM entitlement when you create the physical VM entity on your platform so that the creation of the entitlement and the VM instance occur at the same time or on the same day (PST/PDT time zone).

To create a VM entitlement:

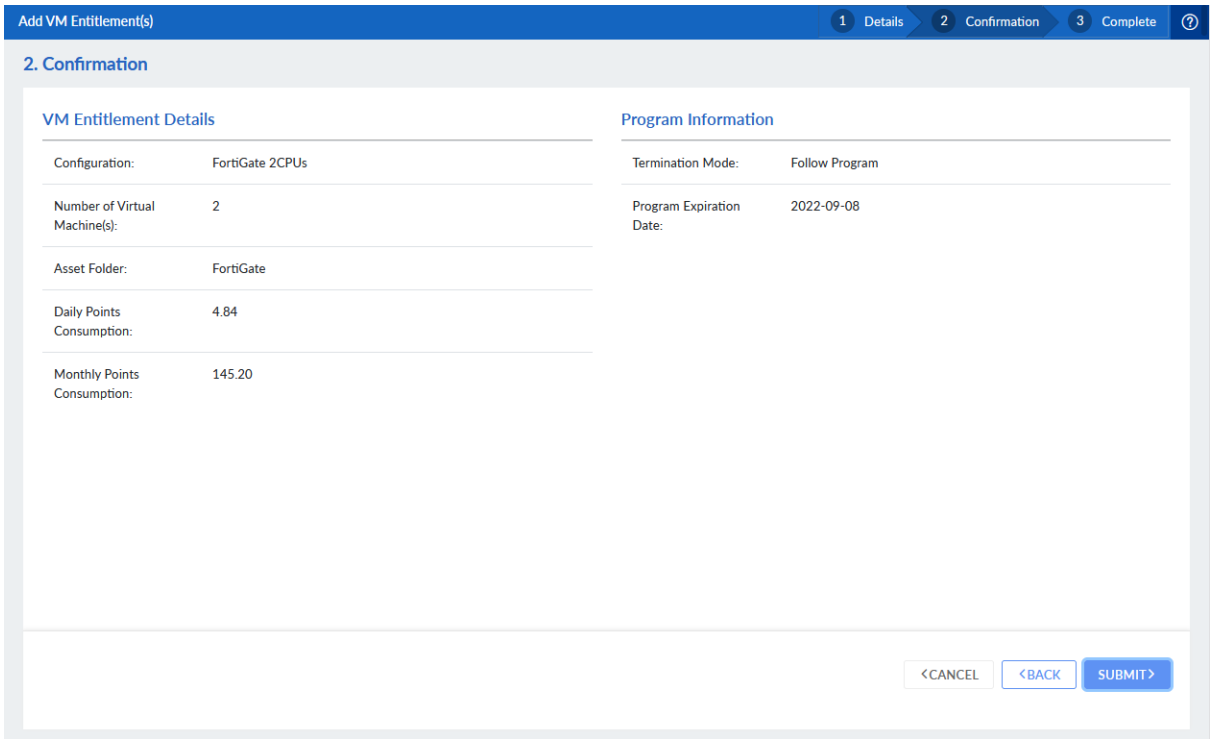
1. Go to *VM Entitlements*, and click *New VM Entitlement*. The *Add VM Entitlement(s)* page opens.



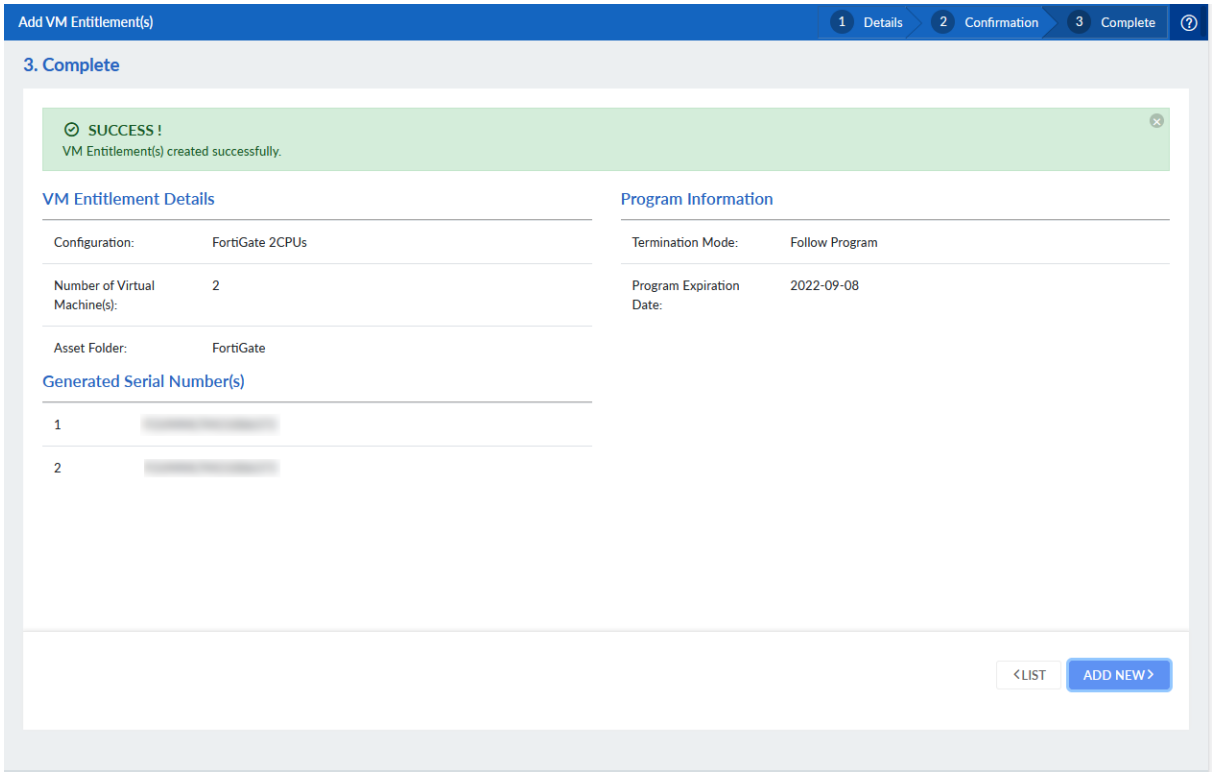
2. Configure the VM Entitlement. Creating VM configurations on page 29.

Product Type	Select one of the following service bundles from the dropdown: • *FortiGate Virtual Machine - Service Bundle* • *FortiGate Virtual Machine - A La Carte Services* • *FortiWeb Virtual Machine - Service Bundle* For information about the product types, see Service offerings on page 12.
Configurations	Select a VM configuration from the list. See, Creating VM configurations on page 29.
Number of Virtual Machine(s)	Enter the number of VM entitlements.Creating VM configurations on page 29
Description	Enter a description of the VM.
Termination Mode	• Select *Follow Program* toConfigurations on page 28 terminate the machine when the program expires. • Select *User Defined*, and select a date in the calendar to specify the termination date.
Asset Folder	Assign the VM to a folder in *My Assets*. For more information about Asset Folders, see Asset Management > Creating custom views. You can use an asset folder to request the next available serial number with the API. See, Creating a license pool group on page 28.

3. Click *Next*.
4. Review the *Virtual Machine Details* and *Program Information*, and click *Submit*.



The *Generated Serial Numbers(s)* are displayed.



Injecting the Flex-VM license

You can inject a Flex-VM license into a VM instance via the CLI or during the VM bootstrapping via Cloud-Init (KVM) or OVF template (ESXi).

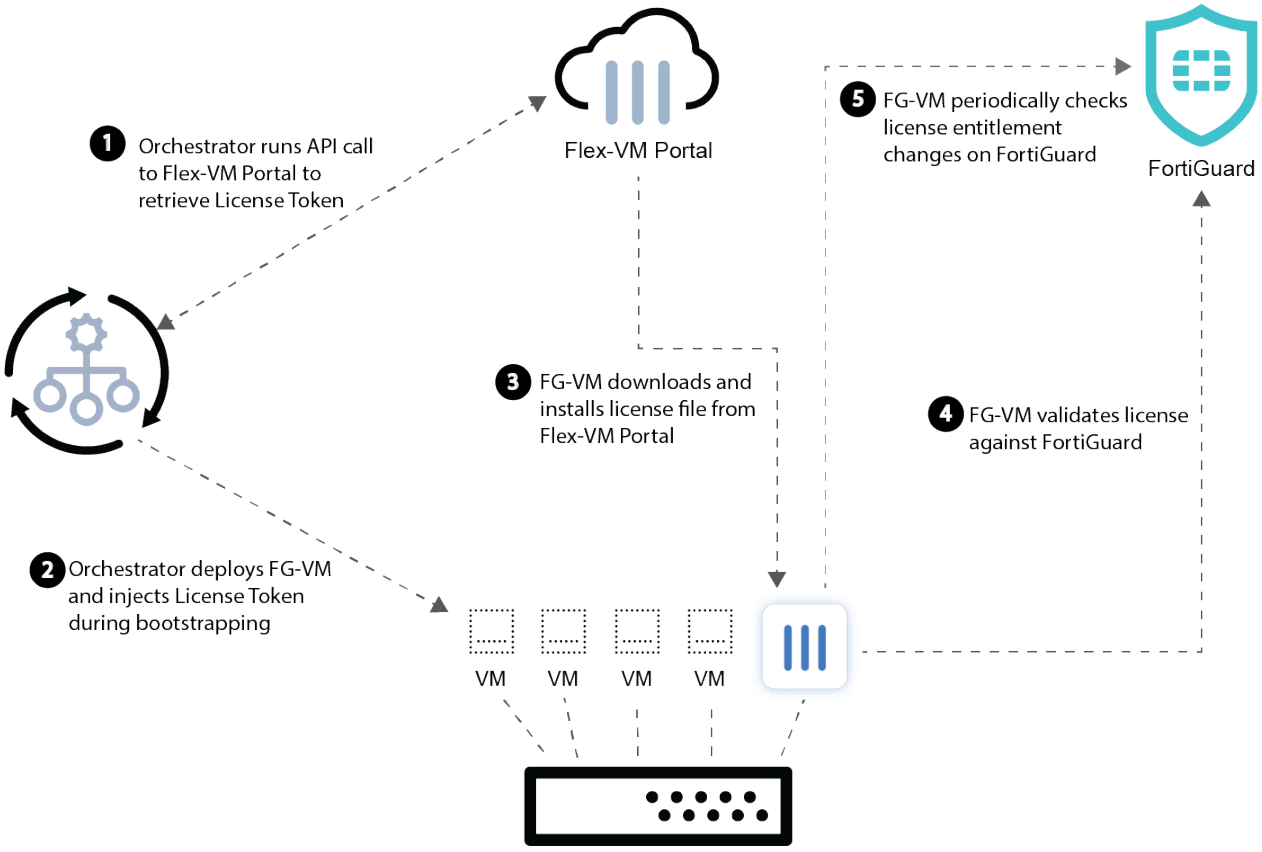
Requisites:

- Create the VM configuration

Injecting the Flex-VM license consists of the following steps:

1. Ensure that the VM has Internet connectivity properly configured.
2. Inject the Flex-VM License Token into the VM using one of the following methods:
   - CLI
   - OVF Template (FGT-64VM only)
   - Cloud-init
   - FortiOS API
3. Confirm that the license token is injected
4. Configuring web proxy tunneling for FDN

Flex-VM License Activation Workflow



Inject a Flex-VM license with the CLI

Use of the following commands to inject a Flex-VM license into a VM instance:

To inject a Flex-VM license with the Flex-VM CLI:

To inject a Flex-VM license into a VM instance with the CLI:

```
execute vm-license <license_token>
```

Example:

```
exec vm-license 58923569A3FFB7F46879
```

To inject a Flex-VM license via web proxy:

```
execute vm-license <license_token> <proxy>
```

The following are examples of the syntax for `<proxy>`:

```
http://user:password@proxyip:proxyport
```

```
user:password@proxyip:proxyport
```

