

A decorative pattern of concentric hexagons in a light blue color, scattered across the top dark blue header area.

# FortiNAC - Hyper-V Virtual Machine Deployment Guide

Version 7.2. F

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**FEEDBACK**

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November 7, 2022

FortiNAC 7.2. F Hyper-V Virtual Machine Deployment Guide

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# Overview

This document provides the steps necessary for installing FortiNAC appliance(s). It is intended to be used in conjunction with the [FortiNAC Deployment Guide](#) in the Fortinet Document Library.

## Virtual Appliance (VM) Part Numbers

Part Number	Description
FNC-MX-VM	Control Manager
FNC-CAX-VM	Control and Application Server (CA)

## Requirements

- Hyper-V Server 2012, Windows 2012, 2016 or 2019 Server with Hyper-V.  
**Note:** Remote management must be enabled in Hyper-V Server 2012 to use Hyper-V Manager
- Hyper-V Server Hardware
  - The requirements for the Hyper-V server used to host your FortiNAC Virtual Machine will vary greatly depending on many different factors. Factors include:
    - The number of other Virtual Machines that are running on the same server
    - The load those VMs place on the server
    - The number of devices, hosts and users on your network that are to be managed by FortiNAC
- Virtual appliance settings will vary depending on the underlying hardware being used for the hosting server. The ideal result is to yield a virtual environment where the average load does not exceed the Total GHz Rating of CPU Resources Allocated.
  - Determine the appropriate parameters for the virtual environment. It is recommended they be comparable to those of hardware-based FortiNAC appliances. Refer to the following tables in the [FortiNAC Data Sheet](#):
    - Hardware Server Sizing - Hardware server part number most appropriate for the target environment
    - Specifications - Details regarding the applicable part number
    - VM Server Resource Sizing - Suggested values for memory and CPU to allocate for the virtual appliance
- **Virtual Machine Generation:** Generation 1 (for VHD) with IDE must be used. Generation 2 (for VHDX) with SCSI and UEFI is not supported at this time.
- VLAN Tagging and Trunking are supported with CentOS-7 and Hyper-V on Windows Server version 2016, 2012 R2, 2012, or 2008 R2. When configuring adapters for Layer 2 VLAN Tagging/Trunking, see VLAN Tagging in Appendix.

## Considerations

In versions 7.x and greater, FortiNAC doesn't have any ports open by default. In previous versions, this was not the case. As features are configured, ports must also be added to the allowaccess list in order for the feature to work.

## Operating System and Open Ports

FortiNAC-F series appliances use the FortiNAC-OS operating system. Limited TCP/UDP ports are open by default for security purposes. This was not the case for FortiNAC appliances using the CentOS operating system.

Virtual appliances do not have any TCP/UDP ports listening by default. Opening additional ports requires the use of the "set allowaccess" command in the appliance CLI.

The configuration steps provided include opening ports for the applicable features and functions covered in this guide. As more features are configured, additional access must be enabled using the "set allowaccess" command via the appliance CLI. For details, see [Open Ports](#) in the FortiNAC Administration Guide.

The best practice is to keep the number of open ports to a minimum, and block all other ports. If there is a need to provide users access to network resources through a static port (e.g., from outside a firewall), the best option is to allow users to connect by VPN.

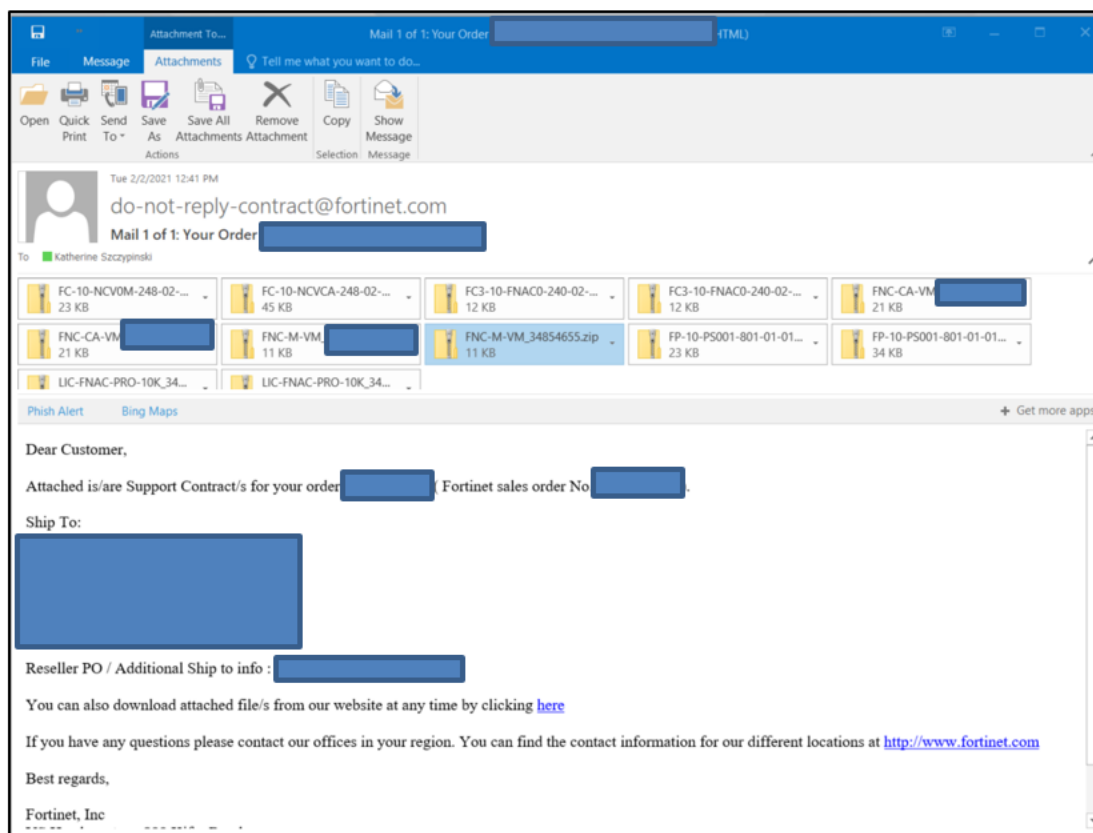
## Prerequisite: Product Registration

Products must be registered in order for the appropriate keys to be generated for the appliances. Without these keys, the appliances will not start.

