



# FortiNAC - Azure Deployment Guide

Version 7.2 F



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**FEEDBACK**

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FortiNAC 7.2 F Azure 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.

For simplicity, this document only discusses the deployment of a FortiNAC virtual appliance with a direct connection to the internet. Other deployment scenarios are possible and more secure. Using a virtual network with a VPN gateway is the preferred deployment. However, those deployments are more involved and beyond the scope of this document.

**Note:** A gateway is required if Azure appliances will be deployed in a High Availability configuration.

Virtual Appliance (VM) Part Numbers

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

## Requirements

- 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

See also <https://docs.microsoft.com/en-us/azure/virtual-machines/sizes>

- Valid Azure account
- There are two sets of commands referenced in this document: Operating system command line and Azure CLI. Operating system command line syntax referenced in this document is based on a computer running the Linux operating system. Windows syntax is not provided.

A Linux computer to prepare and upload the FortiNAC image for Azure. The following must be installed:

- AzureCLI standalone client. The Azure CLI commands in this document are based on Azure CLI version 2.29.1. Exact syntax may vary.
- Qemu (version 2.2.0 or lower, or 2.6 or higher)
- AzCopy. Refer to the following link for installing Azure CLI and working with azcopy:

<https://docs.microsoft.com/en-us/cli/azure/install-azure-cli>

- Gawk
- Sufficient hard drive space (200GB+) available for a fully expanded FortiNAC image
- Either a public or private IP Address can be used. A secure and private topology with FortiNAC is required if a private IP address is used. Related links:

#### Site to Site VPN Gateways

<https://docs.microsoft.com/en-us/azure/vpn-gateway/tutorial-site-to-site-portal>

#### Creating a Virtual Network using a FortiGate Azure IPSEC connection

<https://docs.fortinet.com/document/fortigate/6.2.0/cookbook/255100/ipsec-vpn-to-azure>

- port2 isolation related configurations
  - When creating firewall rules for the isolation network, additional MicroSoft IP addresses may need to be allowed. See <https://www.microsoft.com/en-us/download/confirmation.aspx?id=56519>
  - Once FortiNAC is configured, additional domains may have to be added to the Allowed Domains List in order for clients in the isolation network to function properly. For details see [Domains to Add to the Allowed Domains List](#) in the Document Library.
- High Availability Configurations

The Gateway IP address defined in the High Availability configuration must be able to respond to PING requests. Since Azure's native gateway does not support ICMP, another IP address must be used. For details, see section [Determine Gateway IP Addresses in High Availability - FortiNAC OS](#).

  - A gateway is required.
  - A shared/Virtual IP (VIP) cannot be configured in Azure.

## Considerations

- Currently, there is no Azure Market place appliance/product available to quickly deploy a FortiNAC Instance. Instructions are provided to create a disk image.
- 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.