The following shows examples for each command:

```
exec vm-license 58923569A3FFB7F46879 http://qa:123456@10.1.100.74:8080
exec vm-license 95D87F50C075C6F20EE7 hazel:123456@10.1.100.74:8080
```

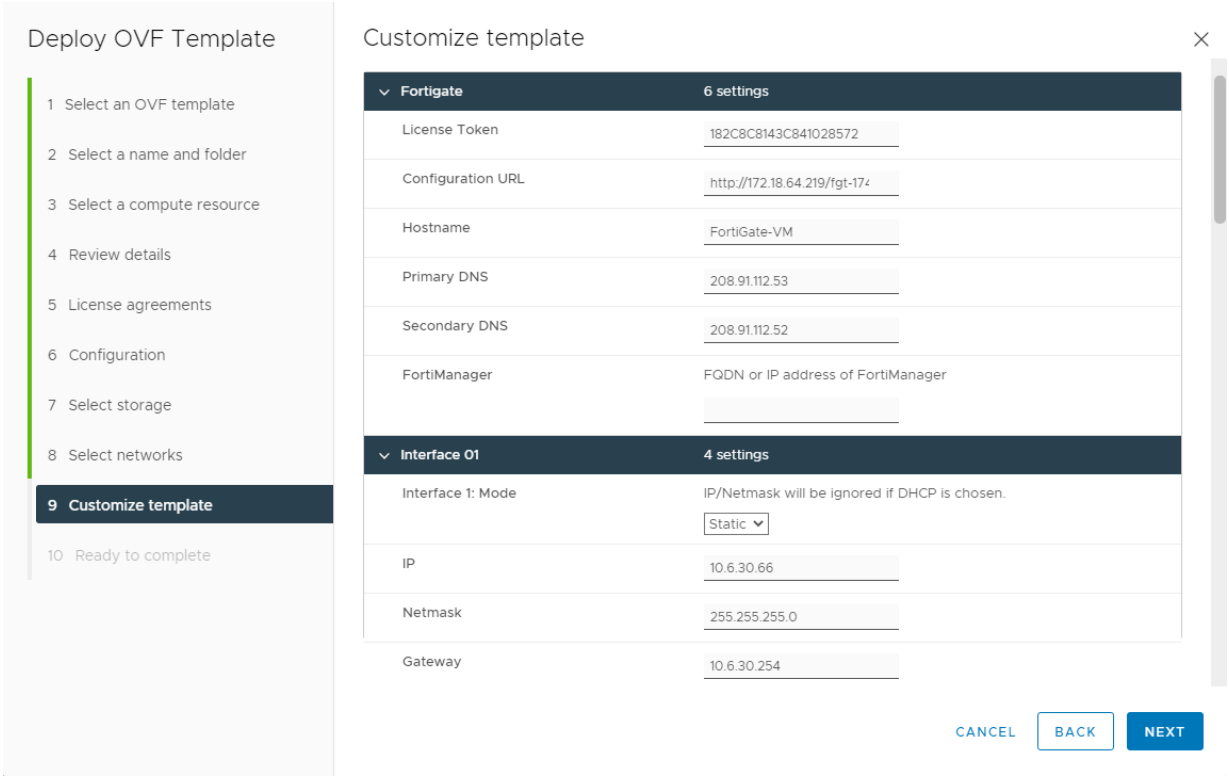
Inject a license token with an OVF template

The custom OVF template contains a *License Token* and *Configuration URL* fields where a bootstrap configuration for the FortiGate is stored.

This option is only available for VMware vCenter.

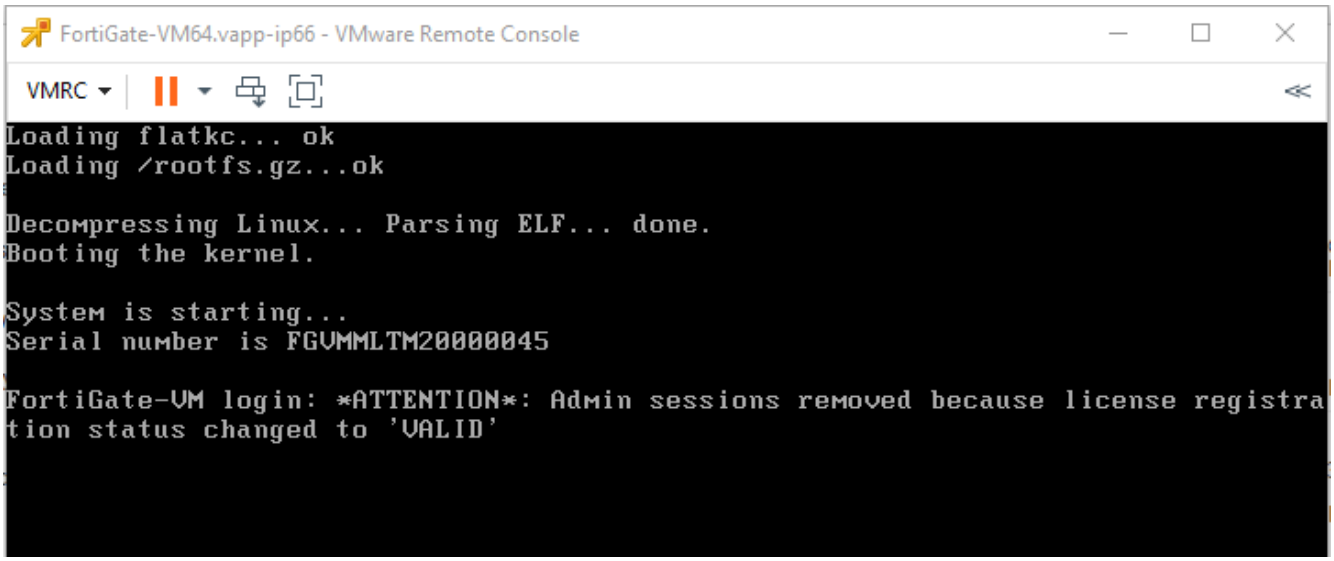
To inject a license token with a custom OVF template:

1. Create a new FGT-VM64 from the vCenter web UI with the extracted files in *FGT_VM64-v7-buildxxxx-FORTINET.out.ovf.zip*.
2. Deploy an OVF Template.
3. In the *Customize template* step:
   a. Enter the License Token in the *License Token* field.
   b. Enter the Configuration URL in the *Configuration URL* field.



4. Restart the VM instance.

After the FGT-VM64 is started, it will activate VM license and load the configuration automatically



Inject a Flex-VM license via cloud-init

The following are the MIME files that you can use to inject a Flex-VM license into a FortiGate-VM instance using cloud-init. See cloud-init Documentation for details.

Configuration information for the FortiGate-VM

```
Content-Type: multipart/mixed; boundary="===============0740947994048919689=="
MIME-Version: 1.0
----------------0740947994048919689==
Content-Type: text/plain; charset="us-ascii"
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit
Content-Disposition: attachment; filename="config"
config sys glo
set hostname FGT-MSSP-MIME
set admintimeout 480
end
......
```

License token information

```
----------------0740947994048919689==
Content-Type: text/plain; charset="us-ascii"
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit
Content-Disposition: attachment; filename="license"
LICENSE-TOKEN:FF69500C90C1604F71EE
----------------0740947994048919689==--
```

Injecting with the FortiOS API

The FortiOS API method is useful for automating the migration of existing FortiGate-VM instances into *Flex-VM*. The Flex-VM API and documentation are available on the Fortinet Developer Network website.

Example: Inject a license via HTTP method:

```
<user_email>:~# curl -k --request POST 'http://<IP_
address>/api/v2/monitor/system/vmlicense/download?token=<token_ID>&access_token=<access_
token>'
{
  "http_method":"POST",
  "status":"success",
  "http_status":200,
  "vdom":"root",
  "path":"system",
  "name":"vmlicense",
  "action":"download",
  "serial":"<serial_number>",
  "version":"v7.2.0",
  "build":1157
```

Example: Inject a license via proxy URL:

```
<user_email>:~# curl -k --request POST 'https://<IP_
address>/api/v2/monitor/system/vmlicense/download?token=<token_ID>&proxy_url=<proxy_
URL>&access_token=<token>'
{
  "http_method":"POST",
  "status":"success",
  "http_status":200,
  "vdom":"root",
  "path":"system",
  "name":"vmlicense",
  "action":"download",
  "serial":"<serial_number>",
  "version":"v7.2.0",
  "build":1157
}<user_email>:~#
```

Confirming the license token is injected

To confirm that the license token is injected:

```
diagnose debug cloudinit show
>> Checking metadata source ovf
>> Found metadata source: ovf
>> Trying to install vmlicense ...
>> License-token:95D87F50C075C6F20EE7 http://qa:123456@10.1.100.74:8080
>> Config script is not available

get system status
Version: FortiGate-VM64 v7.0.4,build0292,220115 (interim)
Serial-Number: FGVMMLTM111111
```

Configuring web proxy tunneling for FDN

After the Flex-VM license has been installed, the FortiGate-VM must validate the license on FDN servers. You can also configure a proxy to accomplish this.

To configure web proxy tunneling for FDN:

```
config system autoupdate tunneling
   set status enable
   set address "<web proxy IP address or FQDN>"
   set port <web proxy port>
   set username "<username>"
   set password <password>
end
```

It may take a while for FortiGate-VM to be able to validate the VM license and update UTM signatures from FortiGuard.

The following shows the output from `get system status` when the FortiGate-VM has completed the validation and update:

```
Version: FortiGate-VM64 v7.0.4,build0292,220115 (interim)
Virus-DB: 89.08825(2022-01-18 21:26)
Extended DB: 89.08825(2022-01-18 21:26)
Extreme DB: 1.00000(2018-04-09 18:07)
AV AI/ML Model: 2.04168(2022-01-18 18:45)
IPS-DB: 6.00741(2015-12-01 02:30)
IPS-ETDB: 19.00243(2022-01-18 01:30)
APP-DB: 19.00243(2022-01-18 01:30)
INDUSTRIAL-DB: 19.00243(2022-01-18 01:30)
IPS Malicious URL Database: 3.00246(2022-01-18 20:50)
Serial-Number: FGVMMLTM111111
License Status: Valid
License Expiration Date: 2022-10-31
VM Resources: 1 CPU/2 allowed, 2007 MB RAM
Log hard disk: Available
Hostname: FGT-DEMO
Private Encryption: Disable
Operation Mode: NAT
Current virtual domain: root
Max number of virtual domains: 1
Virtual domains status: 1 in NAT mode, 0 in TP mode
Virtual domain configuration: disable
FIPS-CC mode: disable
Current HA mode: standalone
Branch point: 0292
Release Version Information: interim
FortiOS x86-64: Yes
System time: Tue Jan 18 21:46:36 2022
Last reboot reason: warm reboot
```

Managing VM Entitlements

You can stop and regenerate a license token if it is stolen or compromised. After the token is regenerated, it must be re-injected into your VM to revoke the old token. You can also export a list of tokens to parse them in scripts.