### Requirements Checklist

- Registration codes: Email from [do-not-reply-contract@fortinet.com](mailto:do-not-reply-contract@fortinet.com) with attached .zip files containing registration codes for all products

Example



File name examples:

**FNC-MX-VM-xxx.zip = Manager next-gen VM Server**

**FC-10-FNVXM-xxx.zip = Support & Maintenance for Manager next-gen VM Server**

**FNC-CAX-VM-xxx.zip = Control & Application next-gen VM Server**

**FC-10-FNVXA-xxx.zip = Support & Maintenance for Control & Application next-gen VM Server**

**LIC-FNAC-BASE-xxx.zip = Perpetual License, Base level**

**FC1-10-FNAC0-xxx.zip = Support & Maintenance for Perpetual Base Licenses**

**FCx-10-FNAC1-215-xx-xx.zip = Support & Maintenance for Subscription Base Licenses**

**LIC-FNAC-PLUS-xxx.zip = Perpetual License, Plus level**

**FC2-10-FNAC0-xxx.zip = Support & Maintenance for Perpetual Plus Licenses**

**FCx-10-FNAC1-213-xx-xx.zip = Support & Maintenance for Subscription Plus Licenses**

**LIC-FNAC-PRO-xxx.zip = Perpetual License, Pro level**

**FC3-10-FNAC0-xxx.zip = Support & Maintenance for Perpetual Pro Licenses**

**FCx-10-FNAC1-209-xx-xx.zip = Support & Maintenance for Subscription Pro Licenses**

**FP-10-PS-801-01-01.zip = Professional Service Days\***

**FP-10-PS-830-01-01.zip = Professional Service Days\***

\*Registered on the day of engagement only. See [Fortinet Professional Services Contracts](#) in the Appendix for more information.

Within the zip files are one or more PDF's which contain the Registration Code.

**Tip:** If multiple appliances were purchased, save these files in separate folders for each appliance.

Example A – CAVM

Example B – Support for CAVM

**FortiNAC Control and Application VM Server Certificate**

Licensor : Fortinet, Inc.  
US Headquarters, 899 Kifer Road,  
Sunnyvale, CA, USA

Licensee :  
Registration Code : RWC4W-XXXXXX  
Sales Order : FNC-CA-VM

**Grant Of License**

Fortinet ("Licensor") hereby grants to the "Licensee", the non-exclusive, revocable, limited right to use one instance of FortiNAC Control and Application VM Server (the "Product") on a supported virtualization platform subject to and in accordance with the terms contained in the End User License Agreement (the "EULA") which is hereby expressly incorporated herein by reference. Use of the license on more than one instance of FortiNAC Control and Application VM Server shall give Licensor the immediate right to terminate this license with no refund to Licensee whatsoever, in addition to all other remedies to which Licensor is entitled. Licensee is strongly encouraged to read the EULA before using the Product or any associated software. For additional copies of the EULA, please contact Licensor at <http://www.fortinet.com/doc/legal/EULA.pdf>.

**Registration**

Please refer to the following steps:

- Log into your registration account on <https://support.fortinet.com/> website
- Go to "Registration" and enter the provided registration code: RWC4W-XXXXXX
- Follow the registration process
- Serial number will be generated and displayed on "Registration Completion page"
- Go to "Manage/View Products" and click on the serial number in order to download the license file

**Image Download**

Please log into <https://support.fortinet.com/> to download the Virtual Appliance image.

- Mouse over "Download" (do not click "Download")
- Go to "Firmware Images"
- Follow links to download proper image version

Should you have any questions, or require further assistance, please contact your Regional Customer Services and Support Team who will be happy to assist you.  
For Support Center contact information please visit [www.fortinet.com/support/contact\\_support.html](http://www.fortinet.com/support/contact_support.html).

Best Regards,  
Fortinet Customer Service and Support

**Service Entitlement Summary**

\*\*\*PLEASE REMEMBER TO REGISTER YOUR CONTRACT REGISTRATION CODE\*\*\*

Date :  
Purchase Order Number :  
Contract Registration Code : XXXXXXXX

**Support / Maintenance / Subscription Services Included**

Qty	Part Number	Description
1	FC-10-NCVCA	1 Year coverage for FortiNAC ControlApp VM Server include: Firmware & General Updates Enhanced Support 24x7 Telephone Support 24x7
2	FC-10-NCVCA	

- **Physical Appliances Only:** Serial number (FNxxxxxxxxxx). The serial number (S/N) is located on the label that shipped with the hardware. This label also contains the Product Name, Model/SKU, Fortinet P/N and HW ID.

## Register the “Managing” Server

1. Use the chart below to determine the “managing” server (appliance to which the Endpoint License Key will be installed). The remaining servers in multiple appliance deployments are installed with an Appliance (Base) License Key.

For more information on how licenses are distributed for each system configuration, see section [License Distribution](#) in the Appendix.

Deployment Configuration	Managing Server	Part Number
Standalone	CA Server	FNC-CAX-xx
Standalone with High Availability (HA)	Primary CA Server	FNC-CAX-xx
Multiple Independent Standalones	Each CA Server	FNC-CAX-xx
Multiple Independent with High Availability (HA)	Each Primary CA Server	FNC-CAX-xx

Deployment Configuration	Managing Server	Part Number
Distributed	Control Manager	FNC-MX-xx
Distributed with High Availability (HA)	Primary Control Manager	FNC-MX-xx

2. Log into the Customer Portal at <https://support.fortinet.com/>
3. Click **Register Product**.
4. In the **Registration Code** field, enter the appropriate value.
  - **Virtual appliance:** Registration code from the pdf found in file FNC-CAX-VM\_XXX (or if a Manager FNC-MX-VM.XXX).
  - **Physical appliance:** Serial number on label.
5. Click **Next**.

This page may appear if there was a POC or active evaluation license.

If you are converting your POC to production, select **Convert Evaluation**.

If you not converting your POC to production, select **Register**.

The screenshot shows a web interface for product registration. At the top, a blue header bar contains the text "Register Product > GQFI" and a progress indicator with steps "1" and "2 Convert Option". Below the header, the "Product Model" is listed as "FortiNAC Control/App VM Server". The main section is titled "Registration Confirmation" and contains the text: "You may register FortiNAC Control/App VM Server with license number [redacted] or use it to convert an existing evaluation license. We have found evaluation license(s) of the same product in your account. Please specify your choice before proceeding to the next step." Below this text is a light blue box with the heading "Attention:" and a warning: "Please be advised that purchased VM licenses are required to be of sufficient size to cover existing products under evaluation. If you attempt to attach an undersized license, your product may not function as expected. All registered support and subscription contracts associated with the converted evaluation VM license will be removed and replaced with associated purchased contracts." At the bottom of the main content area are two buttons: "Convert Evaluation" (black) and "Register" (blue). At the very bottom of the interface are "Cancel" and "Previous" links.

6. Under Product Description, enter managing server's hostname or "Managing Server" (this can be edited later).
7. Select **Fortinet Partner** (ignore all other fields).
8. Click **Next**.

Register Product > GQ /D

1 2 3 Registration Info 4 5 6 ?

Product Model: FortiNAC Control/App VM Server

Support Contract No.:

Product Description:

Mac Address:

UUID:

Fortinet Partner: \*

Please type something here for partner search

Asset Permissions:

My Assets

Cancel Previous Next

9. Read terms and conditions.
10. Click on radio button.
11. Click **Next**.

Register Product > GQ

VD

1234Agreement56?