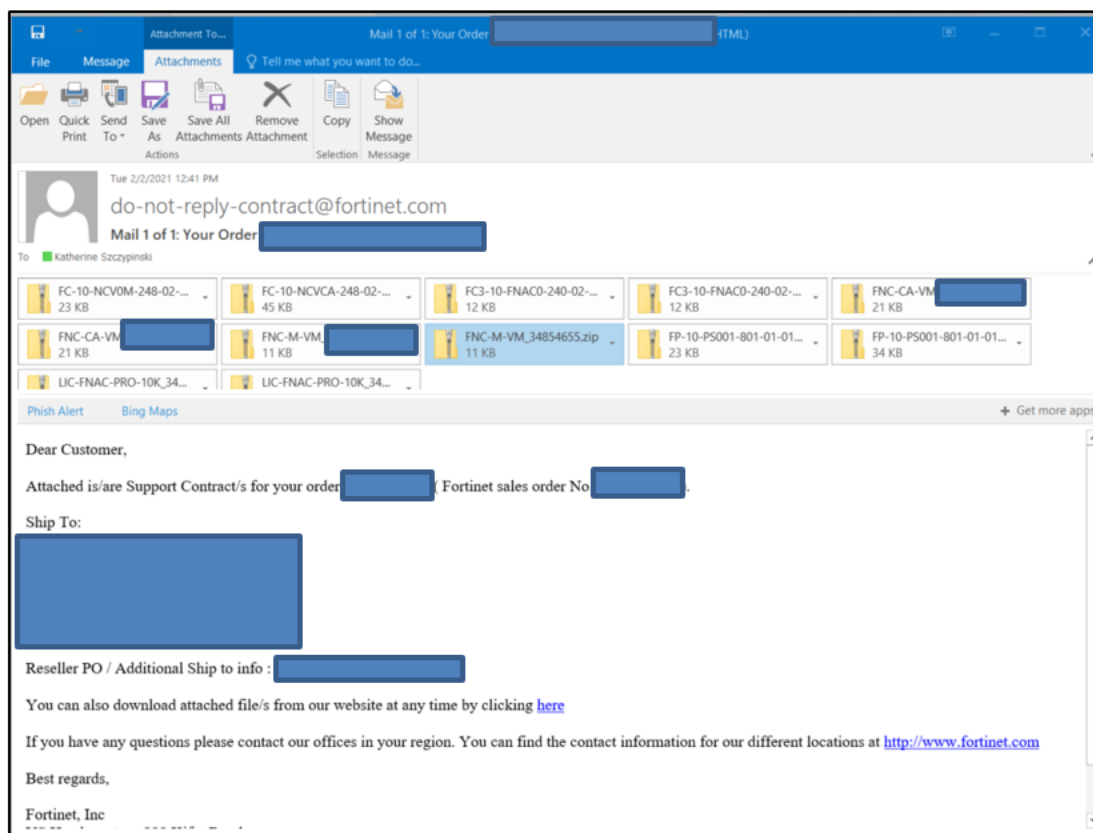
## Prerequisite: Product Registration

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

- **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**.

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

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

1 2 3 4 Agreement 5 6 ?

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 Previous Next

**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
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**.

The screenshot shows a web form titled "Register Product" with a progress bar at the top indicating four steps: 1. Registration Code (active), 2, 3, and 4. The main content area is divided into two sections. The first section, "Registration Code", contains a text input field with a placeholder "Please enter your product serial number, service contract registration code or license certificate number to start the registration:" and a help icon (?). The second section, "End User Type", contains two radio buttons: "A government user" and "A non-government user", with the latter selected. Below the radio buttons is a list of three items defining 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 are "Clear" and "Next" buttons.

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 a web interface for registering a product. At the top, a blue header bar contains the text '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 input field and a help icon. The second section, 'End User Type', has two radio buttons: 'A government user' and 'A non-government user' (which is selected). Below the radio buttons, there is a list of three items: 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 and a 'Next' button.

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 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

Contract Number: 206

**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-XXXXXX
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	FC3-10-FNACD-240-02-12	2021-01-14	2021-03-01	200
001	FC-10-NCVCA-248-02-12	2021-01-14	2021-03-01	

**REGISTERED LICENSE(S)**

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

[Register More](#) [Done](#)

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.

