



Tenable Core + Tenable OT Security User Guide

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Welcome to Tenable Core + Tenable OT Security

You can use the Tenable Core operating system to run an instance of OT Security in your environment. After you deploy Tenable Core + Tenable OT Security, you can monitor and manage your OT Security processes through the secure Tenable Core platform.

To get started quickly with Tenable Core + Tenable OT Security, see [Get Started](#).

Features

- Secure, stable platform.
- Provides automatic application installation and updates via Tenable public repositories.
- Built on Oracle Linux 8.
- Targets Center for Internet Security (CIS) standards for Oracle Linux 8 with SELinux enabled. For more information, see [Default Security Configuration Standards](#).
- Root access is enabled on all builds.

Other Tenable Core Configurations

To run a different Tenable application on Tenable Core, see:

- [Tenable Core + Nessus](#)
- [Tenable Core + Nessus Network Monitor](#)
- [Tenable Core + Tenable Security Center](#)
- [Tenable Core + Tenable Sensor Proxy](#)
- [Tenable Core + Tenable Web App Scanning](#)
- [Tenable Core + Tenable OT Security Sensor](#)

Note: Tenable does not recommend deploying multiple applications on a single instance of Tenable Core. If you want to deploy several applications on Tenable Core, deploy a unique instance for each application.

Tenable Core Operating System Version Support



To see which versions of the products are currently available on each operating system version of Tenable Core, see the [Versions](#) page.



Get Started

Tenable recommends the following sequence to deploy and get started with Tenable Core + Tenable OT Security.

To get started with Tenable Core:

1. Confirm that your environment meets the requirements in [Tenable Core Requirements](#). If necessary, prepare to increase your disk space after you deploy.
2. [Deploy or install](#) Tenable Core + Tenable OT Security.

Note: You can also deploy Tenable Core using the command line interface (CLI). For more information, see [Deploy Tenable Core in Microsoft Azure via the CLI](#).

3. (Optional) If you want to increase your disk space to accommodate your organization's data storage needs, see [Disk Management](#) and the *OT Security User Guide*.
4. Log in as a wizard user and create an administrator account, as described in [Create an Initial Administrator User Account](#).
5. [Log In to Tenable Core](#) with your new administrator credentials.
6. In the left navigation bar, click **Tenable.ot**.

The **Tenable.ot** page appears.

7. When prompted, click **Install OT Security** and allow up to an hour for installation.
8. (Optional) If you want to create more user accounts, see [Create New User Account](#).
9. (Optional) If you want to configure Tenable Core to use a proxy server, see [Configure a Proxy Server](#).
10. [Configure OT Security in the OT Security User Interface](#) to meet the specifications you want for your application.

For more information about configuring and operating OT Security, see the [Tenable OT Security User Guide](#).

11. Configure and manage Tenable Core. To access the application interface, see [Configure Tenable Core](#).



Tenable Core Requirements

You can deploy Tenable Core + Tenable OT Security on any system that meets the following Tenable Core and OT Security environment requirements.

Note: Tenable does not recommend deploying multiple applications on a single instance of Tenable Core. If you want to deploy several applications on Tenable Core, deploy a unique instance for each application.

[System and License Requirements](#)

[Access Requirements](#)

[Default Security Configuration Standards](#)



System and License Requirements

To install and run Tenable Core + Tenable OT Security or Tenable OT Security Sensor, your application and system must meet the following requirements.

Note: Tenable Support does not assist with issues related to your host operating system, even if you encounter them during installation or deployment.

Environment		Tenable Core File Format	More Information
Virtual Machine	VMware	.ova file	Deploy Tenable Core in VMware
Tenable-provided hardware		.iso image	Install Tenable Core on Tenable-Provided Hardware Note: Tenable Core + OT Security requires Tenable-provided hardware. For more information, contact your Tenable representative.

Note: While you could use the packages to run Tenable Core in other environments, Tenable does not provide documentation for those procedures.

OT Security Requirements

Note: Tenable does not recommend deploying multiple applications on a single instance of Tenable Core. If you want to deploy several applications on Tenable Core, deploy a unique instance for each application.

Tenable Core + Tenable OT Security ships with the latest version of OT Security included.

For more information about requirements specifically for OT Security, see [OT Security](#) in the *General Requirements Guide*.



OT Security System Requirements

You can Install OT Security on a hypervisor¹ or directly on user-supplied hardware running Tenable Core.

Note: Tenable strongly discourages running Tenable Core + OT Security in an environment shared with other Tenable applications. (For example, installing two products on the same virtual machine, or in the same Tenable Core system.)

Storage Requirements

Tenable recommends installing OT Security on direct-attached storage (DAS) devices, preferably solid-state drives (SSD), for best performance. Tenable strongly encourages the use of solid-state storage (SSS) that have a high drive-writes-per-day (DWPD) rating to ensure longevity.

Tenable does not support installing OT Security on network-attached storage (NAS) devices. Storage area networks (SAN) with a storage latency of 10 milliseconds or less, or Tenable hardware appliances, are a good alternative in such cases.

Disk Space Requirements

Enterprise networks can vary in performance, capacity, protocols, and overall activity. Resource requirements to consider for deployments include raw network speed, the size of the network to monitor, and the configuration of the application. Processors, memory, and network card selection are heavily based on these deployment configurations. Disk space requirements vary depending on usage based on the amount of data, and length of time, you store data on the system.

Note: OT Security needs to be able to perform full packet captures of monitored traffic², and the size of the policy event data stored by OT Security depends on the number of devices and the type of environment.

ICP System Requirement Guidelines (Virtual or Tenable Core)

Site Size	Maximum	CPU	Memory	Storage	Network
-----------	---------	-----	--------	---------	---------

¹Hypervisor must be officially supported by VMWare and known to work under Hyper-V, KVM.

²Multiply rate (Mbits/sec) * 2.7 to get storage (GB/day) - based on a compression factor of 0.25.



	SPAN/TAP Throughput (Mbps)	Cores ¹	(DDR4)	Requirements	Interfaces
Small	150 Mbps or less	4 x 2 GHz	12 GB RAM	128 GB	Minimum 4 x 1 Gbps
Medium	150-300 Mbps	8 x 2 GHz	16 GB RAM	512 GB	Minimum 4 x 1 Gbps
Large	300-600 Mbps	16 x 2 GHz	32 GB RAM	1 TB	Minimum 4 x 1 Gbps
XL	600 Mbps to 1 GB	32 x 3 GHz	64 GB RAM or more	2 TB or more	Minimum 4 x 1 Gbps

Disk Partition Requirements

OT Security uses the following mounted partitions:

Partition	Content
/	operating system
/opt	application and database files
/var/pcap	packet captures (full packet capture, event, query)

The standard install process places these partitions on the same disk. Tenable recommends moving these to partitions on separate disks to increase throughput. OT Security is a disk-intensive application and using disks with high read/write speeds, such as SSDs, results in the best performance. Tenable recommends using an SSD with high DWPD ratings on customer-supplied hardware installations when using the packet capture feature in OT Security.

Tip: Deploying OT Security on a hardware platform configured with a redundant array of independent disks (RAID 0) can dramatically boost performance.



Tip: Tenable does not require RAID disks for even our largest customers. However, in one instance, response times for queries with a faster RAID disk for a customer with more than one million managed vulnerabilities moved from a few seconds to less than a second.

Network Interface Requirements

You must have four network interfaces present on your device before installing OT Security. Tenable recommends the use of gigabit interfaces. The VMWare OVA creates these interfaces automatically. Create these interfaces manually when you are installing the ISO on your own hardware.

Note: Tenable does not provide SR-IOV support for the use of 10 G network cards and does not guarantee 10 G speeds with the use of 10 G network cards.

NIC Requirements

nic0(192.168.1.5) and **nic3** (192.168.3.3) have static IP addresses when you install Tenable Core + Tenable OT Security in a hardware, or virtual, environment. Other network interface controllers (NICs) use DHCP.

nic3 (192.168.3.3) has a static IP address when you deploy Tenable Core + Tenable OT Security on VMware. Other NICs use DHCP. Confirm that the Tenable Core **nic1** MAC address matches the NIC MAC address in your VMware passive scanning configuration. Modify your VMware configuration to match your Tenable Core MAC address if necessary.

For more information, see [Manually Configure a Static IP Address](#), [Manage System Networking](#), and the *VMware Documentation*.

¹CPU Cores reference PHYSICAL cores, assumes server-class CPU (Xeon, Opteron).



Access Requirements

Your Tenable Core + Tenable OT Security deployment must meet the following requirements.

- [Internet Requirements](#)
- [Port Requirements](#)

Internet Requirements

You must have internet access to download Tenable Core files and perform online installs.

After you transfer a file to your machine, internet access requirements to deploy or update Tenable Core vary depending on your environment.

Note: You need to be able to reach `appliance.cloud.tenable.com` to install from the online ISOs (and to get online updates) and `sensor.cloud.tenable.com` to pick up scan jobs.

Environment		Tenable Core Format	Internet Requirement
Virtual Machine	VMware	.ova file	You do not need internet access to deploy or update Tenable Core.
Hardware		.iso image	Requires internet access to install or update Tenable Core.

Tip: You do not need access to the internet when you install updates to Tenable Core + Tenable OT Security via an offline .iso file. For more information, see [Update Tenable Core Offline](#).

Port Requirements

Your Tenable Core deployment requires access to specific ports for inbound and outbound traffic. OT Security also requires application-specific port access. For more information, see the *OT Security Documentation*.

Inbound Traffic



Allow inbound traffic to the following ports listed.