Product Model: FortiNAC Control/App VM Server

### Fortinet Service Terms & Conditions

For FortiCare, FortiGuard and other Service Offerings

THESE TERMS AND CONDITIONS APPLY TO THE PROVISION OF SERVICES BY FORTINET AND EXCLUSIVELY GOVERN THE LEGAL RELATIONSHIP BETWEEN YOU (THE CUSTOMER) AND FORTINET. IT SETS FORTH THE LEGALLY BINDING RIGHTS AND OBLIGATIONS OF THE CUSTOMER IN RELATION TO FORTICARE SUPPORT OR FORTIGUARD SUBSCRIPTION SERVICES OR OTHER FORTINET SERVICE OFFERINGS. THE CUSTOMER CONSENTS TO BE BOUND BY THESE TERMS AND CONDITIONS AND TO HAVE BECOME PARTY TO THIS 'AGREEMENT' (THIS OR THE 'AGREEMENT') AND REPRESENTS TO HAVE READ AND UNDERSTOOD THIS AGREEMENT AND HAVE HAD SUFFICIENT OPPORTUNITY TO CONSULT WITH COUNSEL BEFORE AGREEING TO THE TERMS HEREIN. THE CUSTOMER AGREES THAT ANY OF THE FOLLOWING ACTIONS BY CUSTOMER REPRESENTATIVES REPRESENT THE CUSTOMER'S AUTHORIZED CONSENT TO BE BOUND BY THIS AGREEMENT: (I) RECEIVING, DOWNLOADING, DEPLOYING OR USING ANY SOFTWARE PROVIDED IN CONNECTION WITH FORTINET SERVICES, (II) RECEIVING, CONFIGURING, LOGGING IN, REGISTERING OR OTHERWISE USING OR BENEFITTING FROM THE SERVICES, OR (III) BY CLICKING ON THE "ACCEPT" BUTTON UPON REGISTRATION (ANY OF (I), (II), OR (III) SHALL CONSTITUTE "ACCEPTANCE" BY CUSTOMER). THE CUSTOMER HEREBY ACKNOWLEDGE AND AGREES THAT THE PERSON ENGAGING IN (I), (II), AND/OR (III) IS AUTHORIZED TO BIND THE CUSTOMER TO THE TERMS HEREIN. FOR CLARITY, NOTWITHSTANDING ANYTHING TO THE CONTRARY, IF CUSTOMER IS USING AN AUTOREGISTRATION TOOL, CUSTOMER ACKNOWLEDGES AND AGREES THAT ANY AND ALL UNITS REGISTERED USING SUCH TOOL SHALL BE SUBJECT TO THESE TERMS AND CONDITIONS.

Services are available independently or in connection with the purchase of Fortinet's commercial networking products and related equipment, including hardware products with embedded software, and software products sold and licensed to you pursuant to Fortinet's End User License Agreement ("EULA"), which EULA is available at <https://www.fortinet.com/content/dam/fortinet/assets/legal/EULA.pdf>, and you hereby agree to the terms of the EULA.

This Agreement and the Sales Order Acknowledgment represent a legal agreement between the parties with respect to FortiCare and FortiGuard Subscription services or other Fortinet services, and shall supersede all prior representations, discussions, negotiations and agreements, whether written or oral. This document expressly supersedes the Customer Service & Support Reference Guide (CSS Reference Guide) and all other service descriptions, and, notwithstanding anything to the contrary, Fortinet is only bound by, and Customer is only entitled to, services pursuant to official service descriptions that are authorized by Fortinet pursuant to this Agreement and are contractually binding on Fortinet pursuant to the terms herein

☒ I have read, understood and accepted the contract stated above

Cancel

PreviousNext

**Note:** "No Entitlement" will display. This is correct.


12. Click on radio button to accept.
13. Click **Confirm**.

Product Model: FortiNAC Control/App VM Server

---

**Important Notice:**  
**READ BEFORE COMPLETING THE REGISTRATION.**

---

 **Asset location:** My Assets

---

PRODUCT ENTITLEMENT

No Entitlement!


Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

☒ By accepting these terms, you are activating this support contract and the entitlement period provided can not be changed. If you wish to continue, click "confirm" button to submit your request.

[Cancel](#) [Previous](#) [Confirm](#)

CAX(VM) product registration is now complete.


14. Note the Serial Number (will be used in a future step).
15. Proceed to register the support contract for the appliance. Click **Register More**.

 **Registration Completed**

Thank you for choosing this Fortinet product. **Your registration process has completed successfully.** Please be aware that the registration information may not reflect on your product immediately, a delay (up to 4 hours) can occur.

**Product Info**

Product Model	FortiNAC Control/App VM Server
Serial Number	FNVMCATM2 [REDACTED]
Registration Date	2021-03-01
Description	N/A
Partner	Fortinet (Americas)
MAC Address	N/A
UUID	N/A

 **Asset location**

My Assets

**SUPPORT COVERAGE**

No Entitlement!

**REGISTERED SUPPORT CONTRACT**

No Contract Registered.

**REGISTERED LICENSE(S)**

License Type	License Number	Registration Date
--------------	----------------	-------------------

Register More

Done

## Register Support Contract for Managing Server

1. Enter registration code found on pdf from file FC-10-FNxxx\_xxx.
2. Click **Next**.

Register Product

1 Registration Code 2 3 4 ?

Registration Code

Please enter your product serial number, service contract registration code or license certificate number to start the registration: \*

?

End User Type

The product will be used by

☐ A government user

☒ A non-government user

In this context a government end-user is any central, regional or local government department, agency, or other entity performing governmental functions, including:

1. Governmental research institutions.
2. Governmental corporations or their separate business units which are engaged in the manufacture or distribution of items or services controlled on the Wassenaar Munitions List.
3. International governmental organizations.

Clear

Next

3. Associate the support contract to the appropriate Serial Number noted in previous step.
  - If only one product is registered, there will only be one choice – select that radio button.
  - If more than one product is registered, select the Serial Number noted in previous step.Selecting the radio button will auto-complete the Serial Number field.
4. Click **Next**.
5. Click on radio button in the lower left corner.
6. Click **Confirm**.

Serial Number: FNVMCATM21000351

Product Model: FortiNAC Control/App VM Server

Contract Number: 0012PT845297

**Important Notice:**  
READ BEFORE COMPLETING THE REGISTRATION.

PRODUCT ENTITLEMENT

Support Type	Support Level	Activation Date	Expiration Date
Firmware & General Updates	Web/Online	2021-03-01	2022-03-01
Enhanced Support	24x7	2021-03-01	2022-03-01
Telephone Support	24x7	2021-03-01	2022-03-01

Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

☒ By accepting these terms, you are activating this support contract and the entitlement period provided can not be changed. If you wish to continue, click "confirm" button to submit your request.

Cancel

Previous

Confirm

Support contract registration is now complete and applied to the FortiNAC-OS appliance.