Modifying VM configurations

We recommend rebooting the VM after you change the configuration. To verify the configuration is in effect, run the following CLI command:

```
get system status
```

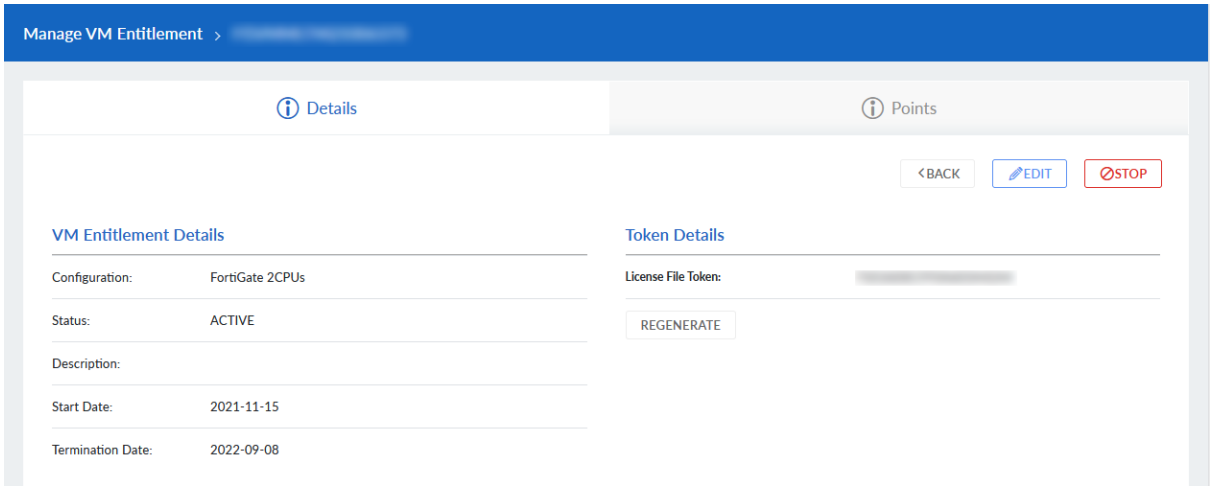
- A reboot is required if you are lowering the vCPU size.
- A reboot is recommended when adding more vCPU.
  If you do not want to reboot the VM, run the following CLI command:
  ```
  exec cpu add X
  ```
  Where `X` is the number of vCPU to be hot-added on top of the existing number.

  Example:

  A reboot is not required if the FortiGate-VM currently consumes 4 vCPUs out of the entitled 16 vCPUs which can be seen as `VM Resources: 4 CPU/16 Allowed` in the `get system status` output, and you run `exec cpu add 12` to consume 12 more vCPUs.

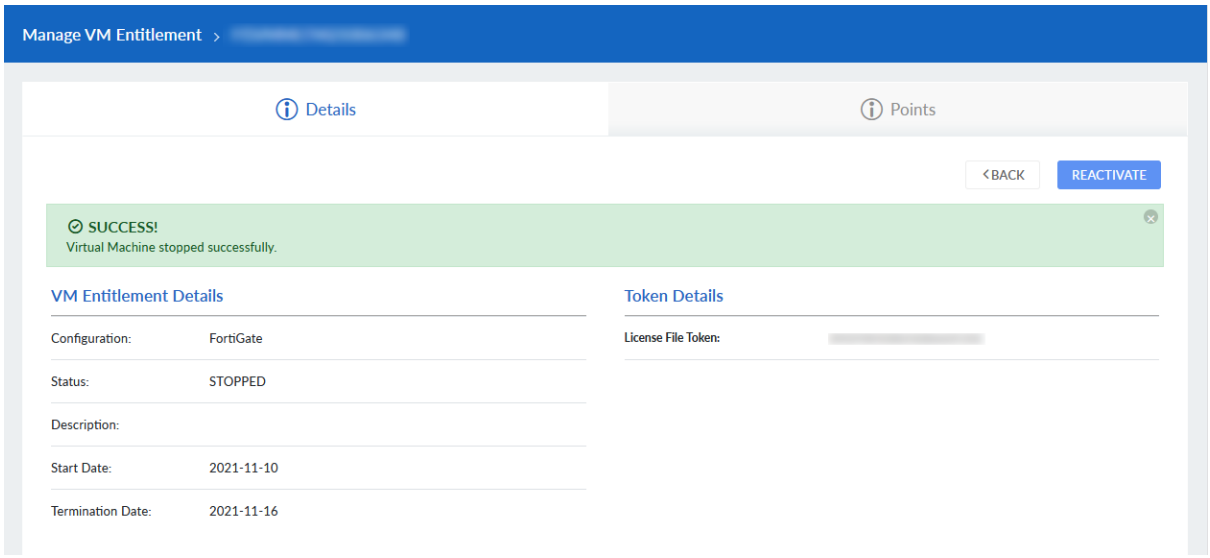
To stop a VM Entitlement:

1. Go to *VM Entitlements*, and click the serial number you want to stop.
2. Click *Stop*. The *Stop VM Entitlement* dialog opens.



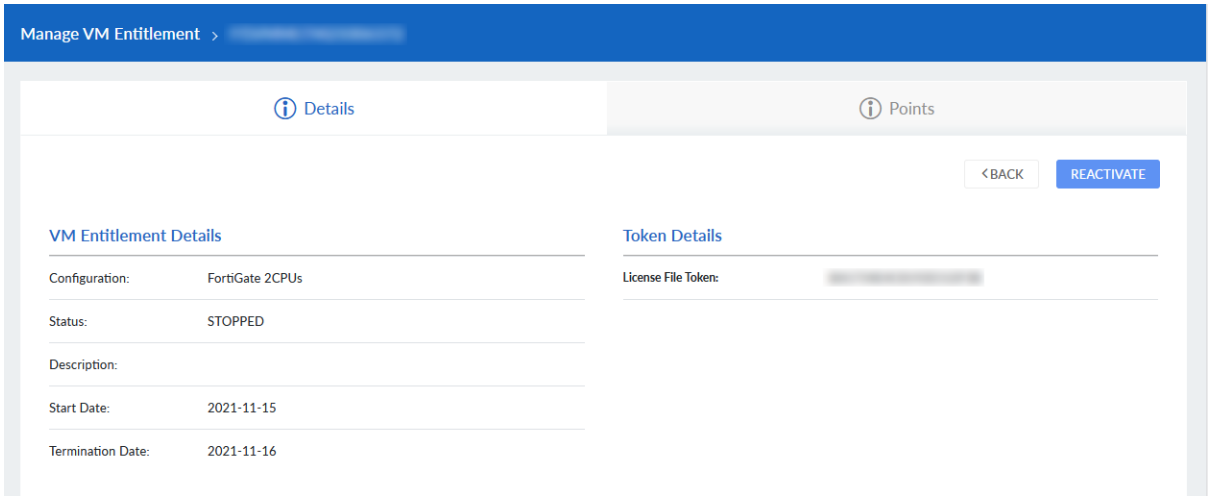
3. Click *Confirm*. The VM status changes to *STOPPED*. Point consumption will stop from the next day even while your

managed VM may be still running.

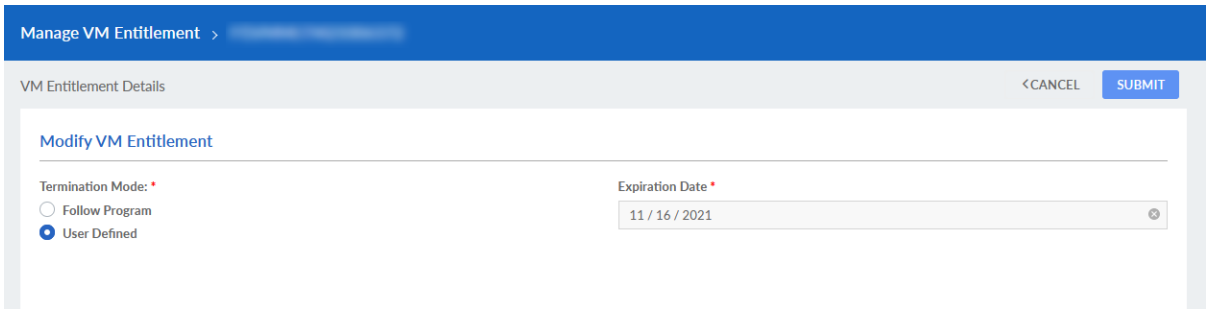


To reactivate a VM Entitlement:

1. Go to *VM Entitlements* and click a serial number with a status of *STOPPED*.
2. Click *Reactivate*. The *Virtual Machine Details* page opens.



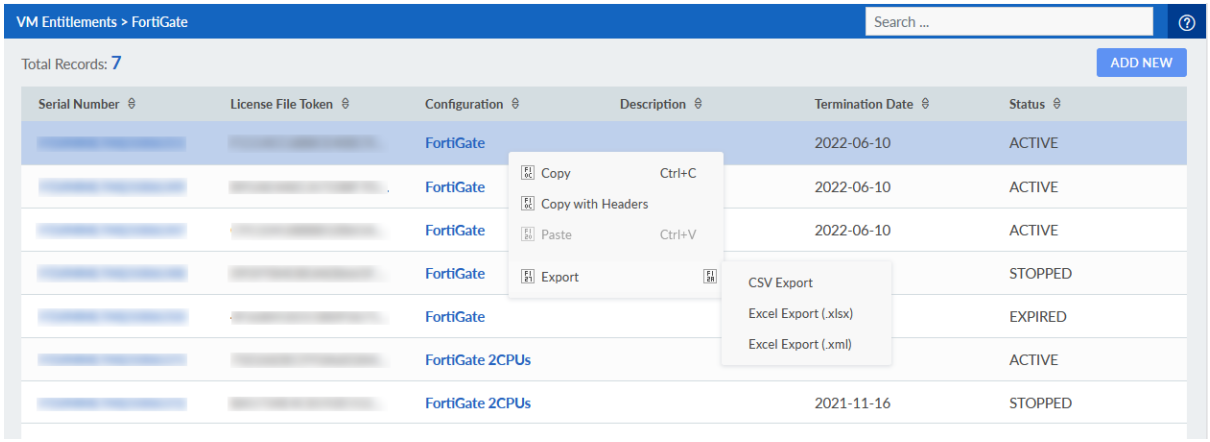
3. (Optional) Modify the VM Entitlement details.



4. Click *Submit*. The serial number *Status* changes to *Active*. Point consumption will restart from the day you make this change even though you may still have not rerun your managed VM.

To export a list of serial numbers and tokens:

1. Go to *VM Entitlements*.
2. Right-click the table, and click *Export*.
3. Select *CSV Export*, *Excel Export (xlsx)*, or *Excel Export (.xml)*. The file is saved to your computer.



Creating a license pool group

A licence pool group allows you to request the next availble serial number in the pool. When a VM is decomissioned, the license is returned to the pool.

Requirements:

- Access to Asset Management
- Fortinet Developer Network membership

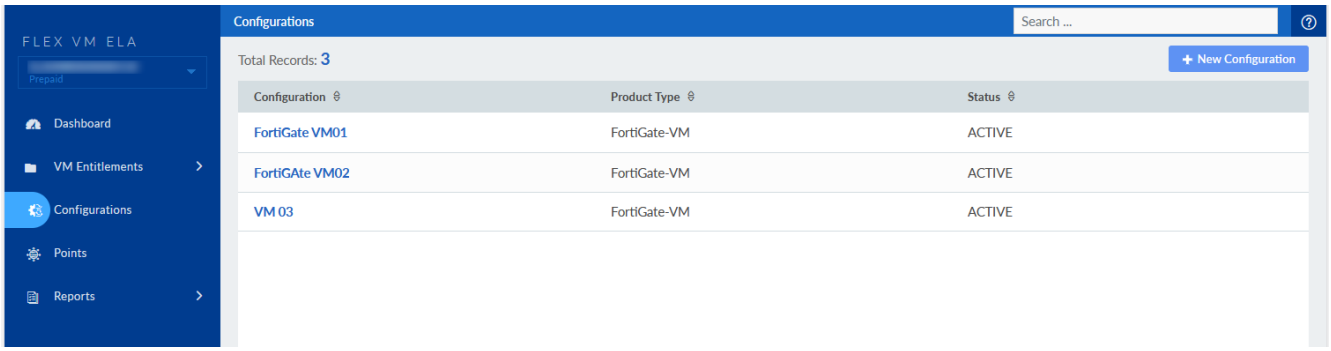
To create a license pool group:

1. In Asset Management, create an Asset Folder for the asset pool group. See, Creating custom views.
2. Create a VM Entitlement and select a folder for the group. See, Creating entitlements on page 18.
3. Use the Virtual Machines API to `create` and add a `folderpath` to the asset folder in *My Assets*.
4. Create a new endpoint to return the group information.
5. Create a new endpoint to return the next available token.

Configurations

The *Configurations* tab is used to create and manage virtual machine configurations. You can set the number of vCPUs in a virtual machine, and select a service package. After the configuration is created, it can be assigned to a VM entitlement. See Creating VM configurations on page 29.