Note: Inbound traffic refers to traffic from users configuring Tenable Core, etc.

Port	Traffic
TCP 22	Inbound SSH connections.
TCP 443	Inbound communications to the OT Security interface.
TCP 8000	Inbound HTTPS communications to the Tenable Core interface.

Outbound Traffic

Allow outbound traffic to the following ports listed.

Port	Traffic
TCP 22	Outbound SSH connections, including remote storage connections.
TCP 443	Outbound communications to the <code>appliance.cloud.tenable.com</code> and <code>sensor.cloud.tenable.com</code> servers for system updates.
UDP 53	Outbound DNS communications for OT Security and Tenable Core.



Default Security Configuration Standards

By default, Tenable Core applies security configurations based on the following Center for Internet Security (CIS) standards. For more information about CIS standards, see [cisecurity.org](https://www.cisecurity.org).

Note: SELinux: is enabled by default on the Tenable Core operating system.

CIS Standards

CIS Benchmarks: Tenable has implemented the following parts of the CIS Level 1 Benchmark on the Tenable Core:

CIS Level 1 - 1.x

- CIS 1.1.1.* (Disable mounting of miscellaneous filesystems)
- CIS 1.1.21 (Ensure sticky bit is set on all world-writable directories)
- CIS 1.4.* (Bootloader adjustments)
 - CIS 1.4.1 Ensure permissions on bootloader config are configured
- CIS 1.7.1.* (Messaging/banners)
 - Ensure message of the day is configured properly
 - Ensure local login warning banner is configured properly
 - Ensure remote login warning banner is configured properly
 - Ensure GDM login banner is configured - banner message enabled
 - Ensure GDM login banner is configured - banner message text

CIS Level 1 - 2.x

- CIS 2.2.* (disabled packages)
 - x11
 - avahi-server
 - CUPS



- nfs
- Rpc

CIS level 1 - 3.x

- CIS 3.1.* (packet redirects)
 - 3.1.2 Ensure packet redirect sending is disabled - 'net.ipv4.conf.all.send_redirects = 0'
 - 3.1.2 Ensure packet redirect sending is disabled - 'net.ipv4.conf.default.send_redirects = 0'
- CIS 3.2.* (ipv4, icmp, etc)
 - 3.2.1 Ensure source routed packets are not accepted - 'net.ipv4.conf.all.accept_source_route = 0'
 - 3.2.1 Ensure source routed packets are not accepted - 'net.ipv4.conf.default.accept_source_route = 0'
 - 3.2.2 Ensure ICMP redirects are not accepted - 'net.ipv4.conf.all.accept_redirects = 0'
 - 3.2.2 Ensure ICMP redirects are not accepted - 'net.ipv4.conf.default.accept_redirects = 0'
 - 3.2.3 Ensure secure ICMP redirects are not accepted - 'net.ipv4.conf.all.secure_redirects = 0'
 - 3.2.3 Ensure secure ICMP redirects are not accepted - 'net.ipv4.conf.default.secure_redirects = 0'
 - 3.2.5 Ensure broadcast ICMP requests are ignored
 - 3.2.6 Ensure bogus ICMP responses are ignored
 - 3.2.7 Ensure Reverse Path Filtering is enabled - 'net.ipv4.conf.all.rp_filter = 1'
 - 3.2.7 Ensure Reverse Path Filtering is enabled - 'net.ipv4.conf.default.rp_filter = 1'
 - 3.2.8 Ensure TCP SYN Cookies is enabled



- CIS 3.3.* (IPv6)
 - 3.3.1 Ensure IPv6 router advertisements are not accepted
 - 3.3.2 Ensure IPv6 redirects are not accepted
- CIS 3.5.* (network protocols)
 - 3.5.1 Ensure DCCP is disabled
 - 3.5.2 Ensure SCTP is disabled
 - 3.5.3 Ensure RDS is disabled
 - 3.5.4 Ensure TIPC is disabled

CIS Level 1 - 4.x

- CIS 4.2.* (rsyslog)
 - 4.2.1.3 Ensure rsyslog default file permissions configured
 - 4.2.4 Ensure permissions on all logfiles are configured

CIS Level 1 - 5.x

- CIS 5.1.* (cron permissions)
 - 5.1.2 Ensure permissions on /etc/crontab are configured
 - 5.1.3 Ensure permissions on /etc/cron.hourly are configured
 - 5.1.4 Ensure permissions on /etc/cron.daily are configured
 - 5.1.5 Ensure permissions on /etc/cron.weekly are configured
 - 5.1.6 Ensure permissions on /etc/cron.monthly are configured
 - 5.1.7 Ensure permissions on /etc/cron.d are configured
 - 5.1.8 Ensure at/cron is restricted to authorized users - at.allow
 - 5.1.8 Ensure at/cron is restricted to authorized users - at.deny
 - 5.1.8 Ensure at/cron is restricted to authorized users - cron.allow



- CIS 5.3.* (password/pam)
 - 5.3.1 Ensure password creation requirements are configured - dcredit
 - 5.3.1 Ensure password creation requirements are configured - lcredit
 - 5.3.1 Ensure password creation requirements are configured - minlen
 - 5.3.1 Ensure password creation requirements are configured - ocredit
 - 5.3.1 Ensure password creation requirements are configured - ucredit
 - 5.3.2 Lockout for failed password attempts - password-auth 'auth [default=die] pam_faillock.so authfail audit deny=5 unlock_time=900'
 - 5.3.2 Lockout for failed password attempts - password-auth 'auth [success=1 default=bad] pam_unix.so'
 - 5.3.2 Lockout for failed password attempts - password-auth 'auth required pam_faillock.so preauth audit silent deny=5 unlock_time=900'
 - 5.3.2 Lockout for failed password attempts - password-auth 'auth sufficient pam_faillock.so authsucc audit deny=5 unlock_time=900'
 - 5.3.2 Lockout for failed password attempts - system-auth 'auth [default=die] pam_faillock.so authfail audit deny=5 unlock_time=900'
 - 5.3.2 Lockout for failed password attempts - system-auth 'auth [success=1 default=bad] pam_unix.so'
 - 5.3.2 Lockout for failed password attempts - system-auth 'auth required pam_faillock.so preauth audit silent deny=5 unlock_time=900'
 - 5.3.2 Lockout for failed password attempts - system-auth 'auth sufficient pam_faillock.so authsucc audit deny=5 unlock_time=900'
 - 5.3.3 Ensure password reuse is limited - password-auth
 - 5.3.3 Ensure password reuse is limited - system-auth



- CIS 5.4.* (user prefs)
 - 5.4.1.2 Ensure minimum days between password changes is 7 or more
 - 5.4.1.4 Ensure inactive password lock is 30 days or less
 - 5.4.4 Ensure default user umask is 027 or more restrictive - /etc/bashrc
- CIS 5.6.* (wheel group)
 - 5.6 Ensure access to the su command is restricted - pam_wheel.so
 - 5.6 Ensure access to the su command is restricted - wheel group contains root

CIS Level 1 - 6.x

- CIS 6.1.* (misc conf permissions)
 - 6.1.6 Ensure permissions on /etc/passwd- are configured
 - 6.1.8 Ensure permissions on /etc/group- are configured



Deploy or Install Tenable Core

You can run Tenable Core + Tenable OT Security in the following environments.

Note: Tenable Support does not assist with issues related to your host operating system, even if you encounter them during installation or deployment.

Environment		Tenable Core File Format	More Information
Virtual Machine	VMware	.ova file	Deploy Tenable Core in VMware
Tenable-provided hardware		.iso image	Install Tenable Core on Tenable-Provided Hardware Note: Tenable Core + OT Security requires Tenable-provided hardware. For more information, contact your Tenable representative.

Note: While you could use the packages to run Tenable Core in other environments, Tenable does not provide documentation for those procedures.



Deploy Tenable Core in VMware

To deploy Tenable Core + Tenable OT Security as a VMware virtual machine, you must download the Tenable Core + Tenable OT Security .ova file and deploy it on a hypervisor.

Before you begin:

- Confirm your environment will support your intended use of the instance, as described in [System and License Requirements](#).
- Confirm your internet and port access will support your intended use of the instance, as described in [Access Requirements](#).

To deploy Tenable Core + Tenable OT Security as a VMware virtual machine:

1. Download the Tenable Core + OT Security .ova file.
2. Open your VMware virtual machine in the hypervisor.
3. Import the Tenable Core + Tenable OT Security VMware .ova file from your computer to your virtual machine. For information about how to import a .ova file to your virtual machine, see the [VMware documentation](#).
4. In the setup prompt, configure the virtual machine to meet your organization's storage needs and requirements, and those described in [System and License Requirements](#).
5. Launch your Tenable Core + Tenable OT Security instance.

The virtual machine boot process appears in a terminal window.

Note: The boot process may take several minutes to complete.

What to do next:

- Continue getting started with Tenable Core + Tenable OT Security, as described in [Get Started](#).



Install Tenable Core on Tenable-Provided Hardware

You can install Tenable Core + Tenable OT Security directly on Tenable-provided hardware using an .iso image. When you install Tenable Core via an .iso image on your computer, Tenable Core replaces your existing operating system with the Tenable Core operating system.

Note: Tenable Core + OT Security requires Tenable-provided hardware. For more information, contact your Tenable representative.

Note: Tenable Core currently supports two host operating system options: Oracle Linux 8 (OL8) and CentOS (EL7).

Before you begin:

- Confirm your environment will support your intended use of the instance, as described in [System and License Requirements](#).
- Confirm your internet and port access will support your intended use of the instance, as described in [Access Requirements](#).
- Confirm that Tenable Core + Tenable OT Security was not preinstalled on your hardware for any new instance of Tenable Core + Tenable OT Security. Not all new instances require manual installation.