7. Click **Register More**.

Proceed to the appropriate section:

Perpetual licenses: Register Perpetual Licenses

Subscription licenses: [Register Support Contract for License](#)

## Register Perpetual Licenses

1. Enter the registration code from the pdf found in the appropriate License file:  
LIC-FNAC-xxxxx-xxx\_xxx
2. Click on **Next**.

The screenshot shows the 'Register Product' window. At the top, a blue header bar contains the title 'Register Product' and a progress indicator with four steps: 1 (Registration Code), 2 (selected), 3, 4, and a help icon. The main content area is divided into two sections. The first section, 'Registration Code', has a text prompt: 'Please enter your product serial number, service contract registration code or license certificate number to start the registration:'. Below this is a large text input field with a question mark icon to its right. The second section, 'End User Type', has a prompt: 'The product will be used by'. It contains two radio buttons: 'A government user' and 'A non-government user', with the latter being selected. Below the radio buttons is a list of definitions for government end-users: 1. Governmental research institutions, 2. Governmental corporations or their separate business units which are engaged in the manufacture or distribution of items or services controlled on the Wassenaar Munitions List, and 3. International governmental organizations. At the bottom of the form, there is a 'Clear' link on the left and a 'Next' button on the right.

3. Associate the License to the managing server CAX(VM).
  - If only one CAX(VM) is registered, there will only be one choice – select that radio button.
  - If more than one CAX(VM) is registered, select the appropriate CAX(VM) (Primary/Control server).  
**Important:** DO NOT license the secondary server. The secondary server will obtain its license from the Primary after High Availability is configured.
4. Click **Next**.

Product Model: FortiNAC Control/App VM Server

Contract Number: 00[REDACTED]

Serial Number

Or Select It From:

	SERIAL NUMBER	PRODUCT MODEL	DESCRIPTION
<input type="radio"/>	FNVMCATM [REDACTED]	FortiNAC Control/App VM Server	Hercules (not in use yet)
<input type="radio"/>	FNVMCATM [REDACTED]	FortiNAC Control/App VM Server	Herculesii
<input type="radio"/>	FNVMCATM [REDACTED]	FortiNAC Control/App VM Server	Atlas
<input type="radio"/>	FNVMCATM [REDACTED]	FortiNAC Control/App VM Server	Hercules 1 year license
<input type="radio"/>	FNVMCATM [REDACTED]	FortiNAC Control/App VM Server	

Total Units: 5

Cancel

Previous

Next

Perpetual license registration is complete.

- Next step:** Register the support contract for the License. Click **Register More**.

Register Product >

123 Completion?

✓ Registration Completed

Thank you for choosing this Fortinet product. Your registration process has completed successfully. Please be aware that the registration information may not reflect on your product immediately, a delay (up to 4 hours) can occur.

Product Info

Product Model

FortiNAC Control/App VM Server

Serial Number

FNVMCATM

Registration Date

2021-03-01

Description

N/A

Partner

Fortinet (Americas)

MAC Address

N/A

UUID

N/A

SUPPORT COVERAGE

No Entitlement!

REGISTERED SUPPORT CONTRACT

Contract Number	SKU	Creation Date	Registration Date
001	FC-10-NCVCA-248-02-12	2021-01-14	2021-03-01

REGISTERED LICENSE(S)

Register More

Done

## Register Support Contract for License

1. Enter registration code from the pdf found in the appropriate License Support file:
  - FCx-10-FNAC0-xxx-xxx (support for Perpetual licenses)
  - FCx-10-FNAC1-xxx-xx-xx (support for Subscription licenses)
2. Click **Next**.

Register Product

1 Registration Code234?

Registration Code

Please enter your product serial number, service contract registration code or license certificate number to start the registration: \*

?

End User Type

The product will be used by

☐ A government user

☒ A non-government user

In this context a government end-user is any central, regional or local government department, agency, or other entity performing governmental functions, including:

1. Governmental research institutions.

2. Governmental corporations or their separate business units which are engaged in the manufacture or distribution of items or services controlled on the Wassenaar Munitions List.

3. International governmental organizations.

Clear

Next

3. Associate the License Support contract to the managing server CAX(VM). If registering Perpetual licenses, this is the same serial number used in previous step.
4. Click **Next**.

Product Model: FortiNAC Control/App VM Server

Contract Number: 0012PT845297

Serial Number

Or Select It From:

	SERIAL NUMBER	PRODUCT MODEL	DESCRIPTION
<input type="radio"/>	FNVMCATN <div></div>	FortiNAC Control/App VM Server	Hercules (not in use yet)
<input type="radio"/>	FNVMCATN <div></div>	FortiNAC Control/App VM Server	Herculesii
<input type="radio"/>	FNVMCATN <div></div>	FortiNAC Control/App VM Server	Atlas
<input type="radio"/>	FNVMCATN <div></div>	FortiNAC Control/App VM Server	Hercules 1 year license
<input type="radio"/>	FNVMCATN <div></div>	FortiNAC Control/App VM Server	

Total Units: 5

Cancel

Previous

Next

5. Click on radio button in lower left corner.
6. Click **Confirm**.

Serial Number: FNVMCATM[REDACTED]

Contract Number: 206[REDACTED]4

**Important Notice:**  
READ BEFORE COMPLETING THE REGISTRATION.

PRODUCT ENTITLEMENT

Support Type	Support Level	Activation Date	Expiration Date
Firmware & General Updates	Web/Online	2021-03-01	2022-03-01
License Support	24x7	2021-03-01	2022-03-01
Enhanced Support	24x7	2021-03-01	2022-03-01
Telephone Support	24x7	2021-03-01	2022-03-01

Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

☒ By accepting these terms, you are activating this support contract and the entitlement period provided can not be changed. If you wish to continue, click "confirm" button to submit your request.

Cancel

Previous

Confirm

Serial Number: FNVMCATM[REDACTED]

Contract Number: 206[REDACTED]4

**Important Notice:**  
READ BEFORE COMPLETING THE REGISTRATION.

PRODUCT ENTITLEMENT

Support Type	Support Level	Activation Date	Expiration Date
Firmware & General Updates	Web/Online	2021-03-01	2022-03-01
License Support	24x7	2021-03-01	2022-03-01
Enhanced Support	24x7	2021-03-01	2022-03-01
Telephone Support	24x7	2021-03-01	2022-03-01

Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

☒ By accepting these terms, you are activating this support contract and the entitlement period provided can not be changed. If you wish to continue, click "confirm" button to submit your request.

Cancel

Previous

Confirm

Registering the License support contract is complete.

The page will display the products and support contracts registered.

**Registration Completed**  
Thank you for choosing this Fortinet product. Your registration process has completed successfully. Please be aware that the registration information may not reflect on your product immediately, a delay (up to 4 hours) can occur.