When you disable a VM configuration, the VMs that are using the configuration are no longer entitled to consume points. Use caution when disabling configurations or stopping VM entitlements, as this will impact the performance of the virtual machines. Disabled VM configurations can be re-enabled.

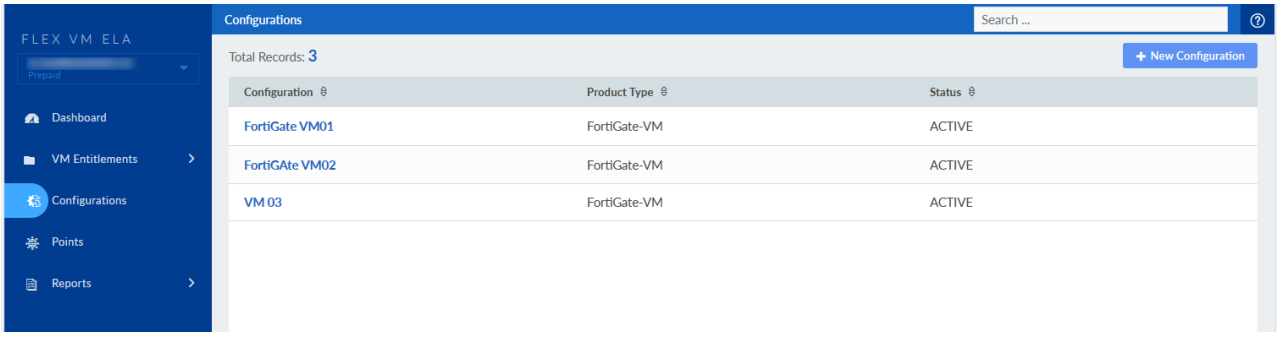


Creating VM configurations

Specify the number of vCPUs and service package to use in a VM entitlement.

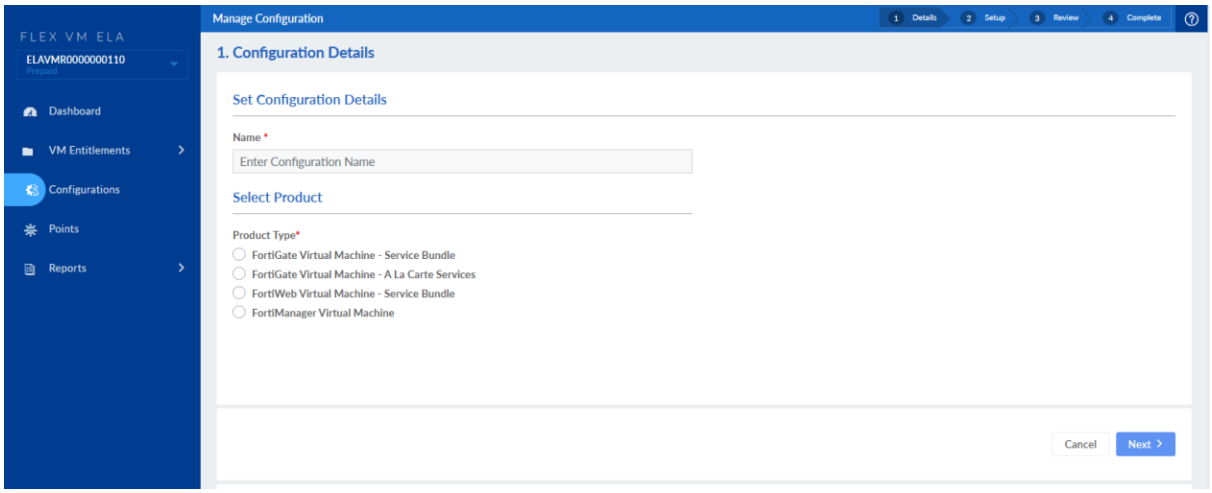
To create a VM configuration:

1. Go to *Configurations*, and click *New Configuration*.

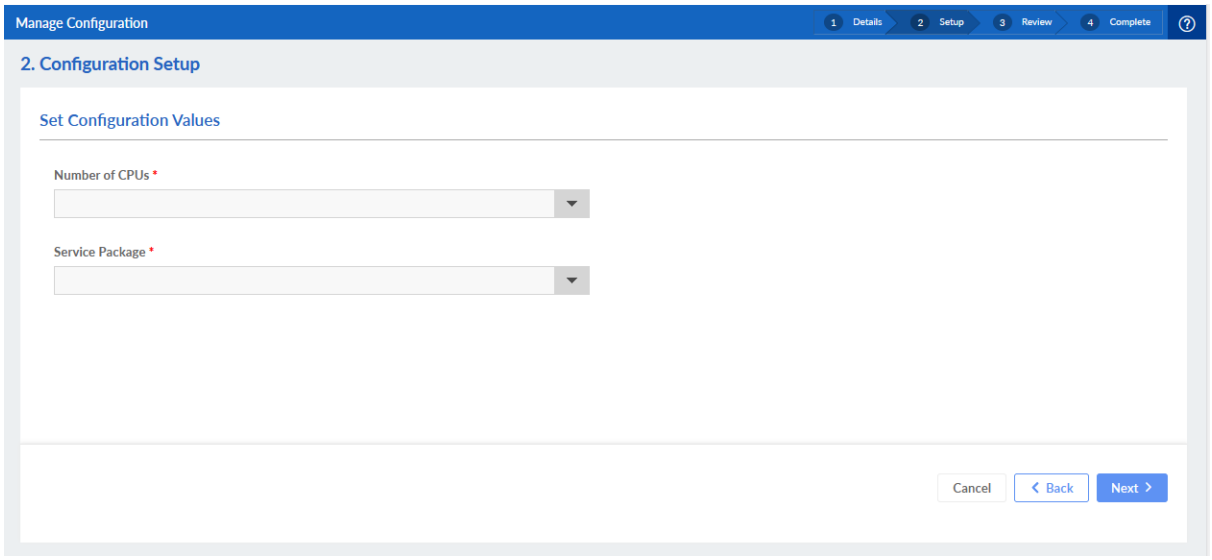


2. In the *Configuration Details* page, set the configuration details and click *Next*.

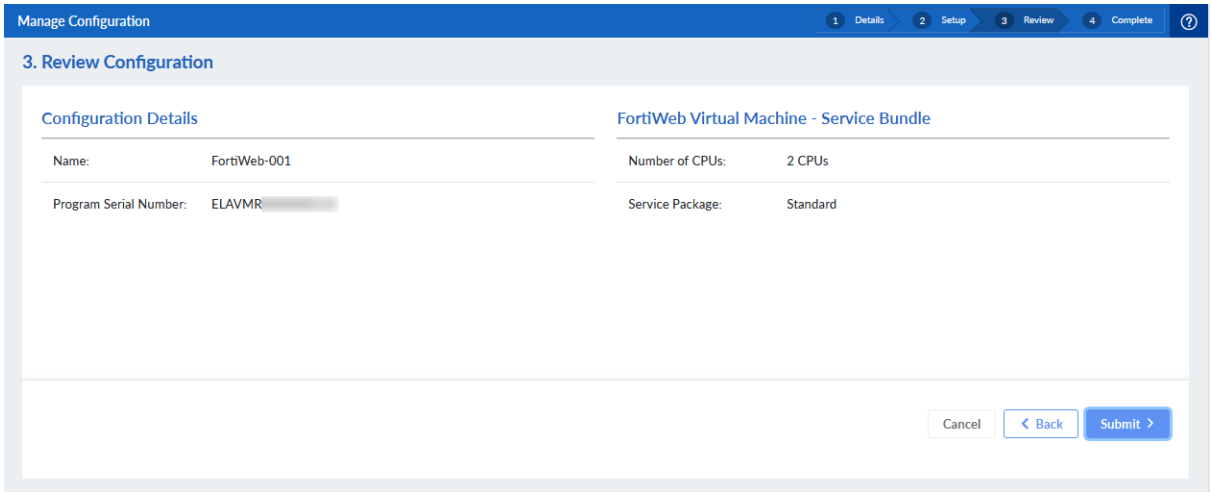
Name	Enter a configuration name.
Product Type	Select one of the following options: • *FortiGate Virtual Machine - Service Bundle* • *FortiGate Virtual Machine - A La Carte Services* • *FortiWeb Virtual Machine - Service Bundle* • *FortiManager Virtual Machine* For information, see Service offerings on page 12.



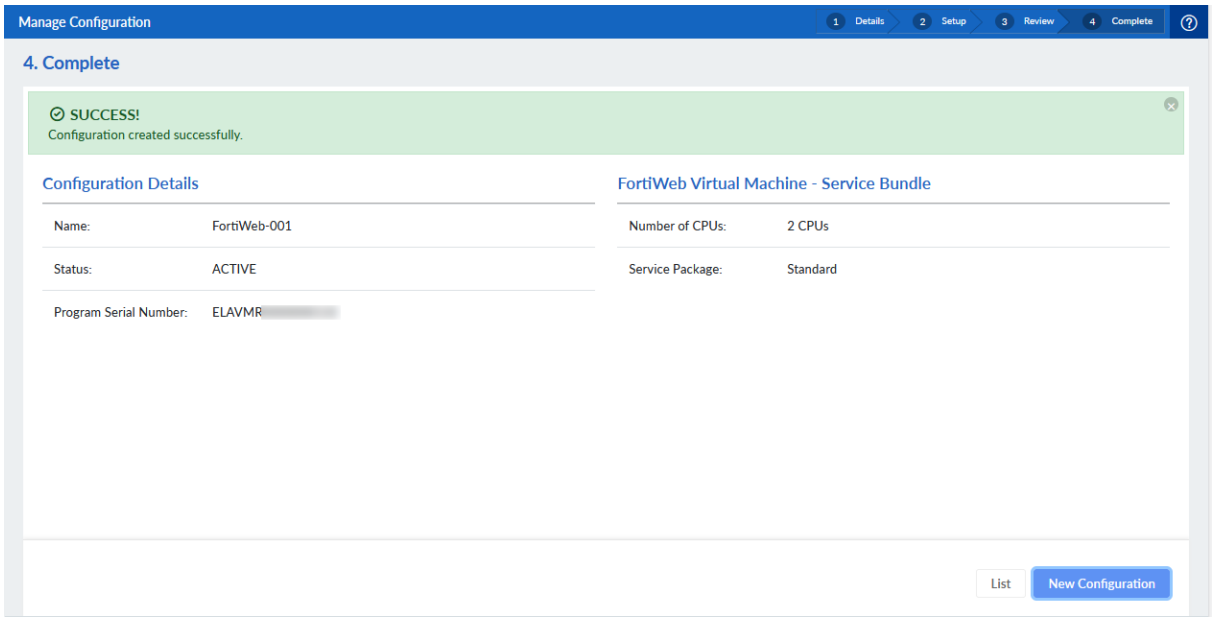
3. In the *Configuration Setup* page, set the service details and click *Next*. For information, seeConfiguration details on page 31



4. Review the configuration details, and click *Submit*.



The configuration is created. Points start to be consumed on the same day even though your managed VM may still not be created or running.



5. Click *List* to view the configuration in the *Configurations* tab.

Configuration details

FortiGate Virtual Machine - Service Bundle

Number of CPUs	Select the number of CPUs from the dropdown.
Service Package	Select one of the following options: • *FortiCare* • *UTM* • *Enterprise* • *ATP*
Virtual Domains	Enter the number of virtual domains.

FortiGate Virtual Machine - A La Carte Services

Number of CPUs	Enter the number of CPUs.
FortiGuard Services	Select one of the following options: • *Intrusion Prevention* • *Advanced Malware* • *Web & Video Filtering* • *IOT Detection* • *Security Rating*

	• *Industrial Security*
Cloud Services	Select one of the following options: • *FortiGate Cloud* • *SD-WAN Cloud* • *FortiManager Cloud* • *FortiAnalyzer Cloud with SOCaaS*
Support Services	Select one of the following options: • *FortiCare Premium* • *FortiCare Elite*
Virtual Domains	Enter the number of Virtual Domains.