To install Tenable Core + Tenable OT Security on hardware:

1. Download the **Tenable Core Tenable.ot Installation ISO** file from the [Tenable Downloads](#) page.
2. Boot the .iso. For more information, see your environment documentation.

Caution: Booting the .iso replaces your existing operating system with the Tenable Core operating system.

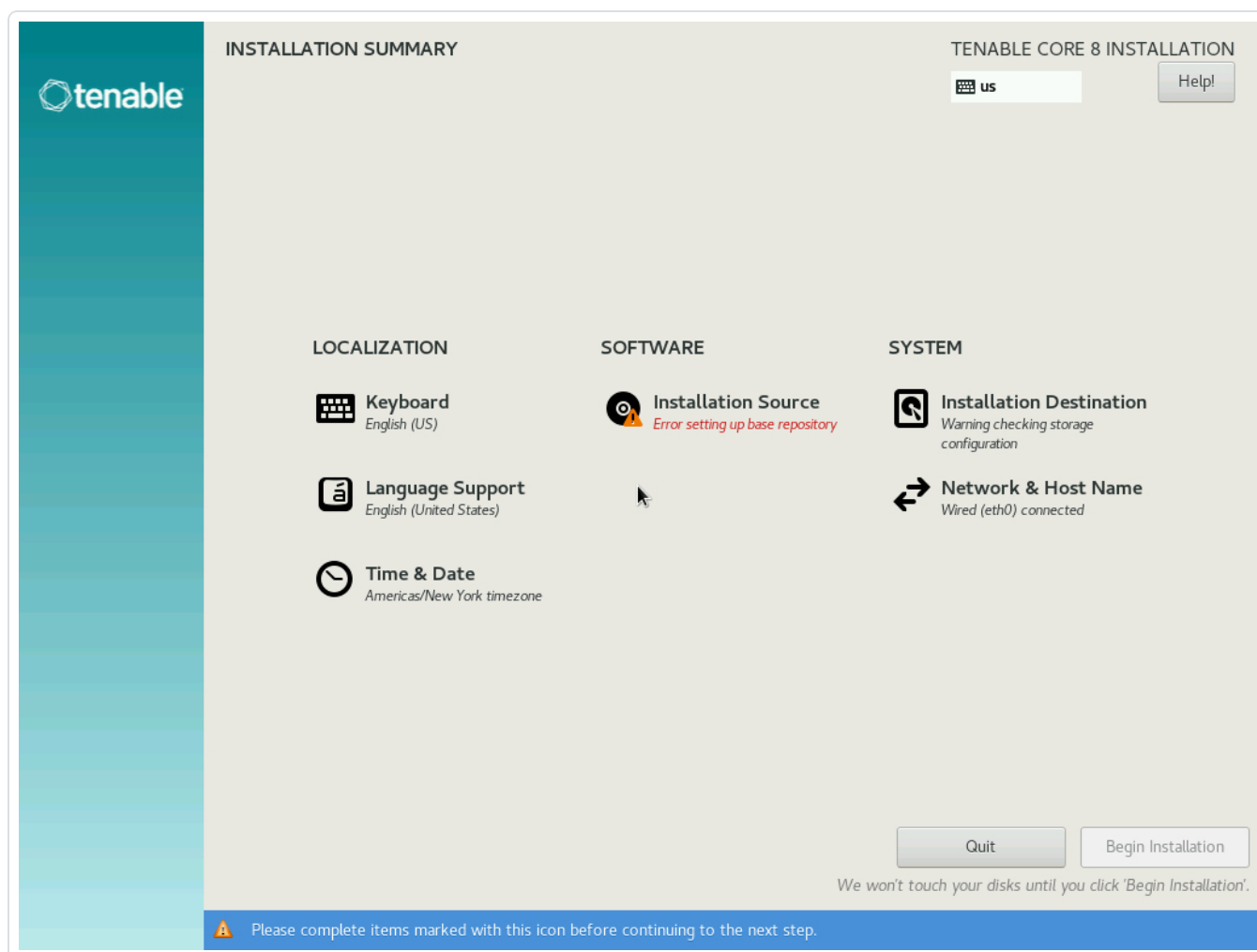
Tip: To monitor the progress of the installation, select `Install TenableCore` using serial console from the boot menu. For more information about the OT Security serial console, see the *OT Security User Guide*.

The installer installs Tenable Core + Tenable OT Security on your hardware.



3. The installation begins if there are no configuration errors.

The **Installation** menu appears if there are configuration errors (such as errors after setting up a Base Repository, for example):



The installation runs and the server restarts.

For Tenable Core deployments with EL7 operating systems:

The **Installation** menu appears if there are configuration errors.

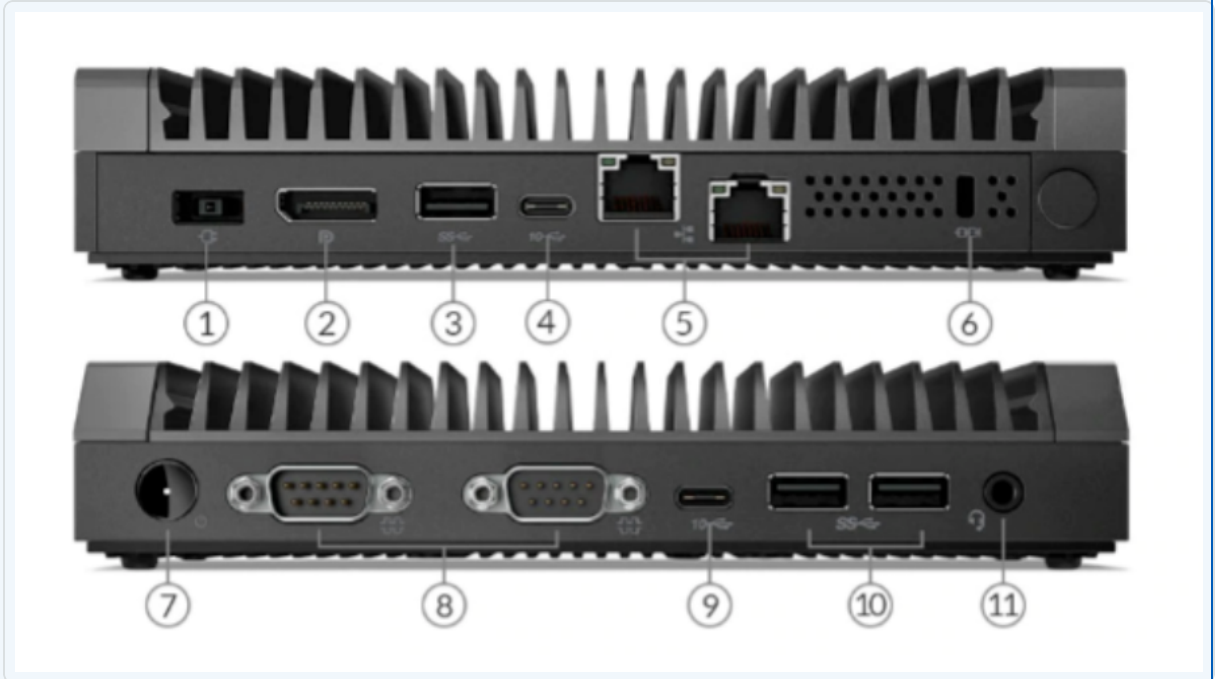
If you need to resolve configuration errors [!] with your **4) Installation source** or **5) Software selection** settings, see [Edit the Network Configuration](#) or [Edit the Proxy Configuration](#).

Caution: Do not enter any other menus or modify any other settings.



The installation runs and the server restarts.

Note: When installing on the Lenovo M90n-1 supported hardware platform, it is important that you connect the installer image to the right-most USB port on the side of the unit with the serial ports (location 10 in the following image):



- For Lenovo hardware: nic0 is port 1, nic1 is port 3

To watch the install on either unit, you need to select the **ttyS0** console entry in the menu.

What to do next:

- Continue getting started with Tenable Core + Tenable OT Security, as described in [Get Started](#).



Edit the Network Configuration

During installation, you may need to edit the network configuration settings. Perform this procedure to resolve errors [!] with your **4) Installation source** and/or **5) Software selection** settings.

Caution: Do not enter any other menus or modify any other settings.

To edit the network configuration:

1. From the **Installation** menu, press the **8** key.
2. Press the **Enter** key.

The **Network Configuration** menu appears.

3. Press the **2** key.
4. Press the **Enter** key.

The **Device Configuration** menu appears.

5. Review the **1) IPv4 address or "dhcp" for DHCP**, **2) IPv4 netmask**, **3) IPv4 gateway**, and **6) Nameservers** settings and, if necessary, edit them.

For example, you must edit these settings if you are installing Tenable Core on a static network without DHCP.

6. Check **8) Apply configuration in installer**.
7. Press the **c** key until you return to the **Installation** menu.
8. Press the **r** key to refresh the menu.
9. Confirm that settings 1-7 show an **[x]**. If the settings all show an **[x]** proceed to step 11.
10. If **4) Installation source** still shows a **[!]**:

Refresh the repository URL:

- a. Press the **4** key.
- b. Press the **Enter** key.

The **Installation Source** menu appears.



c. Press the **3** key.

d. Press the **Enter** key.

The **Installation Source** submenu appears.

e. Press the **2** key.

f. Press the **Enter** key.

The **Specify Repo Options** menu appears.

g. Press the **c** key.

h. Press the **Enter** key.