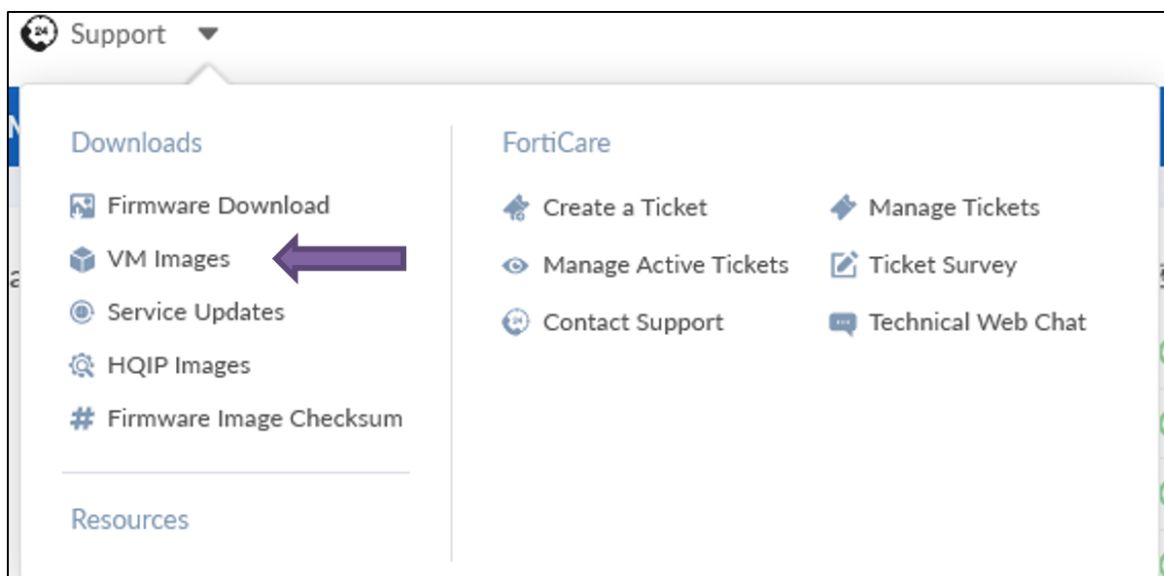
# Build Virtual Machines

## Step 1: Download the Virtual Appliance

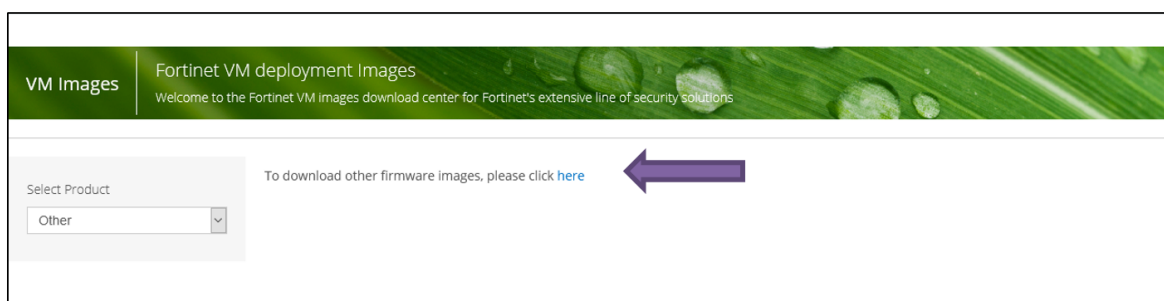
After registering the products, download the appropriate image to the Linux machine running Qemu.

**Note:** Both FortiNAC CA 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 the 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.

6. Click on the file for Azure (FNAC\_AZU-vx-buildxxxx-FORTINET.azure.zip).  
Example: FNAC\_AZU-v7-build0028-FORTINET.azure.zip

7. Unzip the file. From the Linux CLI type:  
`unzip <filename>`

## Step 2: Create Resource Group and Storage Account

If you are using an existing resource group, this step can be skipped.

### Azure Portal

1. Login to the Azure Portal  
<https://portal.azure.com/>
2. Refer to Microsoft documentation to create a resource group and storage account.
3. Once Created, proceed to [Upload VHD Image](#).

### CLI Option: Azure CLI

1. Login to the Azure CLI  
`az login`
2. Create a resource group  
`az group create --name <Resource Group name> --location <Azure region>`  
Example  
`az group create --name MyResourceGroup --location eastus`
3. Create a storage account inside the resource group for the custom disk and VMs  
`az storage account create --resource-group <Resource Group> --location <Azure region> --name <storage account name> --kind Storage --sku Standard_LRS`  
Example  
`az storage account create --resource-group <Resource Group> --location eastus --name myfortinacstorage --kind Storage --sku Standard_LRS`
4. Create a storage container under the created Storage account  
`az storage container create --account-name <storage account name> --name <storage container name>`  
Example  
`az storage container create --account-name myfortinacstorage --name mydisks`

## Step 3: Upload VHD Image

Use one of the below options.