FortiWeb Virtual Machine - Service Bundle

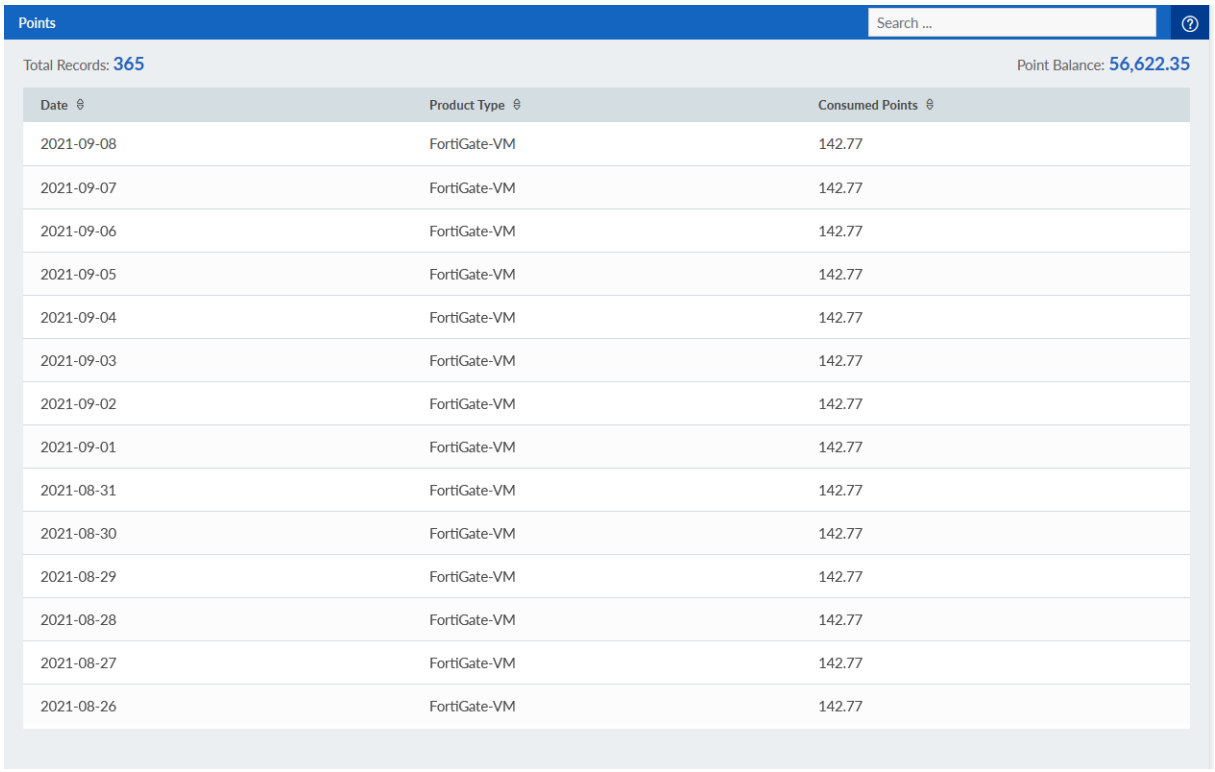
Number of CPUs	Select the number of CPUs from the dropdown.
Service Package	Select *Standard* or *Advanced*.

FortiManager Virtual Machine

Number of managed devices	Enter the number of managed devices
Number of ADOMs	Enter the number of ADOMs.

Points

The *Points* tab shows the *Point Balance* and displays a record of points used on a daily basis. Right-click inside the table to export the points balance as a CSV, XLSX, or XML file. Click the column header to sort the list in ascending or descending order.

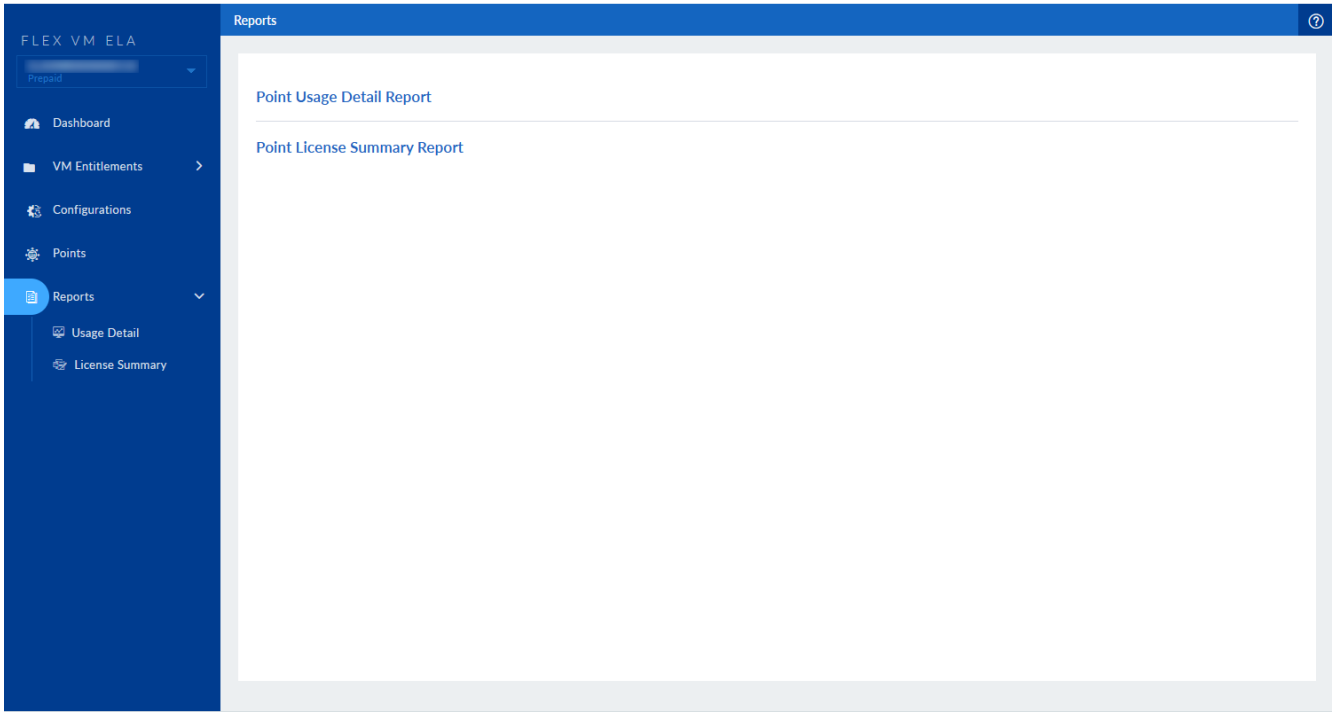


To export the points report:

1. Right-click an entry in the report and select *Export*.
2. Select one of the following options:
   - *CSV Export*
   - *Excel Export (.xlsx)*
   - *Excel Export (.xml)*

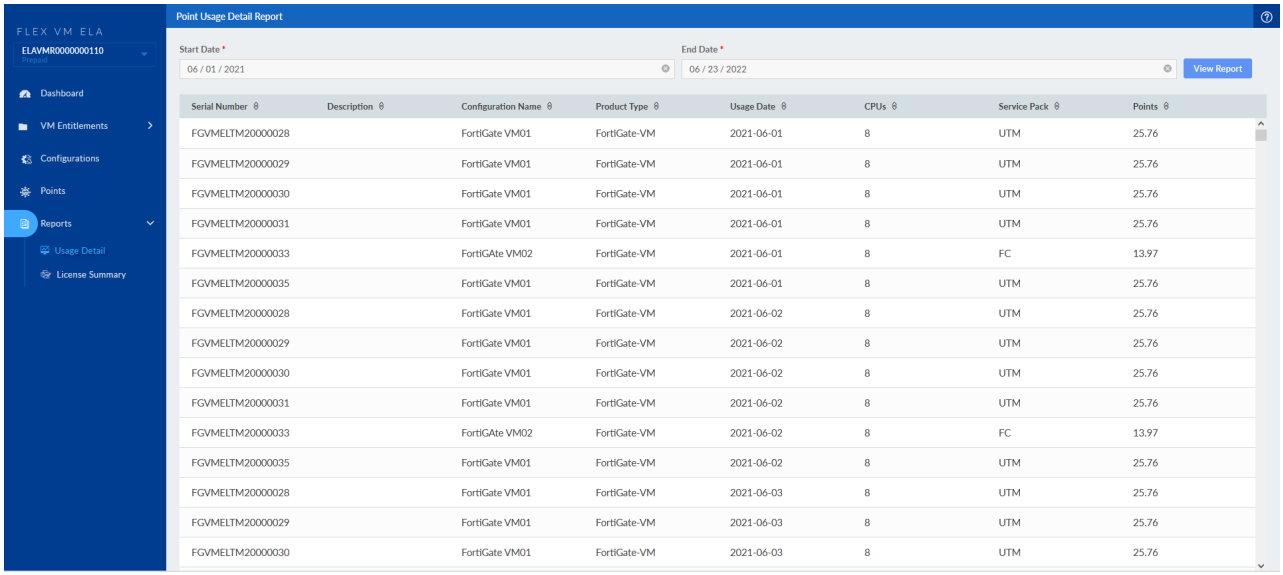
Reports

The *Reports* tab contains the *Point Usage Detail* and *Point License Summary Report*. You can run a report for a specified time period, and then export it as a CSV, XLXS, or XML file.



To run the Point Usage Detail Report:

1. Go to *Reports*, and click *Usage Detail* .
2. Select the *Start Date* and *End Date*.
3. Click *View Report*. The report results are displayed.



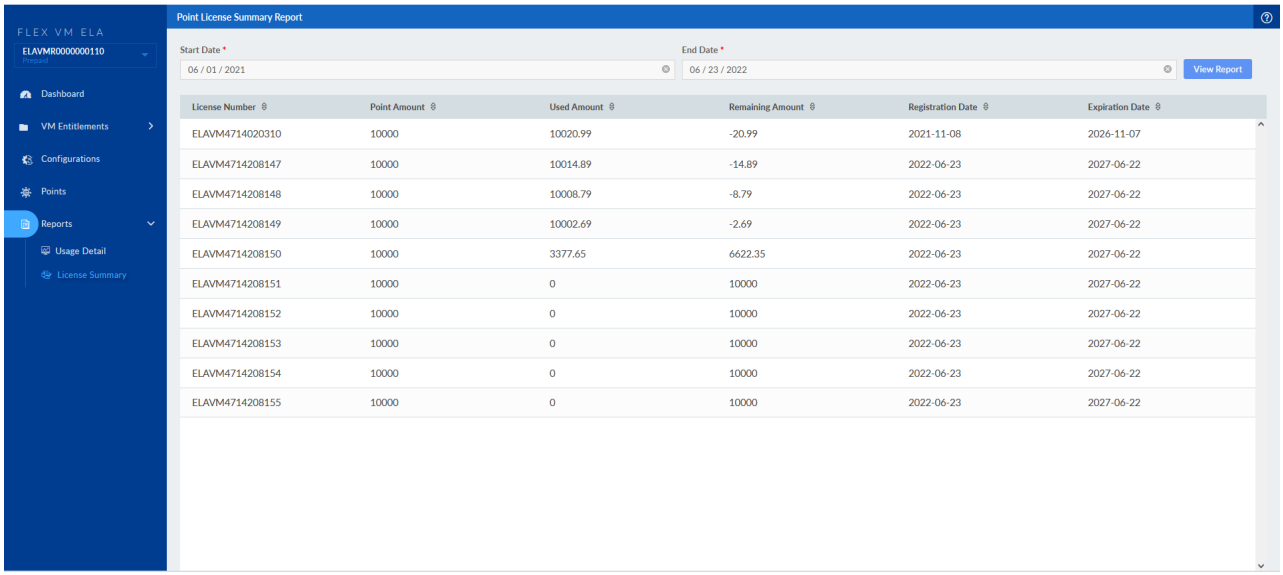
Serial Number	Description	Configuration Name	Product Type	Usage Date	CPUs	Service Pack	Points
FGVMELTM20000028		FortiGate VM01	FortiGate-VM	2021-06-01	8	UTM	25.76
FGVMELTM20000029		FortiGate VM01	FortiGate-VM	2021-06-01	8	UTM	25.76
FGVMELTM20000030		FortiGate VM01	FortiGate-VM	2021-06-01	8	UTM	25.76
FGVMELTM20000031		FortiGate VM01	FortiGate-VM	2021-06-01	8	UTM	25.76
FGVMELTM20000033		FortiGAte VM02	FortiGate-VM	2021-06-01	8	FC	13.97
FGVMELTM20000035		FortiGate VM01	FortiGate-VM	2021-06-01	8	UTM	25.76
FGVMELTM20000028		FortiGate VM01	FortiGate-VM	2021-06-02	8	UTM	25.76
FGVMELTM20000029		FortiGate VM01	FortiGate-VM	2021-06-02	8	UTM	25.76
FGVMELTM20000030		FortiGate VM01	FortiGate-VM	2021-06-02	8	UTM	25.76
FGVMELTM20000031		FortiGate VM01	FortiGate-VM	2021-06-02	8	UTM	25.76
FGVMELTM20000033		FortiGAte VM02	FortiGate-VM	2021-06-02	8	FC	13.97
FGVMELTM20000035		FortiGate VM01	FortiGate-VM	2021-06-02	8	UTM	25.76
FGVMELTM20000028		FortiGate VM01	FortiGate-VM	2021-06-03	8	UTM	25.76
FGVMELTM20000029		FortiGate VM01	FortiGate-VM	2021-06-03	8	UTM	25.76
FGVMELTM20000030		FortiGate VM01	FortiGate-VM	2021-06-03	8	UTM	25.76

4. (Optional) Right-click the report and click *Export* to download the report as a CSV, XLSX, or XML file.