The system refreshes the repository URL and the **Installation** menu appears.

11. Press the **r** key to refresh the menu.

12. Press the **c** key until you return to the **Installation** menu.



Edit the Proxy Configuration

During installation, you may need to edit the proxy configuration settings to identify the proxy you want to use for internet access.

Caution: Do not enter any other menus or modify any other settings.

Note: You need to be able to reach appliance.cloud.tenable.com to install from the online ISOs (and to get online updates). For more information, see [Access Requirements](#).

To edit the proxy configuration:

1. From the **Installation** menu, press the **3** key.
2. Press the **Enter** key.

The **Proxy Configuration** menu appears.

3. Type the proxy you want to use. For example, *https://username:password@192.0.2.221:3128*.

Note: If your password includes a special character, the special character must be HTML URL encoded.

4. Press the **Enter** key.
5. If your proxy is a man-in-the-middle proxy that intercepts SSL traffic, a prompt appears.

In the prompt:

1. Type **yes**.
2. Press the **Enter** key.

The system temporarily disables SSL verification. The system automatically re-enables SSL verification after the installation completes.

The **Installation** menu appears.

6. Press the **4** key.
7. Press the **Enter** key.

The **Installation Source** menu appears.



8. Press the **3** key.

9. Press the **Enter** key.

The **Installation Source** submenu appears.

10. Press the **2** key.

11. Press the **Enter** key.

The **Specify Repo Options** menu appears.

12. Press the **c** key.

13. Press the **r** key, then the **Enter** key.

14. If necessary, continue pressing the **r** key, then the **Enter** key until **4) Installation source** no longer says (**Processing...**).

The system refreshes the repository URL.



Configure Tenable Core Multi-Factor Authentication

You can log into the Tenable Core user interface with multi-factor authentication (MFA). This topic explains how to configure MFA for Tenable Core and only applies to the user interface. Using MFA requires a Google Authenticator token.

Note: Multi-Factor Authentication is only supported on OL8 operating system deployments of Tenable Core.

To enable MFA for Tenable Core user interface login:

1. Install the Oracle EPEL repositories by running the following command:

```
sudo dnf install oracle-epel-release-el8
```

Note: It may require several minutes for the install to complete.

2. Disable Oracle EPEL repositories by default by running the following command:

```
sudo dnf config-manager --disable 'ol8_developer_EPEL*'
```

3. Install the Google Authenticator client and dependencies by running the following command:

```
sudo dnf install --enablerepo=ol8_developer_EPEL google-authenticator  
qrencode
```

4. For each user that needs to use MFA when logging in to the Tenable Core user interface, do one of the following:

- a. Run the following command as the user:

```
google-authenticator -t -d -f -u -w 5
```

Note: If using the Tenable Core user interface terminal, add `-Q utf8` to the `google-authenticator -t -d -f -u -w 5` command.



Note: Running this command for the same user more than once invalidates previous codes.

- i. In your authenticator app, scan the QR code.
 - ii. Enter the confirmation code from the app.
 - iii. (Optional, but recommended) Save the emergency scratch codes.
- b. Alternatively, for full control over the MFA token creation options, run the following command:

```
google-authenticator
```

5. Run the following command:

```
sudoedit /etc/pam.d/cockpit
```

6. Under the `auth` substack `password-auth` line add:

```
auth        required    pam_google_authenticator.so
```

7. Confirm that the first six lines of the `/etc/pam.d/cockpit` file look like this:

```
##PAM-1.0
auth        required    pam_sepermit.so
auth        substack    password-auth
auth        required    pam_google_authenticator.so
auth        include     postlogin
auth        optional    pam_ssh_add.so
.....
```

8. Log into the Tenable Core user interface.



Disk Management

You can use the Tenable Core interface to manage some aspects of your Tenable Core machine disk space. Tenable Core uses Linux logical volume management (LVM) for disk management.

Disk management via the Tenable Core interface assumes you understand basic LVM terminology:

- Volume group – A group of one or more physical volumes.
- Physical volume – A hard disk, hard disk partition, or RAID unit.
- Logical volume – A block of space on the volume group sized to mirror several or all of your physical volumes.
- File system – The file system on the logical volume.
- Mount point – The location where you mounted the file system in your operating system.

For more information about these concepts, see the general documentation for Linux.

Tenable Core Partitions

Tenable Core deploys with the following preconfigured partitions:

Note: This is not a complete list, but an example of the important partitions in Tenable Core.

- /boot
- Swap
- /
- /var/log
- /var/pcap
- /opt

To add more storage space to Tenable Core (typically, in /opt), add a disk or expand a disk as described in [Add or Expand Disk Space](#).



Add or Expand Disk Space

If you need more space in Tenable Core to meet the [requirements](#), add space to your machine by expanding an existing disk or adding a new disk. For general information about Tenable Core disk management, see [Disk Management](#).

Caution: You cannot reassign disk space after you have assigned the space to a file system.

To add or expand existing disk space on your Tenable Core machine:

1. Power down your machine, as instructed by your local administrator or the documentation for your local environment.
2. Add a new disk or expand an existing disk in your machine configuration, as instructed by your local administrator or the documentation for your local environment.

Note: For Tenable Core instances from 2019 or before: If you have reached the limit of partitions on your primary disk, Tenable recommends that you add an additional disk rather than expanding the primary disk.

3. Power up your machine, as instructed by your local administrator or the documentation for your local environment.

4. Log in to Tenable Core.

The **System** page appears.

5. In the left navigation bar, click **Storage**.

The **Storage** page appears.

6. In the **Filesystems** section, locate the file system with `/opt` as the **Mount Point** and note the file system **Name** (for example, `/dev/vg0/00`).

Tip: Typically, you want to add space to `/opt`. To add more storage space to a less common partition (for example, `/` or `/var/log`), locate the file system for that partition.

7. Click the row for the file system **Name** that includes your preferred partition as the **Mount Point**.

The **Volume Group** page appears.



8. In the **Physical Volumes** section, click the + button.

The **Add Disks** window appears.

9. Click the check box for the space you added.

10. Click **Add**.

The **Volume Group** page appears, updated to show the added space in the **Physical Volumes** section.

11. In the **Logical Volumes** section, expand the section for the file system **Name** that includes your preferred partition as the **Mount Point**.

12. Click **Grow**.

The **Grow Logical Volume** window appears.

13. Use the slider to increase the size of the file system to your desired size (typically, to the new maximum).

14. Click **Grow**.

The system expands the logical volume and the file system.

The **Volume Group** page appears, refreshed to reflect the new size.



Manually Configure a Static IP Address

If you deploy Tenable Core in an environment where DHCP is configured, Tenable Core automatically receives network configurations (including your IP address). If DHCP is not configured, you must manually configure a static IP address in Tenable Core.

For more information about the default NIC configuration in your environment, see [System and License Requirements](#).

Before you begin:

- Deploy or install Tenable Core + Tenable OT Security, as described in [Deploy or Install Tenable Core](#).
- Contact your network administrator and obtain your network's netmask and the IP address for your Tenable Core + Tenable OT Security deployment.

To configure a static IP address manually:

1. In the command-line interface (CLI) in Tenable Core, type the following to log in as a wizard user:

```
tenable-y3u1xwh1 login: wizard
Password: admin
```

A prompt appears asking if you want to configure a static IP address.

2. Press the **y** key.

(Optional) If the prompt does not appear, in the command-line interface (CLI) in Tenable Core, run the following command to access the configuration user interface:

```
nmtui edit
```

The list of connections page appears.

3. Select the connection you want to configure.
4. Press **Tab** to select **<Edit>**.



5. Press **Enter**.

The **Edit Connection** window appears.

6. In the **IPv4 Configuration** row, press **Tab** to select **<Automatic>**.

7. Press **Enter**.

8. Select **<Manual>** from the drop-down box.

9. Press **Enter**.

10. Press **Tab** to select **<Show>**.

11. Press **Enter**.

More configuration fields appear.

Note: Type the value for each configuration field as four numbers separated by a period. Refer to the examples for each field.

12. In the **Addresses** field, type the IPv4 IP address for your Tenable Core + Tenable OT Security deployment, followed by a forward slash and your netmask.

Example:

192.0.2.57/24

13. In the **Gateway** field, type your gateway IP address.

Example:

192.0.2.177

14. In the **DNS servers** field, type your DNS server IP address.

Example:

192.0.2.176



15. Press **Tab** to select **<Add...>**.

Note: Complete steps 12-15 only if you have more DNS server IP addresses to add. Repeat for each IP address.

16. Press **Enter**.

An empty box appears in the **DNS servers** row.

17. In the new row, type your second DNS server IP address.

Example:

```
192.0.2.8
```

18. Select the check the box in the **Require IPv4 addressing for this connection** row.

19. Press **Tab** to select **<OK>**.

The list of connections appears.

20. Press **Tab** to select **<Quit>**.

21. Press **Enter**.

If you log in with a wizard, a prompt appears asking if you want to create an administrator account.

To create an administrator account, see [Create a First-Time User Account](#).

You are logged out of the wizard account.

22. Log into the CLI using the administrator account.

23. Restart the connection. In the command-line interface (CLI) in Tenable Core, run the following command:

```
$ nmcli connection down "nic0" && nmcli connection up "nic0"
```

Note: Restarting the connection enables the system to recognize your static IP address. You can reboot the system instead to trigger the response.

What to do next:



- Confirm that the Tenable Core **nic1** MAC address matches the NIC MAC address in your VMware passive scanning configuration. If necessary, modify your VMware configuration to match your Tenable Core MAC address. For more information, see [System and License Requirements](#).