### Option 1: Microsoft Storage Explorer

1. Using Microsoft Storage Explorer, upload the new fixed.vhd file directly to the resource group. Refer to Microsoft documentation for instructions.  
<https://docs.microsoft.com/en-us/azure/virtual-machines/disks-use-storage-explorer-managed-disks>

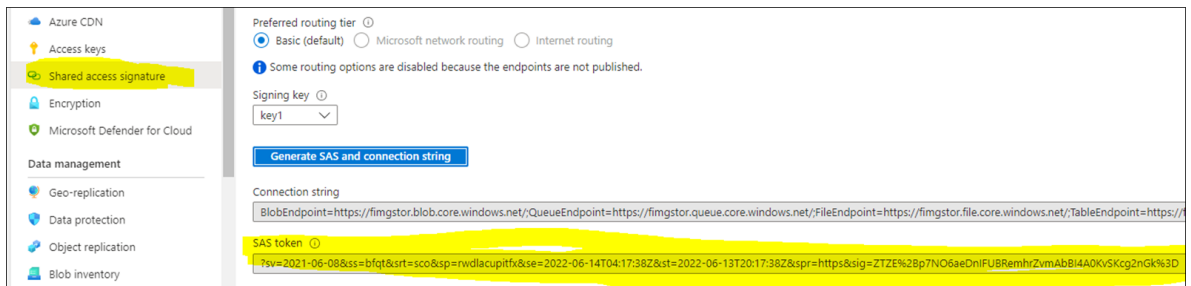
### Option 2: AzCopy tool

Upload vhd file via “azcopy” tool. Reference

<https://docs.microsoft.com/en-us/azure/storage/common/storage-ref-azcopy-copy>

1. In the local machine CLI, get the azcopy:
 

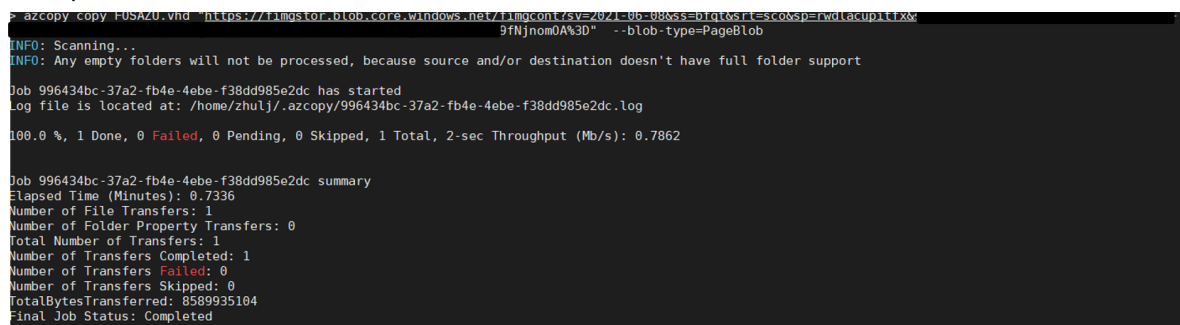
```
wget -O azcopy_v10.tar.gz https://aka.ms/downloadazcopy-v10-linux && \
tar -xvf azcopy_v10.tar.gz --strip-components=1
```
2. In the Azure Portal, obtain the SAS string:
  - a. Select **Storage accounts**.
  - b. Select **Shared access signature** in the second column (shown in yellow below).
  - c. In **Allowed resource types**, select **Object**, then click **Generate SAS and connection string**.
  - d. Scroll down and copy the **SAS token** from the generated string.



3. In the local machine CLI, run the command
 

```
azcopy login
```
  4. Run the Azcopy command:
 

```
azcopy cp "/path/to/ <filename>.vhd " \
"https://[account].blob.core.windows.net/[container]/[path/to/blob][SAS string]" \
```
- Example:



The uploaded .vhd file will now appear in the containers under the storage account.