To run the License Summary Report:

1. Go *Reports*, and click *License Summary* .
2. Select the report *Start Date* and *End Date*.

3. Click *View Report*. The Flex-VM point licenses that were registered between the start and end dates are displayed. If there are no point licenses registered during the specified time period, the report will be empty.



4. (Optional) Right-click the report, and click *Export* to download the report as a CSV, XLSX, or XML file.

Deployment examples and scripts

The following section provides an example of a manual deployment for KVM as well as links to sample scripts to automate deployments for KVM.

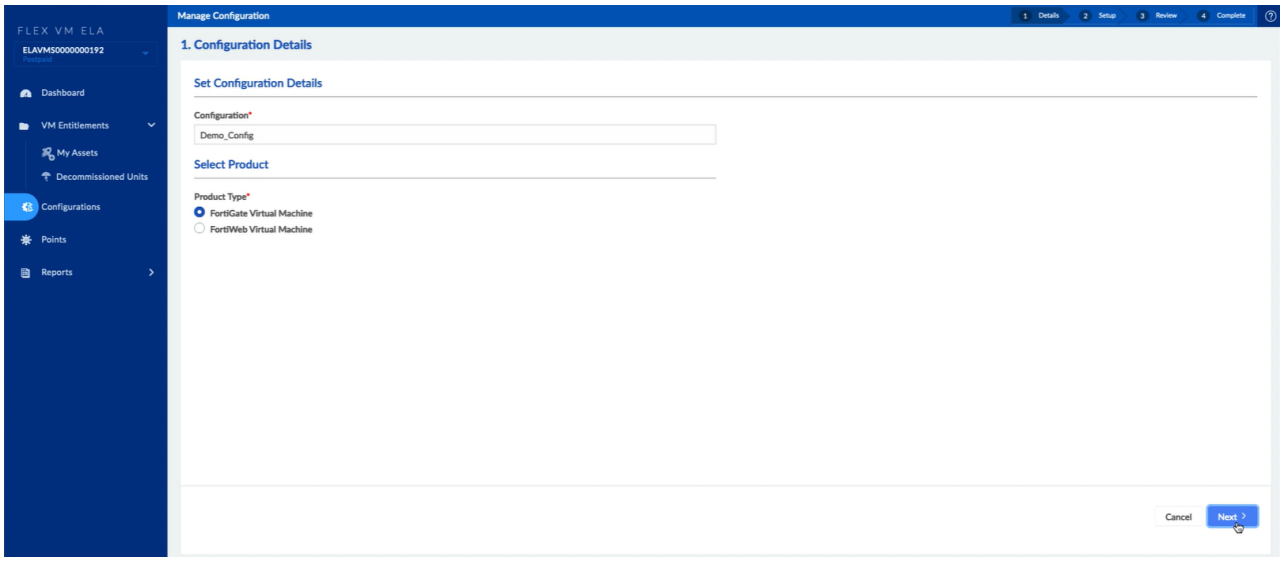
- Manual deployment on KVM on page 36
- Automatic deployments on page 43

Manual deployment on KVM

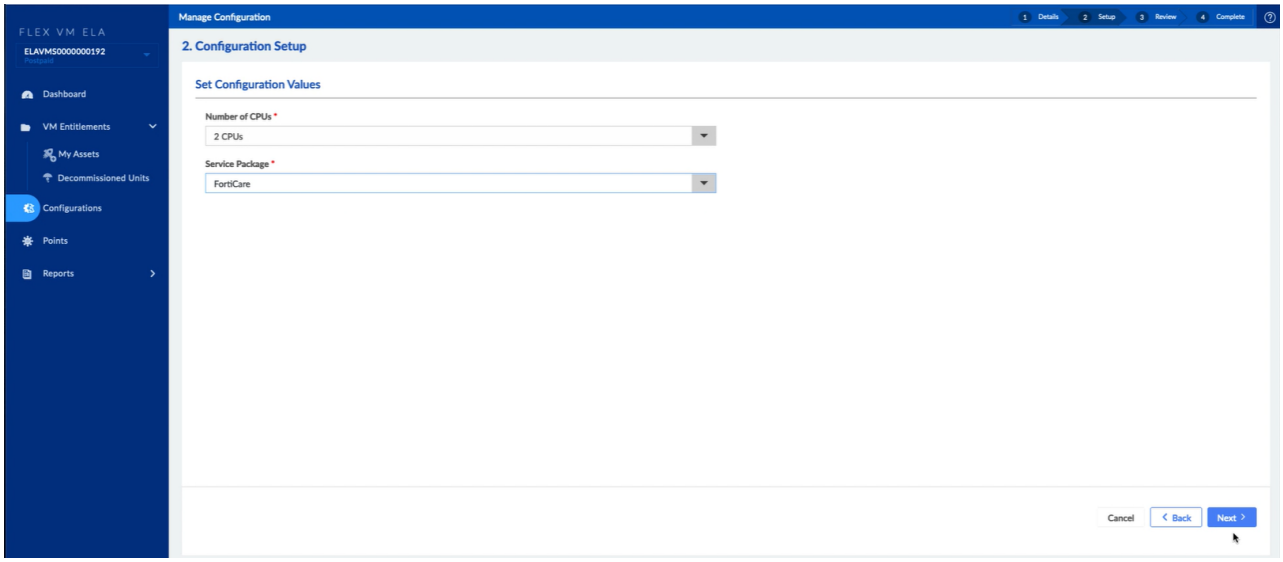
Activate a FortiGate VM using a Flex-VM license. Flex-VM allows for adhoc license via its portal.

Step 1. Create the Flex-VM configuration.

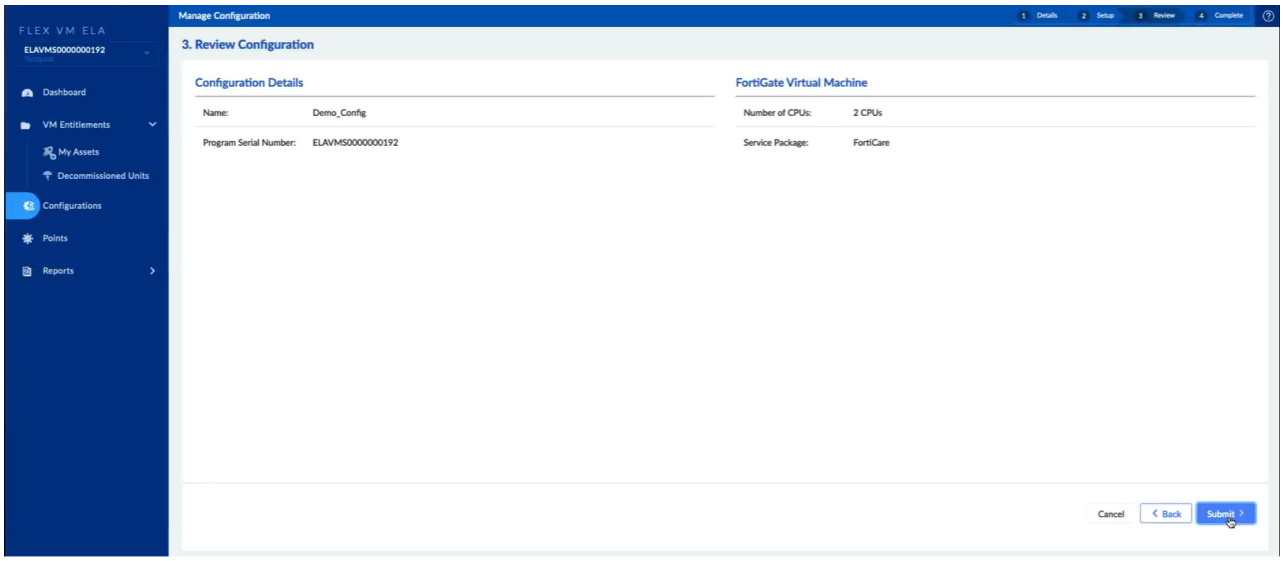
1. Open the Flex-VM portal.
2. Go to *Configurations* and click *New configuration*.
3. In the *Configuration Details* page, enter a name for the configuration and the product type and click *Next*.



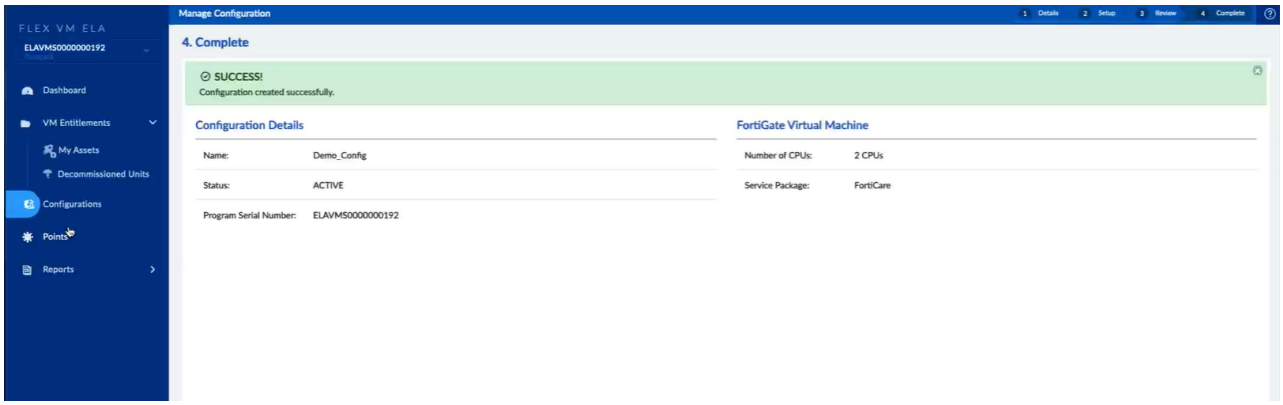
4. Set the configuration values and click *Next*.