Create an Initial Administrator User Account

The first time you access Tenable Core + Tenable OT Security, you log in as a wizard user.

Then, you create an initial administrator account.

Tip: If you delay creating an initial administrator account, after a few minutes, the system locks you out of the wizard user account. Reboot Tenable Core to proceed with the initial administrator account creation.

Before you begin:

- Deploy or install Tenable Core + Tenable OT Security, as described in [Deploy or Install Tenable Core](#).

To create an initial administrator user account:

1. Navigate to the URL for your Tenable Core virtual machine.

The login page appears.

2. In the **User name** field, type **wizard**.
3. In the **Password** field, type **admin**.
4. Click **Log In**.

The **Create New Administrator** window appears.

5. In the **Username** field, type the username you want to use for your administrator account.
6. In the **Password** field, type a new password for your administrator account.

Note: Your password must meet the following minimum requirements:

- Minimum 14 characters long
- Cannot be a palindrome (i.e., a word or phrased spelled the same backward and forward)

Note: (For EL7 operating systems) Your password must meet the following minimum requirements:



- Minimum 14 characters long
- One capital letter
- One lowercase letter
- One numeric digit (0-9)
- One special character (~`!@#\$%^&*()+= _-{}[]\|:;'"?/<>,.)
- Cannot be a palindrome (i.e., a word or phrase spelled the same backward and forward)

7. Click **Create Account**.

A confirmation window appears.

8. Click **Finish Setup**.

Tenable Core creates your user account.

9. Click **Log Out**.

Tenable Core logs you out.

What to do next:

- (Optional) If you want to log in again, see [Log In to Tenable Core](#).
- (Optional) If you want to create another user account, see [Create New User Account](#).

Note: Log in again to create a new user account.



Log In to Tenable Core

Log in to Tenable Core to configure and manage your Tenable Core + Tenable OT Security instance in the Tenable Core interface.

Before you begin:

- Deploy Tenable Core + Tenable OT Security, as described in [Deploy or Install Tenable Core](#).

Note: For information on inbound and outbound port requirements, see [Access Requirements](#).

To log in to Tenable Core:

1. Navigate to the URL for your Tenable Core virtual machine.

The login page appears.


2. In the **User name** field, type your username.
3. In the **Password** field, type your password.
4. (EL7 deployments only) Select the **Reuse my password for privileged tasks** checkbox.

Note: You cannot configure or manage your instance of Tenable Core + Tenable OT Security if you do not select the **Reuse my password for privileged tasks** checkbox.

5. Click **Log in**.

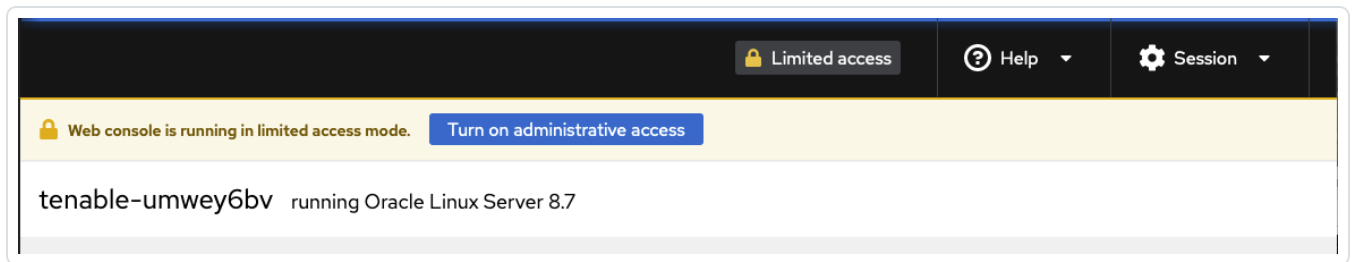
Tenable Core logs you in to the user interface.

To access administrative or limited access modes (OL8 deployments only):

- You can access an administrative access mode by clicking the  **Administrative access** button at the top of the page. In administrative access mode, you can switch back to a limited



access mode by clicking the  **Limited access** button in the same location.





Configure Tenable Core

You can use the Tenable Core user interface to configure Tenable Core + Tenable OT Security.

[Configure OT Security in the OT Security User Interface](#)

[Configure a Proxy Server](#)

[SNMP Agent Configuration](#)

[Configure an SNMP Agent via the User Interface](#)

[Configure an SNMP Agent via the CLI](#)

[View the Dashboard](#)

[Add a Server](#)

[Edit a Server](#)

[Delete a Server](#)

[Synchronize Accounts](#)

[View the System Log](#)

[Filter the System Log](#)

[Generate a Diagnostic Report](#)

[View Container Status](#)

[View OT Security Logs](#)

[Access the Terminal](#)

[Start, Stop, or Restart Your Application](#)



Configure OT Security in the OT Security User Interface

After you deploy Tenable Core + Tenable OT Security, you can access the OT Security interface from the Tenable Core interface to configure OT Security.

To access the OT Security interface from the Tenable Core interface:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Tenable.ot**.

The **Tenable.ot** page appears.

3. If prompted, provide your OT Security instance password.

For more information, contact your Tenable representative.

4. In the **Installation Info** section, next to **URLs**, click the URL hyperlink.

The OT Security interface appears.

5. Configure OT Security, as described in the *OT Security User Guide*.



Configure a Proxy Server

If your organization configured a proxy server to conceal your IP address, share an internet connection on your local network, or control internet access on your network, set the proxy configuration in Tenable Core.

Note: This proxy configuration only applies to updates and Tenable Core + Tenable Web App Scanning connections. The proxy configuration for the application updates itself needs to be completed from the application user interface.

Before you begin:

- Log in to Tenable Core in a browser, as described in [Log In to Tenable Core](#).

To configure a proxy server:

1. In the left navigation bar, click **Update Management**.

The **Updates** page appears.

2. In the **Proxy Host** box, type the hostname and port for your proxy server in the format *hostname:port* (for example, *https://192.0.2.1:2345*).
3. (Optional) In the **Proxy Username** box, type a username for your proxy server.
4. (Optional) In the **Proxy Password** box, type a password for the proxy.
5. Click **Save Proxy**.

The system initiates your proxy configuration.



SNMP Agent Configuration

If your organization uses a Simple Network Monitoring Protocol (SNMP) network management station (NMS) for device monitoring, you can install a net - snmp agent onto Tenable Core to report device data to your NMS.

You can use the user interface to configure common SNMPv2 or SNMPv3 settings. To configure other advanced or uncommon SNMP settings, use the CLI.

- [Configure an SNMP Agent via the User Interface](#)
- [Configure an SNMP Agent via the CLI](#)

To stop, start, restart, or reload the SNMP service in Tenable Core, or to view SNMP logs, see [Manage Services](#).



Configure an SNMP Agent via the User Interface

Required User Role: Administrator with **Reuse my password for privileged tasks** enabled

If your organization uses a Simple Network Monitoring Protocol (SNMP) network management station (NMS) for device monitoring, you can install a net - snmp agent onto Tenable Core to report device data to your NMS.

You can use the user interface to configure common SNMPv2c or SNMPv3 settings. To configure other advanced or uncommon SNMP settings, use the CLI as described in [Configure an SNMP Agent via the CLI](#).

To install and configure an SNMP agent on Tenable Core via the user interface:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **SNMP**.

If you already installed an SNMP agent on Tenable Core, the **SNMP** page appears. If you do not have an SNMP agent installed on Tenable Core, the **Install SNMP Packages** window appears.

3. (Optional) In the **Install SNMP Packages** window, click **Install SNMP** to install the SNMP service.

Tenable Core installs the SNMP service and opens inbound ports 161 and 162 on Tenable Core.

The **SNMP** page appears.

4. In the **SNMP common setup** section, configure the contact properties you want to appear on your NMS for this instance of Tenable Core.

Option	Description
Contact	A name, email address, or other identifier for the person you want to list as the contact for questions about this instance of Tenable Core.



Location	A geographic, organizational, or other location descriptor for the person you want to list as the contact for questions about this instance of Tenable Core.
----------	--

5. If you want to grant an SNMPv2c NMS access to Tenable Core, in the **SNMPv2c access control setup** section, configure one or both of the settings:

Option	Description
read-only access community name	Specifies the read-only community string for the SNMPv2c NMS.
read-write access community name	Specifies the read-write community string for the SNMPv2c NMS.

6. If you want to grant an SNMPv3 NMS read-only access to Tenable Core, in the **SNMPv3 access control setup** section, configure the settings:

Option	Description
Read-only Hash algorithm	Specifies the read-only hash algorithm for the SNMPv3 NMS.
Read-only access username	Specifies the username and password for an account on the SNMPv3 NMS.
Read-only access user password	

7. If you want to grant an SNMPv3 NMS read-write access to Tenable Core, in the **SNMPv3 access control setup** section, configure the settings:

Option	Description
Read-write Hash algorithm	Specifies the read-write hash algorithm for the SNMPv3 NMS that you want to grant read-write access on Tenable Core.
Read-write	Specifies the username and password for an account on the



access username	SNMPv3 NMS.
Read-write	
access user	
password	

8. Click **Save Configuration**.

Tenable Core saves your SNMP configuration.



Configure an SNMP Agent via the CLI

Required User Role: Root user

If your organization uses a Simple Network Monitoring Protocol (SNMP) network management station (NMS) for device monitoring, you can install a net - snmp agent onto Tenable Core to report device data to your NMS.

To install and configure an SNMP agent on Tenable Core via the CLI:

1. Prepare the net - snmp agent configuration file and add it to Tenable Core, as described in the *Net-SNMP Documentation*.