**Product Info**

Product Model	FortiNAC Control/App VM Server
Serial Number	FNVMCATM [REDACTED]
Registration Date	2021-03-01
Description	N/A
Partner	Fortinet (Americas)
MAC Address	N/A
UUID	N/A

**SUPPORT COVERAGE**

Support Type	Support Level	Activation Date	Expiration Date
Firmware & General Updates	Web/Online	2021-03-01	2022-03-01
License Support	24x7	2021-03-01	2022-03-01
Enhanced Support	24x7	2021-03-01	2022-03-01
Telephone Support	24x7	2021-03-01	2022-03-01

**REGISTERED SUPPORT CONTRACT**

Contract Number	SKU	Creation Date	Registration Date	Units of Contract
▶ 204 [REDACTED]	FC3-10-FNACD-240-02-12	2021-01-14	2021-03-01	200
▶ 001 [REDACTED]	FC-10-NCVCA-248-02-12	2021-01-14	2021-03-01	

**REGISTERED LICENSE(S)**

License Type	License Number	Registration Date
FortiNAC VM	FTNAC47 [REDACTED]	2021-03-01
FortiNAC Control and Application VM Server		
FortiNAC Upgrade	FTNAC4 [REDACTED]	2021-03-01
FortiNAC PRO License for 200 concurrent endpoint devices		

7. Close the PDF files used in the previous steps.
8. If there are additional CAX(VM)s to register (and its support contracts), click on **Register More**. Otherwise, click **Done**.

## Register Remaining Appliances

1. Open the folder for the next appliance to be registered.
2. Open the 2 PDF files.
3. Register the appliance.
  - a. Click **Register Product**.
  - b. Enter registration code from the PDF found in file FNC-CAX-xx\_xxx (or if there is a Manager FNC-MX-xx.xxx).
  - c. Click **Next**.
  - d. If there was a POC or active evaluation license, a special page may display. If you are converting your POC to production, select **Convert Evaluation**. If you are not converting your POC to production, select **Register**.

- e. Enter “Managing Server” under Product Description (this can be edited later).
- f. Select Fortinet Partner (ignore all other fields).
- g. Click **Next**.
- h. Read terms and conditions.
- i. Click on radio button.
- j. Click **Next**.

Note: “No Entitlement” will display. This is correct.

- k. Click on radio button to accept.

- l. Click **Confirm**.

CAX(VM) product registration is now complete.

- m. Note the Serial Number (will be used to register the appliance support contract).

- n. Proceed to register the support contract for the appliance. Click **Register More**.

**4. Register Support Contract for Appliance.**

- a. Enter registration code found on pdf from file FC-10-NCxx\_xxx.
- b. Click **Next**.
- c. Associate the support contract to the appropriate CAX(VM) Serial Number noted in previous step.
- d. If only one CAX(VM) is registered, there will only be one choice – select that radio button.
- e. If more than one CAX(VM) products are registered, select the appropriate CAX(VM).
- f. Click **Next**.
- g. Click on radio button in the lower left corner.
- h. Click **Confirm**.
- i. Support contract registration is now complete and applied to the CAX(VM).
- j. Close the PDF files used in the previous steps.

If there are additional CAX(VM)s to register (and its support contracts), click on **Register More**. Otherwise, click **Done**

**\* DO NOT REGISTER THE PROFESSIONAL SERVICES CONTRACTS \***

**Important:** If a file for Professional Services (FP-10-PS-801-01-01.zip or FP-10-PS-830-01-01.zip) was included in the email, do not attempt to register. These are ONLY to be registered one at a time and on the day of the Professional Services session. One contract is like an “admission ticket” to the Professional Services session.

**End result:**

Once product registrations are complete, the summary page for each appliance will look similar to the example below. Note only the managing server (example below) will have license information listed.

Perpetual License Example:

Product Information

Product Model

FortiNAC Control/App VM Server

Serial Number

FNVMCA[REDACTED]

Registration Date

2021-03-01

Description

N/A

Partner

Fortinet (Americas)

MAC Address

N/A

UUID

N/A

Entitlement

Telephone Support

Enhanced Support

License Support

Firmware & General Updates

Registration

Renew Contract

License & Key

License Type	License Number	Registration Date
FortiNAC VM	FTNAC4[REDACTED]	2021-03-01
FortiNAC Control and Application VM Server		
FortiNAC Upgrade	FTNAC4[REDACTED]	2021-03-01
FortiNAC PRO License for 200 concurrent endpoint devices		

Subscription License Example:

Entitlement

License Support

Telephone Support

Enhanced Support

Firmware & General Updates

FortiNAC VM

If assistance is needed with registering devices, contact Fortinet Customer Service.

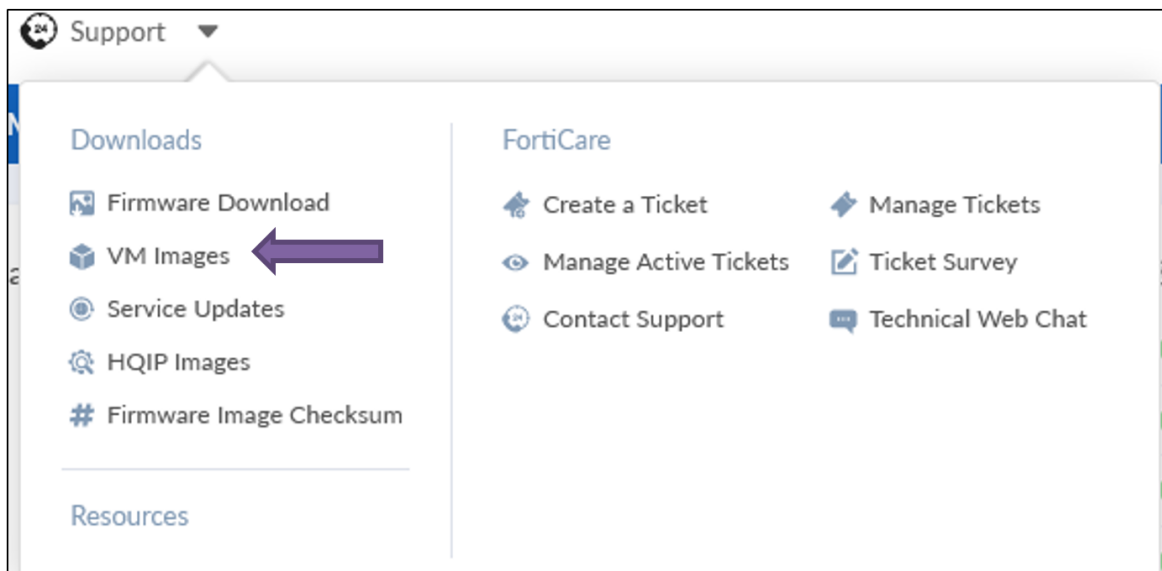
Product Registration is complete. Proceed to next step.