5. On the *Review configuration* page, click *Submit*.

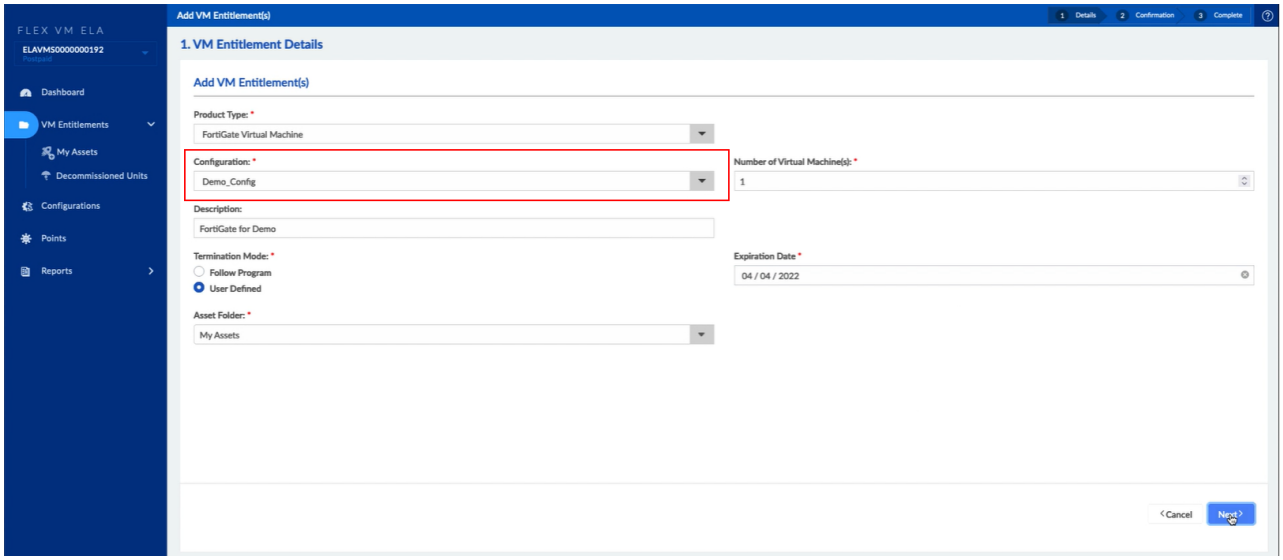


The configuration is complete.

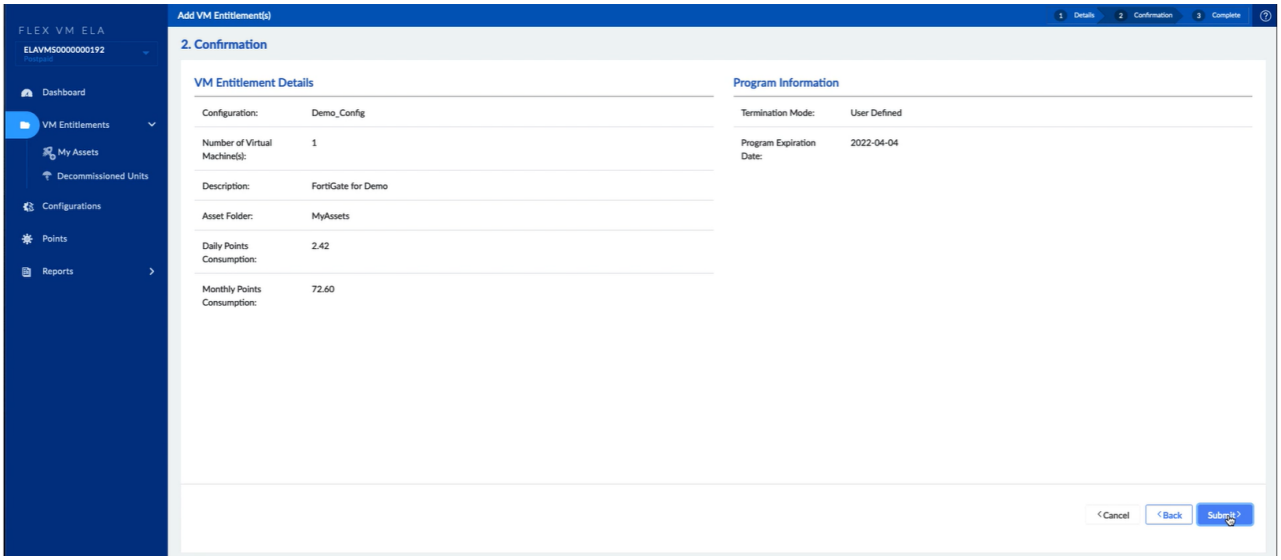


Step 2. Create the license entitlement

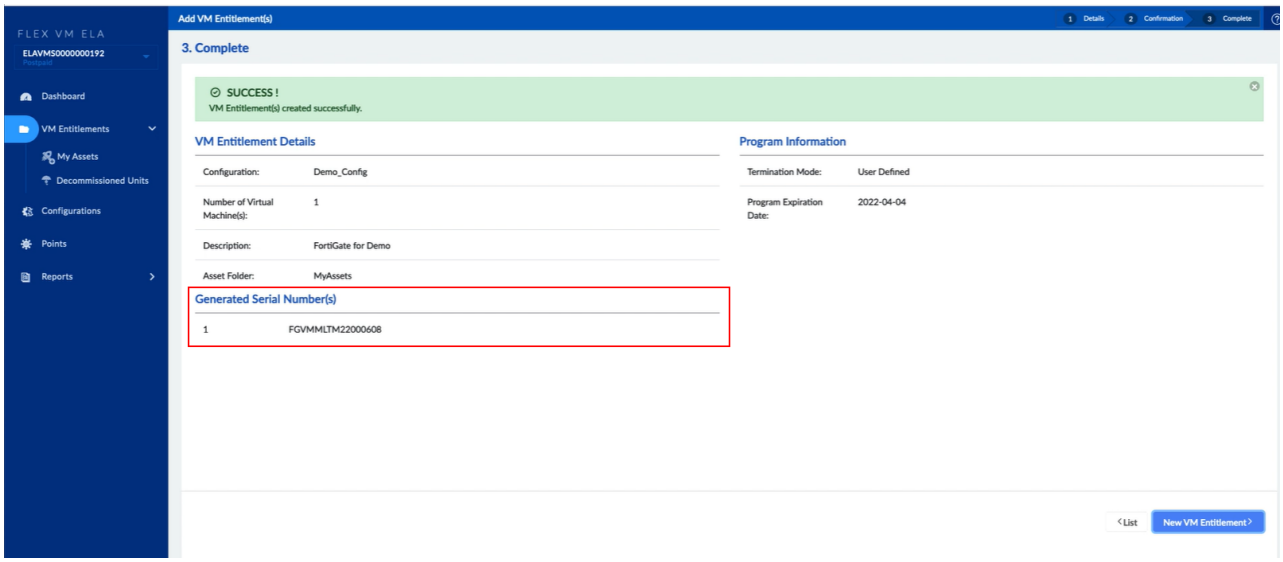
1. Go to *VM Entitlements* and click *New VM Entitlement*.
2. In the *VM Entitlement Details* page, from the *Configuration* list, select the configuration you created in Step 1 and click *Next*.



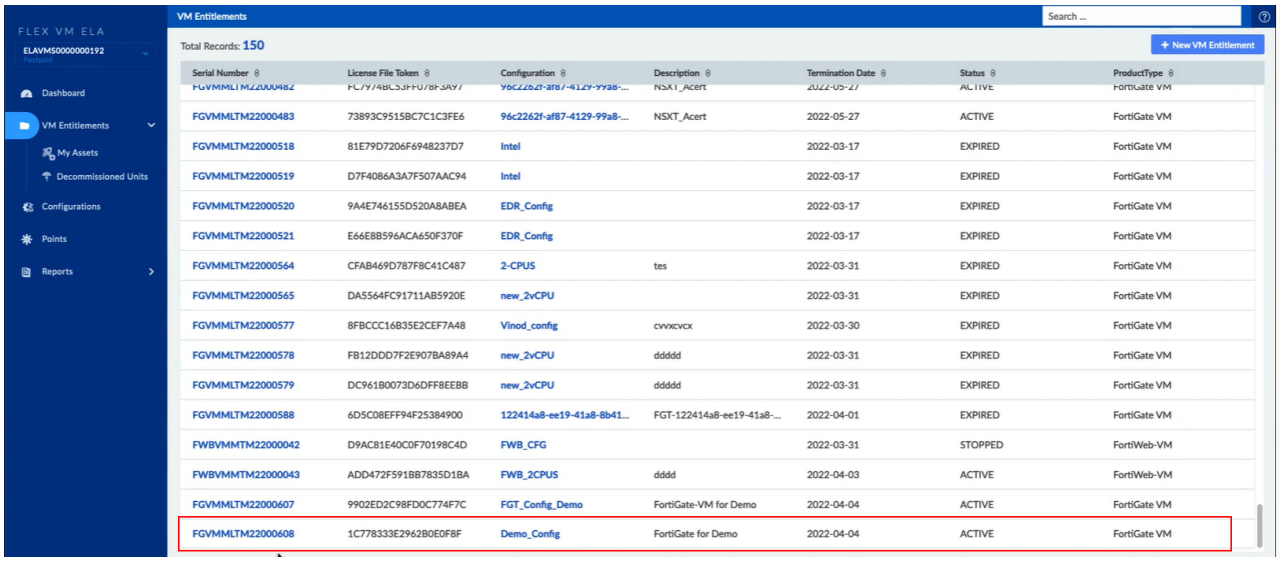
3. On the *Confirmation* page, click *Submit*.



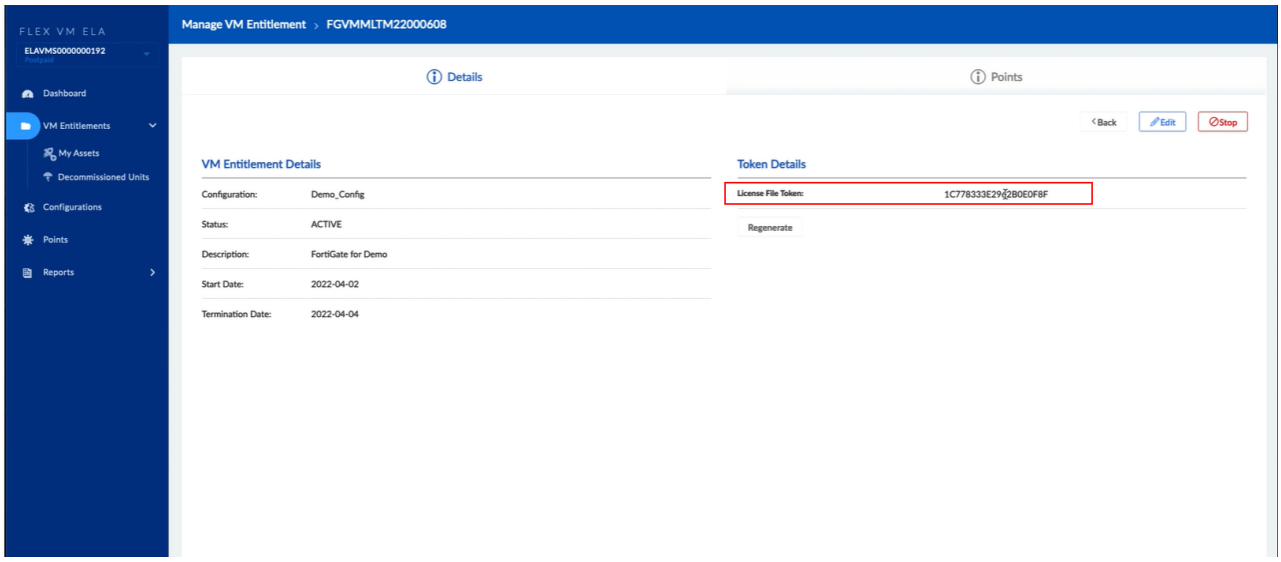
The license entitlement is created. The serial number is displayed under *Generated Serial Number(s)*.



4. Go to *VM Entitlements* and search for the Serial Number you generated. Click the Serial Number to view the Product details.