2. Log in to Tenable Core via the [Terminal](#) page or command line interface (CLI).

The command line appears.

3. In the /etc/snmp/ directory, open the snmpd.local.conf file.

The file opens.

4. Locate the **IncludeFile** line in the file.

5. Comment out the **IncludeFile** line to instruct Tenable Core to ignore all current and future configurations on the **SNMP** page of the Tenable Core user interface.

Tenable Core ignores SNMP configurations in the Tenable Core user interface.

Note: IP tables may need to be updated to facilitate SNMP communication. Be sure to confirm that your OS configuration allows for this communication.



View the Dashboard

You can use the **Dashboard** page to view usage statistics and manage your attached servers.

To view the Tenable Core dashboard:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. Hover over the left navigation bar and click **Overview**.

The **Overview** page appears.

You can:

Section	Action
Data graphs	<ul style="list-style-type: none">• View a graph of the CPU usage on your instance.• View a graph of the Memory usage on your instance.• View a graph of the Network bandwidth usage on your instance.• View a graph of the Disk I/O bandwidth usage on your instance.• To change the time range for data displayed in the graph:<ol style="list-style-type: none">1. In the top-right corner of the graph, click the drop-down box.2. Select a time range.The system refreshes the graph.
Servers table	<ul style="list-style-type: none">• Add a server, as described in Add a Server.• Edit a server, as described in Edit a Server.• Delete a server, as described in Delete a Server.• Synchronize user accounts, as described in Synchronize Accounts.• To view detailed information about a server, click a server row. For more information, see System.



Add a Server

To add a server:

Note: You can add as many servers to the Dashboard as you want.

1. Hover over the far-left navigation bar.

The left navigation plane appears.

2. Click **Dashboard**.

The **Dashboard** page appears.

3. Click the  icon.

The **Add Machine to Dashboard** window appears.

4. In the **Address** field, type the IP address or hostname for the server you want to add.

5. In the **Color** field, click the color you want to represent the server.

6. Click **Add**.

A confirmation window appears.

Note: If Tenable Core cannot establish authentication, the Unknown Host window appears. Contact your administrator to confirm your server's name or IP address.

7. Click **Connect**.

A credentials window appears.

8. Type your credentials in the **User name** and **Password** fields.

Note: To synchronize your accounts so that your account information and passwords are the same across multiple servers, click the *synchronize accounts and passwords* link. Refer to [Synchronize Accounts](#) for more information.

9. Click **Log In**.

Tenable Core adds the server to your list of servers in the **Servers** table.

Note: If the server does not appear in the list right away, refresh the browser.




Edit a Server

To edit a server:

1. From the top bar in the **Servers** table, click the  icon.

A pencil icon () and a trashcan icon () appear next to each server name.

2. Click the  icon.

The **Edit Server** window appears.

3. Do any of the following:

- In the **Host Name** box, type the name you want for your server.
- Update the server color:

- In the **Color** box, click the color bar.

A color menu appears.

- Click the color you want to represent the server.

The server color changes.

4. Click **Set**.

Tenable Core updates your server information.



Delete a Server

To delete a server:

1. From the top bar in the **Servers** table, click the check mark icon.

A pencil icon and a trashcan icon appear next to each server name.

2. Click the trashcan icon.

The server disappears from the server list.



Synchronize Accounts

If you have multiple user accounts but do not want to manage credentials for each one, you can synchronize your accounts, which allows you to navigate seamlessly between accounts without providing a different username and password for each account.

Note: You can synchronize accounts while either adding or editing servers in the [Dashboard](#).

To synchronize accounts:

1. While either adding or editing a server, click the **Synchronize users** link in the dialogue box. The **SYNCHRONIZE USERS** dialogue box appears with a list of your accounts.

Note: If you are adding a server, the linked text in the dialogue box is **synchronize accounts and passwords**.

2. Check the boxes next the accounts you want to synchronize.
3. Click **Synchronize**.



View the System Log

You can use the **System Log** page to view errors encountered in the system. The system log lists, categorizes, and stores system issues that have occurred within the last seven days.

To view Tenable Sensor Proxy logs:

1. Select the desired log from the drop-down box.
2. Click **View Log**.
The log appears in the text box.
3. Click on an individual entry (row) to get additional information.

August 24, 2017 ▼

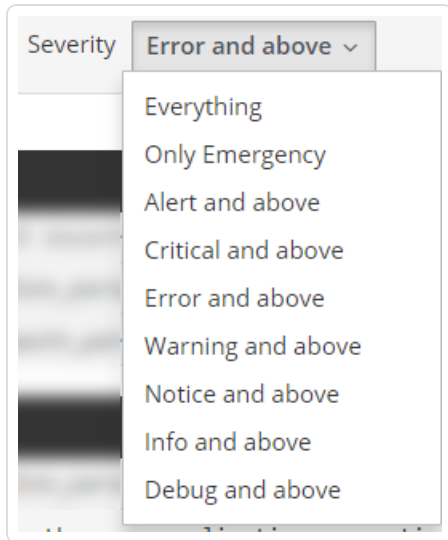
Severity Problems, Errors ▼

August 24, 2017		
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr2: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr1: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr0: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr2: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr1: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr0: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr2: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr1: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
▲ 11:21	Error probing device: Error sending ATA command IDENTIFY PACKET DEVICE to /dev/sr0: ATA command failed: error=0x01 count=0x02 status=0x50 (g-io-erro...	storaged
August 21, 2017		
▲ 15:04	fatal: Read from socket failed: Connection reset by peer [preauth]	sshd 2 ▶
August 16, 2017		
▲ 15:55	Failed to start Crash recovery kernel arming.	systemd
▲ 15:55	Failed to start Network Manager Wait Online.	systemd
▲ 15:54	piix4_smbus 0000:00:07.3: Host SMBus controller not enabled!	kernel
▲ 15:54	sd 0:0:0:0: [sda] Assuming drive cache: write through	kernel

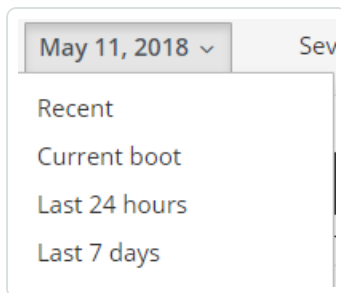


Filter the System Log

Several log type filters are available. The **Everything** option is selected by default. Select another option using the drop-down menu at the top of the page. The logs are listed with the most recent entry displayed first. Previous days are divided into sections with the corresponding date displayed in the header.



Filter the logs using the drop-down menu. Click on the date to display the filter options for the logs.





Generate a Diagnostic Report

You can use diagnostic reports to assist with troubleshooting Tenable Core.

To generate a diagnostic report for troubleshooting:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Diagnostic Reports**.

The **Diagnostic Reports** page appears.

3. Click the **Run report** button.

4. A user interface list appears as the report generates.

5. When the report is complete, the status displays **Done**.

6. Click the **Download** button next to each report that you want to download.

Tenable Core saves and prints the report.



View Container Status

After you deploy Tenable Core + Tenable OT Security, you can view container and image status information to troubleshoot issues with OT Security.

Note: Container and image status information is available only on Tenable Core deployments using EL7 operating systems.

To view container status information:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Containers**.

The **Containers** page appears.

3. View container status information:

Section	Action
Graphs	<ul style="list-style-type: none">• View a graph of the combined CPU usage on your instance.• View a graph of the combined memory usage on your instance.
Containers table	<p>Expand a row to view details for a container.</p> <div>Caution: Tenable does not recommend removing a container or modifying the status of a container unless recommended by Tenable Support.</div>
Images table	<p>Expand a row to view details for an image.</p> <div>Caution: Tenable does not recommend removing an image or modifying the status of an image unless recommended by Tenable Support.</div>



View OT Security Logs

If you experience an issue during the OT Security installation process or an issue with the OT Security service, you can view the logs to access more troubleshooting information.

To view logs for OT Security:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Tenable.ot**.

The **Tenable.ot** page appears.

3. In the **Tenable.ot Logs** section, click the drop-down box and select a log type:

- **Tenable.ot Service** – Logs related to issues with the OT Security service.
- **Tenable.ot Installation** – Logs related to issues during the Tenable Core + OT Security installation.

The section refreshes to show the logs.