## Step 1: Download the Virtual Machine

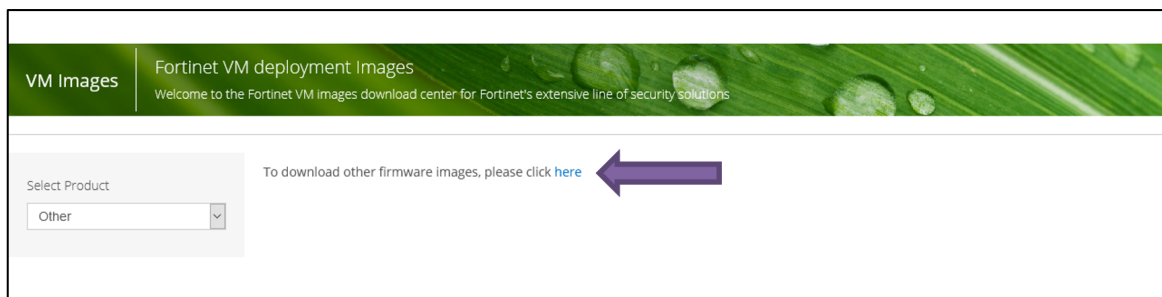
After registering the products, download the appropriate HyperV.zip image.

**Note:** Both FortiNAC CAX and Manager use the same image. The product type is defined by the license key installed.

1. In the Customer Portal, navigate to **Support > Downloads**
2. Click **VM Images**



3. From drop down list, click **Other** and then click on **here**.



4. From drop down list, select **FortiNAC-F**.
5. Select the Download Tab to reveal the available versions. Please select the version as recommended by Fortinet or Program Manager.

**Note:** The suggested version may be the GA version and not the newest version.

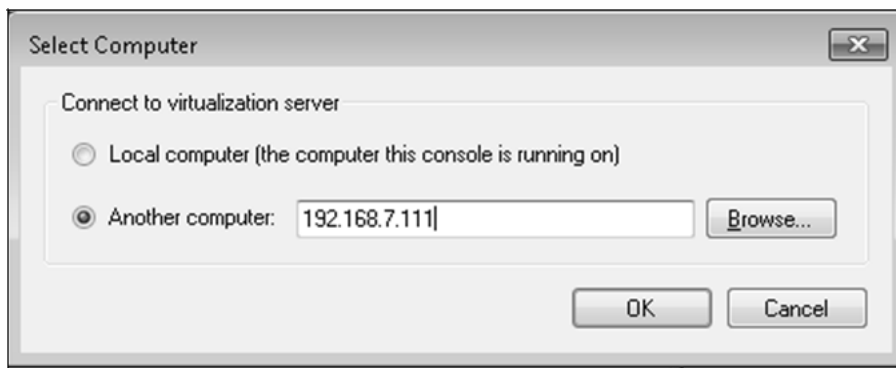
## Step 2: Copy Virtual Hard Drive

Each appliance requires its own Virtual Machine and its own license. If multiple appliances were purchased, make a copy of the .vhd file downloaded and rename it for each Virtual Machine required. Make sure all of the .vhd files are on the Hyper-V Server.

When naming the vhd files, keep in mind that you will also be naming the associated virtual machine and you will be assigning a host name when configuring FortiNAC server. If you have more than one virtual machine, it may be beneficial to use similar names for the virtual hard drive, the virtual machine and the host name of the FortiNAC server.

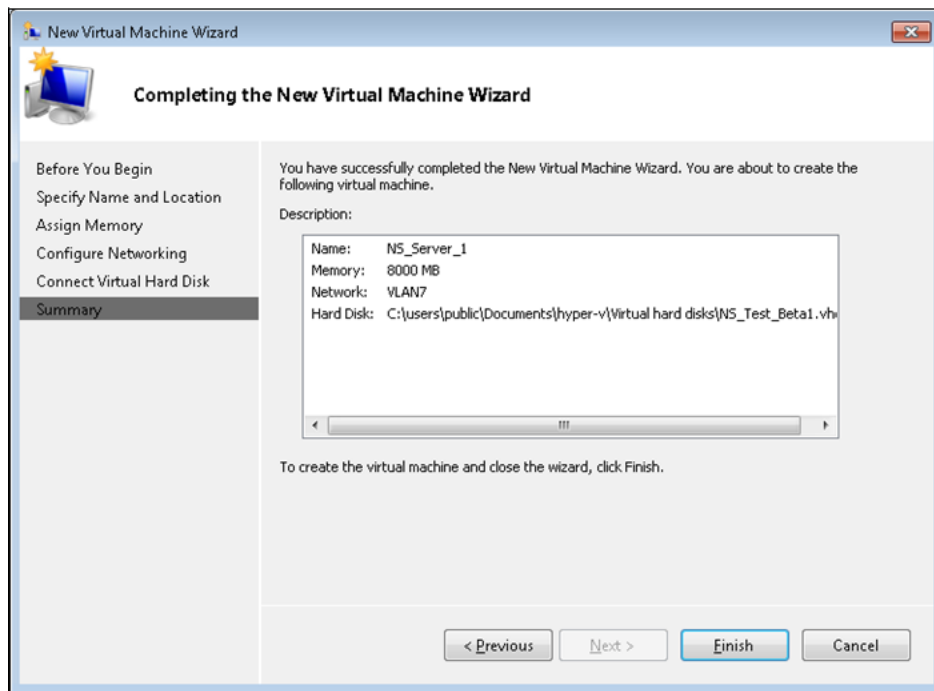
## Step 3: Import Virtual Machine

1. Extract the zip file.
2. Start Hyper-V Manager.
3. Select **Hyper-V Manager** in the tree on the left.
4. Select the appropriate **Hyper-V Server**. If it is not displayed, select **Connect to Server** in the **Actions** panel on the right.
5. On the **Select Computer** dialog, choose the computer that is running the Hyper-V server and click **OK**. The server is displayed in the tree on the left.



### Select Computer

6. Select the Hyper-V Server.
7. In the **Actions** panel select **New > Virtual Machine**.
8. The **New Virtual Machine Wizard** is displayed. On the **Before You Begin** step click **Next**.
9. On the **Specify Name and Location** step, click in the **Name** field and enter a descriptive name for this virtual machine, such as NS\_server\_1. You may want to name the virtual machine something that is similar to the name of the virtual hard drive and the host name of the FortiNAC server. Click **Next**.
10. On the **Assign Memory** step enter the amount of memory (at least 8 GB) that will be assigned to this virtual machine and click **Next**.
11. On the **Configure Networking** step, select the a VLAN or Network from the **Connection** drop-down and select Default Switch or VLAN, then click **Next**.
12. On the **Connect Virtual Hard Disk** step, select **Use Existing Virtual Hard Disk**. If **Generation** option is available, select **Generation 1** (Generation 2 not supported at this time).
13. Browse to the .vhd file you copied and renamed earlier. Select the appropriate .vhd file.
14. Click **Next** to continue.
15. On the **Summary** screen, review your settings and click **Finish**. This creates the virtual infrastructure.



**New Virtual Machine Wizard - Summary**

## Step 4: Edit Settings

The following describes the procedures for editing Virtual Machine settings.

**Important:** VLAN Tagging and Trunking are supported with CentOS-7 and Hyper-V on Windows Server version 2016, 2012 R2, 2012, or 2008 R2. When configuring adapters for Layer 2 VLAN Tagging/Trunking, see [VLAN Tagging](#) in Appendix.