## Step 4: Create the Virtual Machine

Before a virtual machine can be created, make sure there is a network interface that can be used for the VM.

For details on creating a network interface on Azure: <https://learn.microsoft.com/en-us/azure/virtual-network/virtual-network-network-interface?tabs=azure-portal#create-a-network-interface>

Create VM from the managed image that was generated in the previous step. The virtual machine can be created with or without a Public IP Address.

1. In the Azure portal, create a managed image from the uploaded VHD file.
  - a. Select **Images > Create image**.

b. Configure using the following settings

OS type	Linux
VM generation	Gen 1
Storage blob	<browse for the VHD file just uploaded>

Microsoft Azure

Home > Images >

### Create an image

Basics Tags Review + create

Create a managed image that can be used to deploy virtual machines and virtual machine scale sets. The image contains a list of managed blobs and metadata necessary for creating virtual machines. [Learn more](#)

**Project details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

Resource group \*  [Create new](#)

**Instance details**

Name \*

Region \*

Zone resiliency ☐

**OS disk**

OS type \* ☐ Windows ☒ Linux

VM generation \* ☒ Gen 1 ☐ Gen 2

Storage blob \*  [Browse](#)

Account type \*

Host caching \*

**Encryption**

You can encrypt the OS and data disks with a platform-managed or customer-managed key. [Learn more](#)

Encryption type \*

**Data disk**

[+ Add data disk](#)

[Review + create](#) [< Previous](#) [Next: Tags >](#)

c. Click **Review + create**.

2. Select **Virtual machines > Add**.
3. Next to **Image**, click **See all images** and select the image that was generated in the previous step.
4. Next to **Size**, select the appropriate number of CPUs and memory.
5. Configure using the tables below.

#### Public IP Address

Public inbound port rules	Allow selected ports
---------------------------	----------------------

Select inbound ports

SSH (22)

**No Public IP Address**

Public inbound port rules

None

**Microsoft Azure**

Home > Virtual machines >

### Create a virtual machine

For full customization, [Learn more](#)

**Project details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

Resource group \*  [Create new](#)

**Instance details**

Virtual machine name \*

Region  (US) West US 2

Availability options  Availability zone

Availability zone \*  Zones 1

☒ You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type  Standard

Image \*  fimg-v1 - Gen1

[See all images](#) | [Configure VM generation](#)

Azure Spot instance ☐

Size \*  Standard\_B2s - 2 vcpus, 4 GiB memory (\$30.37/month)

[See all sizes](#)

**Administrator account**

Authentication type ☒ SSH public key ☐ Password

**Username** \*  azureuser

SSH public key source  Generate new key pair

**Key pair name** \*  fimg-v1\_key

**Inbound port rules**

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports \* ☐ None ☒ Allow selected ports

Select inbound ports \*  SSH (22)

**Warning:** This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

[Review + create](#) < Previous Next: Disks >

6. Click **Next: Disks**.
7. Create 100 GB data disk.
8. Click **Review + create**.
9. No Public IP (optional):
  - a. Click the **Networking** tab for the new Virtual Machine.
  - b. Next to **Public IP**, select **None**.
  - c. Save.

The Azure portal should now have a virtual machine with either a dynamic public or private IP address.

## Step 5: Assign a Static IP Address



Open HTTPS port 8443 for GUI access.

1. Navigate to the **Azure Portal > Virtual Machines**. Select your FortiNAC VM instance.
2. Select **Networking > Network Interface > IP configurations**.
3. Select the primary interface.
4. Set the Private IP address settings to Static and assign a private address that is within the subnet of the default route.

## Step 6: Serial Console Configuration

1. In the Azure portal, navigate to **Virtual Machines**.
2. Select the FortiNAC VM.
3. Select **Serial Console** in the left menu.
4. Click on the prompt in the right.
5. Under **Boot Diagnostics**, select **Enable with the Custom storage account**.
6. Under **Diagnostics storage account**, select the one created in section [Create Resource Group and Storage Account](#).
7. Once configuration is complete, click **Save**. User is returned to the page of Virtual machines.
8. Select **Serial console** and a CLI window should now appear. **Note:** May need to hit the “Enter” or “Return” key to get the window to update.
9. Login to the FortiNAC CLI using the following:  
User name = admin  
Password = <no password>
10. Configure appliance to allow for UI and SSH access to port1.  

```
config system interface
edit port1
set allowaccess https-adminui ssh
next
end
```

This virtual machine should now be able to be accessed via SSH directly from the local machine.