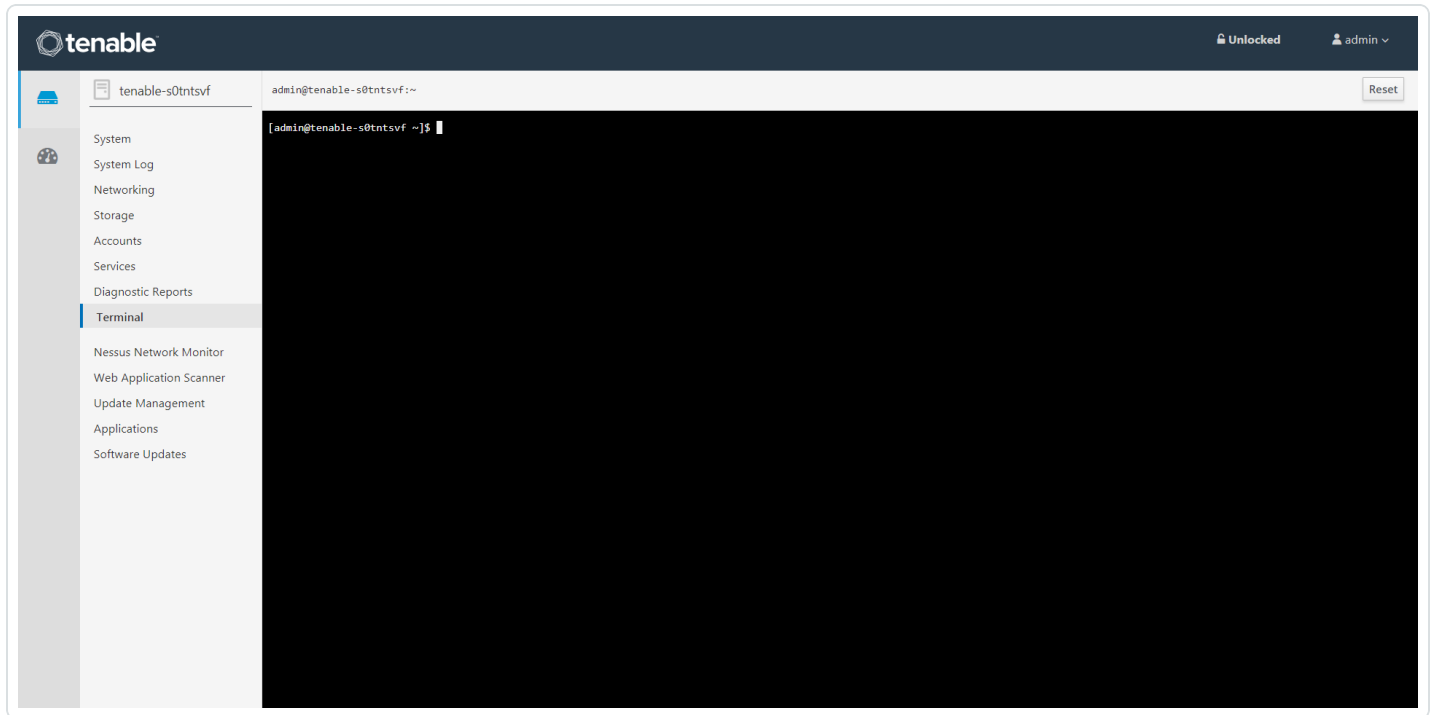
4. (Optional) To filter the logs that appear, select a time range, a **Severity**, or a **Service**.

The page applies the selected filters.



Access the Terminal

The **Terminal** page provides a console to access a user-specific command-line interface.





Start, Stop, or Restart Your Application

To start, stop, or restart your application via the user interface:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Tenable OT Security**.

The application page appears.

3. In the **Installation Info** section, click **Start**, **Stop**, or **Restart**.

To start, stop, or restart your application via the CLI:

1. Log in to Tenable Core via the [Terminal](#) page or command line interface (CLI).

The command line appears.

2. To change the status of your application, see the *OT Security Documentation*.



Manage the System

You can use the **Overview** page to view usage statistics and manage system settings.

To manage the Tenable Core system:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

You can:

Section	Action
Health	<ul style="list-style-type: none">• View your number of failed services.• View your number of available updates.• View the date, time, and location of the last successful login.• View login history.
System information	<ul style="list-style-type: none">• View your system Model.• View the Asset tag of your system.• View the Machine ID of your system• View the Uptime of your system.• View your system's hardware details.
Usage	<ul style="list-style-type: none">• View a graph of the CPU usage on your instance.• View a graph of the Memory usage on your instance.• View metrics and history of usage of your instance.
Configuration	<ul style="list-style-type: none">• View and edit the hostname for your instance, as described in Edit Your Tenable Core Hostname.• View the System time.



- View and edit the **Domain** for your instance.
- Change the **Performance profile** for your instance, as described in [Change Performance Profile](#).
- View and edit the **Cryptographic policy** for your instance.
- View the **Secure shell keys** for your instance.



Manage System Storage

You can use the **Storage** page to view real-time system storage graphs, filesystem information, and logs. For more information, see [Disk Management](#).

To manage Tenable Core storage:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Storage**.

The **Storage** page appears.

You can:

Section	Action
Graphs	<ul style="list-style-type: none">• View a graph of the Reading storage activity on your instance.• View a graph of the Writing storage activity on your instance.
Filesystems table	<ul style="list-style-type: none">• View information about each filesystem.• Click a row to view more details about the filesystem.• Rename a filesystem, as described in Rename a Filesystem.• Delete a filesystem, as described in Delete a Filesystem.



Rename a Filesystem

To rename a filesystem in Tenable Core:

1. In the left navigation pane, click **Storage**.

The **Storage** page appears.

2. In the **File Systems** section, click on the individual file in the file systems list.

The details page appears.

3. Click the **Rename** button in the upper right section of the window.

A new window appears.

4. Enter the new name for the **File System**.

5. Click **Create**.

The new name appears on the page.



Delete a Filesystem

To delete a filesystem in Tenable Core:

1. In the left navigation pane, click the **Storage** option. The **Storage** page displays.
2. In the **File System** section, click the individual file in the files systems list. The details page appears.
3. Click the red **Delete** button in the system heading.
4. Confirm that you want to delete the **File System**.

Please confirm deletion of centos

This device has filesystems that are currently in use. Proceeding will unmount all filesystems on it.

/	/dev/centos/root
---	------------------

Deleting a volume group will erase all data on it.

Caution: Deleting a volume group erases all data on it.



Manage Updates

You can use the **Updates Management** page to manage your Tenable Core updates.

If your deployment is online, Tenable recommends:

- Configuring automatic updates. For more information, see [Configure Automatic Updates](#).
- Performing on-demand updates, as needed. For more information, see [Update On Demand](#).

If your deployment is offline, you can perform offline updates. For more information, see [Update Tenable Core Offline](#).



Configure Automatic Updates

By default, Tenable Core has automatic updates enabled.

If you deploy Tenable Core in an online environment, Tenable recommends keeping automatic updates enabled. When performing an automatic update, Tenable Core retrieves and installs:

- The latest version of OT Security.
- The latest version of host operating system included in Tenable Core.
- The latest version of any additional packages required by Tenable Core.
- The latest version of any additional host operating system packages you installed.

Note: To update your OT Security application version, contact Tenable Support. You cannot use the Tenable Core interface to update OT Security.

To configure automatic updates:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click **Update Management**.

The **Update Management** page appears.

3. In the **AUTOMATIC UPDATES** section, click the **Edit** link in the **Unit State** row.

The **Services** details page appears, displaying the details for the **Scheduled System Updates** service.

4. Confirm that you have set **Unit State** to enabled (set to enabled by default).
5. Review the schedule for the automatic updates and modify, if needed, as described in [Configure Your Automatic Update Schedule](#).



Configure Your Automatic Update Schedule

By default, Tenable Core has automatic updates set to enabled.

If you deploy Tenable Core in an online environment, Tenable recommends keeping automatic updates enabled.

To configure the schedule for your automatic updates:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click **Update Management**.

The **Update Management** page appears.

3. In the **AUTOMATIC UPDATES** section, click the link in **Timer Config Line**.

The **Edit Timer Configuration** window appears.

4. Modify the schedule.

Note: If you set both a **Day of week** and a **Day of month**, the system only performs updates on days when those two parameters are true. For example, if you set **Wednesday** as the **Day of week** and **8** as the **Day of month**, Tenable Core performs automatic updates only on the 8th of the month if it is a Wednesday.

Tip: Tenable Core uses Eastern Time as your default time zone, unless you modify it as described in [Edit Your Time Settings](#).

5. Click **Save**.

Tenable Core modifies the schedule for automatic updates.



Update On Demand

If you deploy Tenable Core in an online environment, you can perform updates on demand. When updating on demand, Tenable Core retrieves and installs the following:

- The latest version of OT Security.
- The latest version of host operating system included in Tenable Core.
- The latest version of any additional packages required by Tenable Core.
- The latest version of any additional host operating system packages you installed.

Before you begin (Tenable Core deployments with EL7 operating systems):

- Configure for Update Checks:
 1. Navigate to the **Updates Management** page.
 2. Click **Configure** when this pop-up appears:



Confirmation of the upgrade success appears:



To update on demand:




1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click **Update Management**.

The **Update Status** section on the page shows the number of available updates.

3. (Optional) Click the  button to refresh the page with available updates in the **Update Status** section

4. Click the **Install Updates** button.

Tenable Core installs the updates.

5. Tenable Core confirms your system is up to date and prompts you to reboot, if required by any of the installed updates.

6. If prompted, restart your system.

To update on demand (Tenable Core deployments with EL7 operating systems):

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click **Software Updates**.

The **Software Updates** page appears.

3. Click **Check for Updates**.

The page refreshes and displays available updates.

4. If updates are available, click **Install all updates**.

Tenable Core confirms the updates are successfully completed.

To activate the upgrade for OT Security or OT Security Sensor:

Note: All OT Security and OT Security Sensor upgrades are staged when you install all updates. The upgrade is not yet installed. Click on one of the OT Security tabs, then click the blue arrow next to **RPM Version**. (As outlined in the following procedure.)