1. In Hyper-V Manager, select the FortiNAC virtual machine.
2. In the **Actions** panel under your virtual machine, select **Settings**.
3. On the **Settings** dialog, all settings are configured by selecting an item from the tree on the left and modifying data in the panels on the right.

### Virtual Machine Settings

4. Modify the **Memory** field as necessary. See the [Requirements](#) section to determine the setting required.
5. Select **Processor** and configure the correct number of processors for your server.
6. Select **IDE Controller 0**, make sure **Hard Drive** is highlighted and click **Add**.
7. Under **Virtual Disk**, navigate to the datadrive.vhd from the extracted zip. (This will be the drive for data storage)
8. Click **Apply**.
9. Select **Network Adapter**. In the Network Adapter panel displayed, click **Remove** to remove the existing Network Adapter.
10. Click **Add Hardware** at the top of the Hardware tree. Select the **Network Adapter** option.  
**Important:** Do not use the **Legacy Network Adapter** option. Otherwise, inconsistent network connectivity may occur.
11. Click **Add**.
12. Click in the Network drop-down and select a VLAN or Default Switch. This represents port1 or the management interface for the FortiNAC configuration. Select the Network that contains the IP address you will use for port1.
13. If needed, add another Network Adapter by selecting **Add Hardware** at the top of the Hardware tree and choosing **Network Adapter** (avoid selecting **Legacy Network Adapter**).
14. In the Network drop-down select a VLAN or Default Switch. This represents port2. Select the Network that contains your DHCP IP addresses. This network will be used for Isolation.  
**Note:** The port2 adapter is not necessary if the virtual machine is being set up for a Manager (FNC-MX-VM).
15. Click **OK** to save Settings.
16. On the Actions panel under the virtual machine, click **Start**.

## Step 5: Assign Static IP Address for port1

FortiNAC is configured by accessing the Configuration Wizard using the Management interface (port1) IP address. Follow the instructions below to set the IP address for port1.

Port1 has the following default configurations:

- IP address: 192.168.1.99
- FortiNAC interfaces do not communicate without the required protocols added to the appliance's access list for the port. The minimum required for appliance configuration are Administration UI access (port 8443) and SSH. Additional protocols can be added to the access list in the future as needed.

1. Once the virtual machine is running, click Connect to bring up the console.
2. Login to the FortiNAC CLI using the following:

User name = admin

Password = <no password>

3. To set the IP address and default gateway, type the following:

```
config system interface
edit port1
set ip <port1 ip addr>/<mask>
set allowaccess https-adminui ssh
next
end
config system route
edit 1
set device port1
set gateway <default gateway>
next
end
```

**Example:**

```
config system interface
edit port1
set ip 10.12.234.175/22
set allowaccess https-adminui ssh
next
end
config system route
edit 1
set device port1
set gateway 10.12.232.1
next
end
```

4. Confirm SSH access to the port1 IP address works.

## Step 6 (Optional): Cloud-init using config drive

This section describes how to bootstrap a FortiNAC VM in Hyper-V using config drive. This method can be used if deploying VMs and need to preconfigure the FortiNAC VM so that it boots with a predetermined configuration.

FortiNAC-OS supports version 2 of the config-drive capabilities. Cloud-Init config drive was initially created for OpenStack and other cloud environments and is a capability available on the FortiNAC even when booting within Hyper-V. Config drive also allows the administrator to pass day zero configuration scripts to the FortiNAC VM on initial boot.

FortiNAC day zero configuration:

- port1 IP Address
- Subnet mask
- Gateway

If not using this function, proceed to **Configure Network Access for port2**.

### Configure

1. To pass a config drive to the FortiNAC VM, create the following directory structure:  
`config-drive/openstack/latest/`
2. Create the FortiNAC configuration script `user_data` via text editor. The configuration script for a FortiNAC VM uses FortiNAC-OS CLI syntax.

Script should contain the following content:

```
#<HostName> Day0 Configuration
config system interface
edit port1
set ip <port1 IP address>/<mask>
set allowaccess https-adminui ssh
next
end
config system route
edit 1
set device port1
set gateway <Default Gateway for port1>
next
end
```

### Example

Hostname = FNC

port1 IP address and mask = 10.12.234.175/22

Default gateway = 10.12.232.1

```
cat config-drive/openstack/latest/user_data
#FNC Day0 Configuration
config system interface
edit port1
set ip 10.12.234.175/22
set allowaccess https-adminui ssh
next
```

```
end
config system route
edit 1
set device port1
set gateway 10.12.232.1
next
end
```

3. Create the config drive ISO:
  - a. Create the config-drive ISO using a utility such as xorriso (other utilities can also be used to create ISOs, such as mkisofs).
  - b. Place the ISO on the data store so that it can be used with the FortiNAC VM.
4. Attach the config-drive ISO as a CDROM device:
  - a. Power off the FortiNAC VM.
  - b. In Hyper-V Manager, right click on the newly created VM and select Settings.
  - c. Select the DVD Drive under IDE Controller 1
  - d. Click on Image File: and browse to the config-drive ISO.
  - e. Click OK
  - f. Start the FortiNAC VM.

### Validate

Open the console to verify that the VM is booting and utilizing the day zero configuration file that was provided.

To verify the results:

1. Go to the **Console**.
2. Login to the CLI.
3. Review port1 configuration. Type

```
get system interface physical
```
4. Confirm SSH access to the port1 IP address works.
5. Power off the VM.
6. Under the VM settings, set the VM to boot from the main drive.
7. Start the VM.

## Step 7: Set a Static MAC Address

If your Hyper-V environment assigns MAC Addresses dynamically, you will need to set the MAC addresses for FortiNAC VMs to be Static. Use the following instructions or refer to your Hyper-V documentation.

1. Power off the VM.
2. On the VM Properties, open the vNIC Properties.
3. Under **Advanced Features**, select the Static option.
4. Enter the MAC address you wish to use as the static MAC address. **Important:** Ensure the MAC address is not within the dynamic address range generated by the Hyper-V host. See <https://www.dtonias.com/set-vm-static-mac-address-hyper-v/>
5. Start the VM.

Appliance installation is complete. Proceed to the [FortiNAC Deployment Guide](#) to continue deployment.

# VLAN tagging

Refer to the following documentation:

## Configure virtual local area networks for Hyper-V

<https://docs.microsoft.com/en-us/windows-server/virtualization/hyper-v/deploy/configure-virtual-local-area-networks-for-hyper-v>

### Hyper-V PowerShell Module

Hyper-V PowerShell Module is required to configure VLAN tagging. To view a list of Hyper-V related cmdlets on the system, type

```
PS C:\> Get-Command -Module Hyper-V
```

If the system does not return results, the Hyper-V PowerShell module must be installed. The module must be imported separately, by doing the following:

1. Load the ServerManager Module. Type  
`Import-Module ServerManager`
2. To respond to the security warning, type '**R**' <ENTER> to proceed with loading the ServerManager module.
3. Load the Hyper-V PowerShell Module located in the Remote Server Administration Tools feature. Type  
`Add-WindowsFeature RSAT-Hyper-V-Tools -IncludeAllSubFeature`
4. After a few minutes you'll receive the system response that the installation was successful and that no restart (reboot) is needed.