From the local machine CLI run

```
ssh admin@<public or private IP address>
```

Example

```
myUser@myUser-mac:/Users/myUser/Desktop/MyCompany/AZURE_Cloud_Deployment/FortiNAC
> ssh admin@10.32.0.6
```



## Step 7: Create Second Network Interface (port2)

If the FortiNAC Service Network will be used to restrict network access for untrusted endpoints, create a second network interface. Otherwise, this step can be skipped.

This interface represents port2 or the FortiNAC Service Network interface. DHCP, DNS, captive portal and agent communication for restricted endpoints will be served from this interface.

1. Select **Networking > Virtual network/subnet > Subnets**.
2. Click "+ Subnet".
3. Create the subnet to which the port2 interface will be assigned.
4. Stop VM.
5. Click **Networking**
6. Click **Attach Network Interface**
7. Click **Create and Attach Network Interface**
8. Configure the interface:
  - Network Interface Name: NAC Service Network
  - Select the new subnet from drill down
  - NIC network security group: Basic
  - Private IP address assignment: Static
  - Enter IP address
9. Click **Create**
10. Start VM.
11. Reconnect via SSH to the FortiNAC VM using the static address configured within the default route (not port2).
12. Verify both port1 and port2 are created by typing
 

```
show system interface
```

### Related Links

Configuring multiple network interfaces:

<https://docs.microsoft.com/en-us/azure/virtual-machines/linux/multiple-nics?toc=/azure/virtual-network/toc.json>

Adding and removing network interfaces:

<https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-network-interface-vm>

## Step 8: Add Security Rules for UI Access

Security rules are needed to connect to the UI and allow traffic from the restricted networks.

1. Navigate to the **Azure Portal > Virtual Machines**. Select the FortiNAC VM instance.
2. Select **Networking**.
3. Add an inbound port rule. For GUI access, in the Destination port ranges, input **8443** and select **TCP** for protocol. In Source, only enter in any IP's you wish to give access to the FortiNAC GUI.

## Step 9: Configure Subnets Security Rules and Route Tables for port2 Access

If not using port2, this step can be skipped.

On the interface created to represent port2:

- Create subnets for each network that will be used (production & restricted)
- Create Security Rules to allow traffic for each of the subnets specified. For a list of required ports, refer to the **Open Ports** section of the [Deployment Guide](#).
- Create a Route Table on the interface
  - Name:
  - Address Prefix: <network for DHCP scope>/<mask>
  - Next hop type: Virtual appliance
  - Next hop IP address: <gateway ip>

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

# 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. It is divided into four main sections: Product Information, Entitlement, Registration, and License & Key.

- Product Information:** Lists details for a FortiNAC Control/App VM Server, including its serial number (FNVMCATM-...), registration date (2021-03-01), description (FNAC-DC-NCM-P-Zeus), partner (Fortinet (Americas)), MAC Address (06-...), and UUID (22-...85a1).
- Entitlement:** Shows a list of entitlements with green checkmarks: Telephone Support, Enhanced Support, License Support, and Firmware & General Updates.
- Registration:** Contains a 'Renew Contract' button.
- License & Key:** Contains two tables.
 

License Type	License Number	Registration Date
FortiNAC VM	FTNAC-...	2021-03-01
FortiNAC Control and Application VM Server		
FortiNAC Upgrade	FTNAC4-...	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

Two purple arrows point to the 'Get The License File' links in the License & Key section.

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:				Refresh: <span>Manual</span>			
Type	Total	In Use	Available	% Used			
Concurrent Licenses	500	0	500	0%			
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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