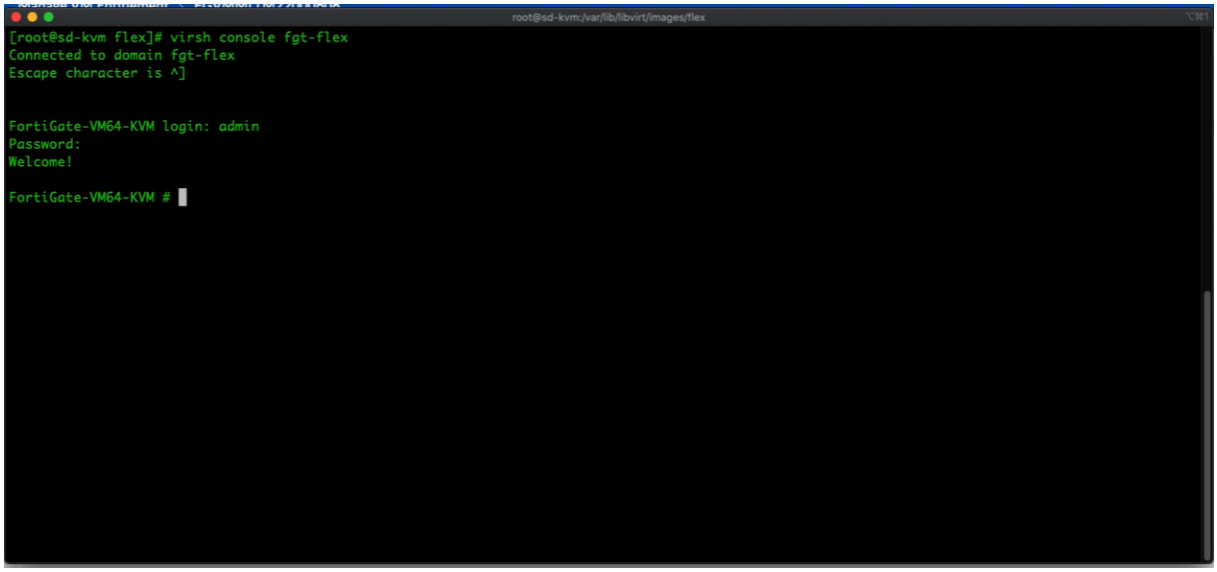


5. In the *Details* page, copy the *License File Token*. You will need this token to activate the FortiGate VM instance.

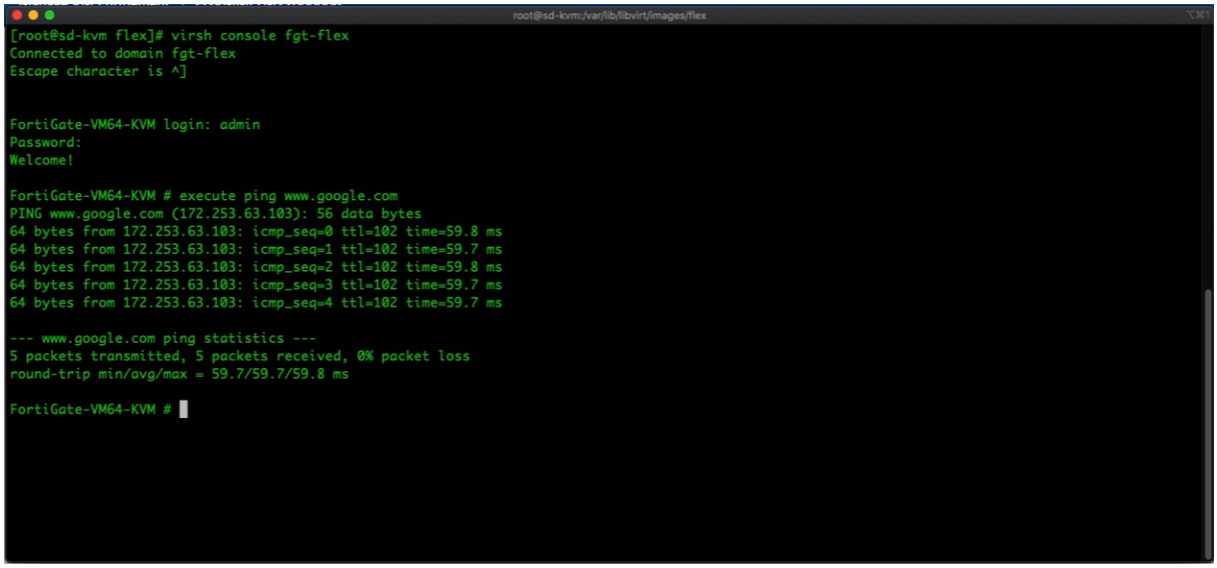


Step 3: Configure the VM

1. Open the KVM host which has already deployed the FortiGate VM and connect to it.

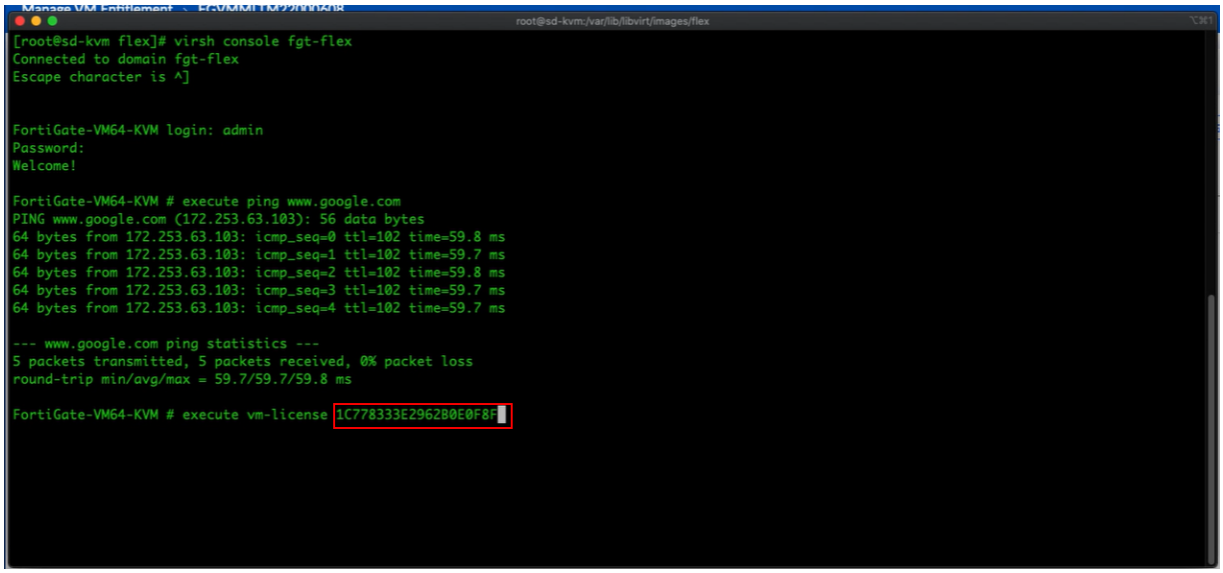


2. Confirm the VM is connected to the Internet.

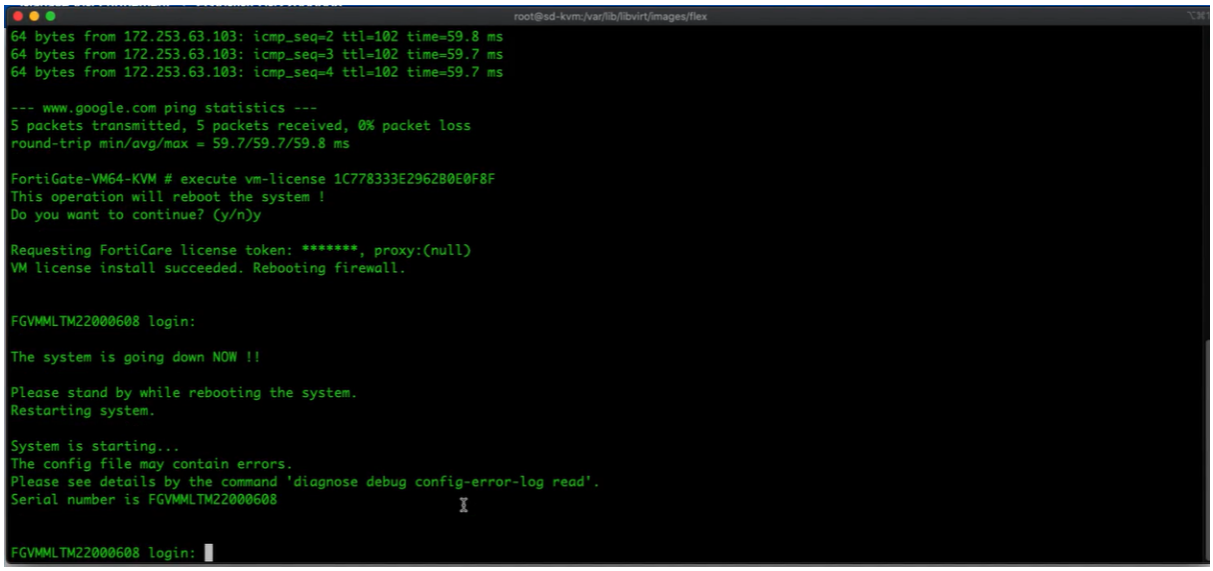


3. Activate the license with the following command:

```
execute vm-license <license_token>
```

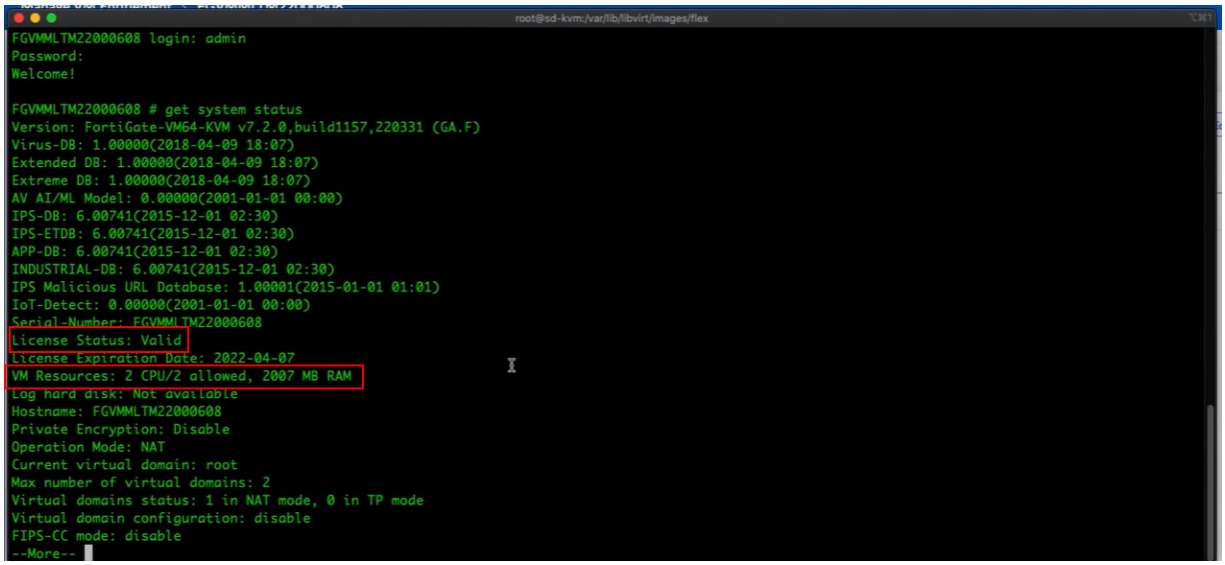


4. When prompted enter `y` to allow the VM to reboot to activate the new license. The VM reboots and the license is validated against the FortiGaurd servers.



5. To confirm the license and configuration, run the following command:

```
get system status
```



Automatic deployments

Customers with access to Orchestrator tools can the use Flex-VM API to automate the FortiGate deployment and activation.

Automatic deployment on KVM

Automate the FortiGate deployment and activation on HyperVisor using a python script and the KVM cloud-init capabilities.

A Python script with examples of the basic calls for the Flex-VM API is available in the Fortinet Developer Network (FNDN). To view the script, log in to FNDN and search for the following article: *Sample Python Script for Flex-VM API*.

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