### Configure VLAN Tagging

1. To create virtual adapters and tag VLANs, type:  
`Add-VMNetworkAdapter -SwitchName HYPERV1 -VMName "NS-Application-Server" -Name "port2"`  
`Set-VMNetworkAdapterVlan -Trunk -AllowedVlanIdList "317,318" -VMName "NS-Application-Server" -VMNetworkAdapterName "port2" -NativeVlanId 1`
2. Confirm that the changes have been applied. Type  
`Get-VMNetworkAdapterVlan`

For more details and additional commands regarding VLAN tagging, refer to the following Microsoft document:

## Supported CentOS and Red Hat Enterprise Linux virtual machines on Hyper-V

<https://docs.microsoft.com/en-us/windows-server/virtualization/hyper-v/supported-centos-and-red-hat-enterprise-linux-virtual-machines-on-hyper-v>

# Generate and Download Keys

This step updates the product records in FortiCare with the required information for each appliance in order to generate the appropriate key files.

## Key Generation Procedure Overview

- 1: Collect appliance information
- 2: Generate Key for Managing Server
- 3: Generate Key for Remaining Servers (VMs Only)

## Collect Appliance Information

Collect the appropriate appliance information using one of the methods below.

### UI Method

1. Launch the FortiNAC Administration UI by opening a web browser and navigating to:  
`https://<FortiNAC IP Address>:8443/`  
or  
`https://<FortiNAC Host Name>:8443/`
2. Login using the Default FortiNAC Admin UI Credentials  
User: root  
Password: YAMS
3. Read the End User License Agreement. Accept the terms and proceed.
4. Under **Enter License Key**, the UUID (virtual appliances only) and port1 MAC address are displayed.
5. **Record** the information. This information is used in the next step to generate the license key. You cannot currently import a license file because you do not have one yet.
6. Close the browser window.

### CLI Method

1. Login to the appliance CLI as admin.
2. Enter the command  
`get hardware status`  
Record the UUID and MAC address from the resulting output.
3. Type `exit`

### Physical Appliances

Eth 0 MAC address (xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx) can also be found in the following locations:

- Shipping label
- Appliance Identification Details document

- On the back or the top of the metal casing of the appliance

## Generate Key for Managing Server

1. Log into the Customer Portal at <https://support.fortinet.com/>
2. Go to **Products > Product List**.
3. Click the serial number for the appliance.
4. Edit the record in **Product Information**.
5. Enter the following:
  - Description (if modification is required)
  - port1 MAC Address
  - UUID (Virtual appliances only)

**Note:** Once MAC Address and/or UUID is entered and saved, it cannot be changed online. If assistance is needed with registering devices or changing these entries, contact Fortinet Customer Service.

6. Click **Save**.

The summary page has updated with the link to “Get The License File”

**Important:** Customers with new appliances should select the FortiNAC License File.

The screenshot displays the Fortinet Customer Portal interface. The top section contains 'Product Information' and 'Entitlement'. The 'Product Information' section lists details for a FortiNAC Control/App VM Server, including its serial number, registration date, description, partner, MAC address, and UUID. The 'Entitlement' section shows various support and update options. Below these are the 'Registration' and 'License & Key' sections. The 'Registration' section has a 'Renew Contract' button. The 'License & Key' section contains two tables. The first table lists licenses with their types, numbers, and registration dates. The second table lists keys with their license numbers and descriptions. Two purple arrows point to the 'Get The License File' links in the second table.

License Type	License Number	Registration Date
FortiNAC VM	FTNAC [redacted]	2021-03-01
FortiNAC Control and Application VM Server		
FortiNAC Upgrade	FTNAC4 [redacted]	2021-03-01
FortiNAC PRO License for 200 concurrent endpoint devices		

Key	License Number	Description
<a href="#">Get The License File</a>	N/A	FortiNAC License File Download
<a href="#">Get The License File</a>	N/A	Network Sentry Key File

7. Click **Get the License File**.

If a Control Manager is registered, this screen may appear.

### Please Select the Linked Serial Number

☐ FNVM-MTM20000045

☐ FNVM-MTM20000066

☐ FNVM-MTM21000029

☐ FNVM-MTM21000030

Download License Key File

Close

8. Select the serial number of the Control Manager that will be managing this appliance (select Primary Control Manager if Managers are configured for High Availability).
9. Click **Download License Key File**.  
The .lic filename will reflect the appliance serial number.
10. Once the file is downloaded, click **Close**.

## Remaining Servers

**Virtual Appliances:** Repeat the previous steps to update each appliance record and download the key, saving each key file to their appropriate folder.

**Physical Appliances:** Repeat the previous steps to update each appliance record with the MAC Address. Do not download any additional keys. The remaining appliances use the installed key shipped with the hardware.

Key generation is complete. Proceed to next step.

# Appliance Configuration

1. Follow the instructions in the [Guided Install](#) section of the Administration Guide.

These steps guide the user through the following tasks:

- License key installation
- Network settings configuration
- Password creation
- port2 interface configuration

2. Verify appliance with the Endpoint License Key has the correct entitlements.




a. In the appliance with the Endpoint License Key installed, access the Administration UI using one of the following URLs:

`https://<FortiNAC IP Address>:8443/`

`https://<FortiNAC Host Name>:8443/`

If “Processes are Down” is displayed, there may be a UUID or MAC address mismatch. See related KB article [192992](#).

b. Locate the License Information widget in the Dashboard. If not available, click the **Add Widget** button at the top of Dashboard view to add.

License Information: <span>Refresh: <span>Manual</span>   </span>				
Type	Total	In Use	Available	% Used
Concurrent Licenses	500	0	500	<div><div>0%</div></div>
Entitlement	Support Level	Expires		
Telephone Support	24x7	2023-12-11		
IoT Detection	Web/Online	2023-12-11		
Vulnerability Management	Web/Online	2023-12-11		
Firmware & General Updates	Web/Online	2023-12-11		
FortiNAC VM	FortiNAC Pro	2023-12-18		
Enhanced Support	24x7	2023-12-11		
COMP	24x7	2023-12-11		

- c. Review the entitlements in the License Information widget to ensure they are accurate.

If entitlements are populated but not correct, review the entitlements in the customer portal (<https://support.fortinet.com/>) for that product. Contact Customer Service for assistance.

Subscription License: If panel is blank, see KB article [191745](#) for troubleshooting steps.

For more information regarding the different license types, see [Perpetual and Subscription Licenses](#) in Appendix.

Appliance installation is complete. Proceed to the [FortiNAC Deployment Guide](#) to continue deployment.



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