1. In the left navigation pane, click the **OT Security** tab or the **Sensor** tab for OT Security Sensor.

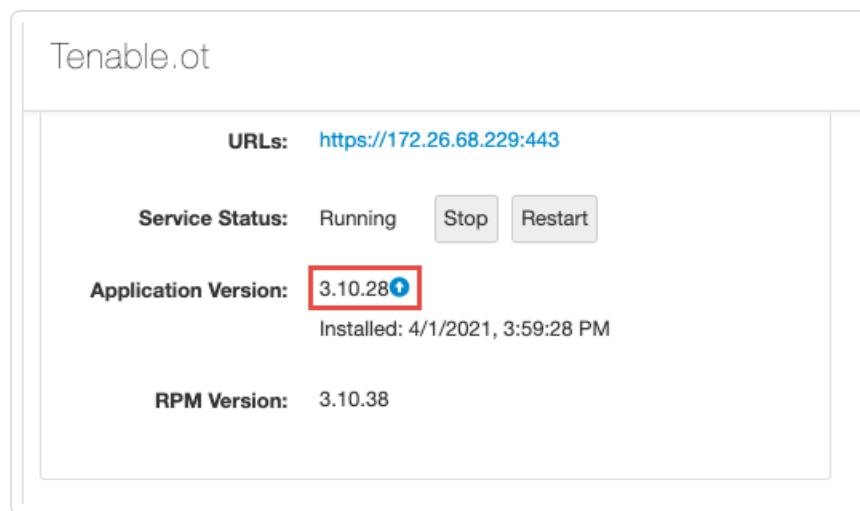
The installation information page appears.

The screenshot shows the Tenable OT Security Sensor web interface. The left navigation pane includes options like System, System Log, Networking, Storage, Accounts, Containers, Services, Diagnostic Reports, Terminal, **Tenable.ot** (selected), Remote Storage, Update Management, SSL/TLS Certificates, Backup/Restore, and Software Updates. The main content area is titled 'Tenable.ot' and displays 'INSTALLATION INFO:'. This section includes the following details:

- URLs:** <https://172.26.68.229:443>
- Service Status:** Running, with buttons for Stop and Restart.
- Application Version:** 3.10.28
- Installed:** 4/1/2021, 3:59:28 PM
- RPM Version:** 3.10.30

Below the installation info, there is a section for 'TENABLE.OT LOGS:' which includes a dropdown menu and a text area for logs.

2. Refresh the page to show the latest update available.



3. Click the blue arrow next to the application version to install the update.

Note: The OT Security user interface may be unavailable during an upgrade.

What to do next (Tenable Core deployments with EL7 operating systems):

1. If the update included any of the following packages, restart Tenable Core as described in [Restart Tenable Core](#).
 - kernel
 - glibc
 - linux-firmware
 - systemd
2. After manually updating, a pop-up screen appears directing you to restart:



Restart Recommended

Updated packages may require a restart to take effect.

Ignore

Restart Now

3. Restart your system.



Update Tenable Core Offline

Tenable recommends applying all offline updates to your Tenable Core machine in chronological order. Do not skip offline updates. There are two methods available to perform an offline update. For information about the contents of individual offline update files, see the [Tenable Core Release Notes](#).

Tip: For more information about updating Tenable Core, see the [FAQ](#).

Note: Service pack (SP) updates to OT Security may not be available for an online update in Tenable's repositories. Complete an offline update by downloading the latest installation ISO and performing the offline update procedure if you wish to update your version.

Note: While the quarterly update ISO can update your OT system, you may want to use the OT offline installer ISO as a source of updates. On the [downloads page](#), you can select from two ISO types for your Tenable Core + Tenable OT Security deployment:

- **Tenable Core Tenable.ot Self-Contained Installation ISO** - provides latest Tenable.OT ICP/Sensor and system updates (for example, Tenable-Core-Tenable.ot-offline-20231019.iso and Tenable-Core-Tenable.ot.Sensor-offline-20231019.iso)
- **Offline Update ISO Image** - provides quarterly cadence for ICP/Sensor and system updates (for example, Tenable-Core-Offline-Update-2023-Q3.iso).

Note: Tenable OT has centralized sensor updates provided by the ICP as of [Tenable Core + Tenable OT Security version 3.16.55](#). To ensure functionality, the ICP needs to have offline updates attached and mounted. When the sensor is connected to the ICP and the ICP has updates, running updates from the sensor installs the software served by the ICP.

To upload a Tenable Core offline update .iso file:

1. Navigate to the Tenable Core Offline Update ISO section of the [Tenable Downloads](#) page.
2. Click and download the offline update .iso file.
3. Upload the file via scp. For example:

```
scp local-iso-file.iso user@host:/srv/tenablecore/offlineiso/local-iso-file.iso
```



Note: The target line may vary; however, the destination must be the following path:
`/srv/tenablecore/offlineiso/tenable-offline-updates.iso`

4. Rename the offline update `.iso` file as **tenable-offline-updates.iso**.

To update Tenable Core via external media:

1. Navigate to the Tenable Core Offline Update ISO section of the [Tenable Downloads](#) page.
2. Click and download the offline update `.iso` file.
3. Burn the ISO to media (for example, DVD-DL, BD, or thumb drive).
4. Attach the media to a system and have it mount automatically.

Note: By default, the hardening on OL8 operating systems prevents USB media from mounting. In order to use USB drives with a Tenable Core OL8 operating system, the `/etc/modprobe.d/usb-storage.conf` file needs to be removed from that directory.

What to do next:

- [Update on Demand](#)



Application Data Backup and Restore

Backup and restore requires a connection to a remote storage host. When Tenable Core begins a scheduled or on-demand backup, your files are stored temporarily in `/opt/tenablecore/backup/spool` before being sent to the configured remote storage host.

Later, you can restore your backup data by uploading your backup file to Tenable Core.

Note: You can also use local backups in Tenable Core. Remote storage is safer and preferred, but local storage can be enabled. In the user interface you can specify how many backups to keep and download backups that are stored locally. For more information, see [Configure Storage for Tenable Core Backups](#).

For more information, see:

- [Configure Storage for Tenable Core Backups](#)
- [Perform an On-Demand Backup](#)
- [Change the Scheduled Backup Time](#)
- [Restore a Backup](#)

If you want to enable or disable a scheduled backup, click **Scheduled backups can be configured Here**.

Note: During a backup or a restore, Tenable Core stops the OT Security application service. You cannot use Tenable Core during this time. After the backup or restore completes, your services restart and OT Security resumes normal function.

Tip: A virtual machine snapshot backs up the entire virtual machine (application-installed files, application data, OS files, and configurations.) To take a snapshot of your virtual machine, see [Take a Snapshot](#).

Remote Storage Host Requirements

The location where you store your backups must:

- Have rsync installed.
- Have an SSH server installed and running.



- Have sufficient storage space to hold your application's backup data.
- Have a user with write permissions to manage the remote storage host location.

Note: Tenable Core does not manage your remote storage system. If you have concerns about space on your remote storage system, remove backup files manually when you no longer need them.



Configure Storage for Tenable Core Backups

Before you can back up your application data, you must set the storage location. You can establish a remote storage host with an SSH key and configure Tenable Core to use that host, or you can store backups locally.

Configure remote backup storage

Before you begin:

- Confirm your SSH private key for authenticating to the remote storage host is in OpenSSH key format.
- Prepare your remote storage host environment, as described in the [Remote Storage Host Requirements](#).
- Confirm that you can log in to your remote storage host using SSH key authentication.

Note: There are several ways to create your own SSH private key. These are not Tenable-specific processes. Consult your system administrator.

To configure your remote storage host:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Remote Storage**.

The **Remote Storage Configuration** page appears.

3. In the **Remote Host** box, type the hostname for the remote storage host where you want to store your backup files.
4. In the **Remote Path:** box, type the location on the remote host where you want to store your backup files.
5. In the **User** box, type the username for a user on the remote host with edit permissions for the remote path location.



6. In the **SSH private key** box, paste the SSH private key for authenticating to the remote storage host.
7. Click **Save Configuration**.

Configure local backup storage

Storing backups exclusively on the Tenable Core system where the backup is taken is not recommended. Backups should be kept in a separate location in order to avoid data loss in the event that the Tenable Core system becomes unusable.

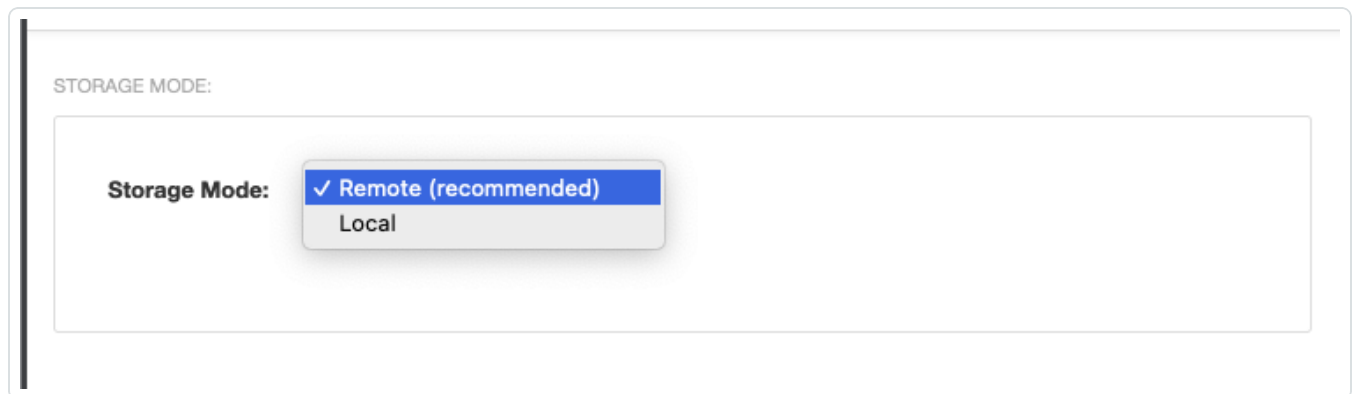
1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Remote Storage**.

The **Remote Storage Configuration** page appears.

3. In the **Storage Mode** drop-down menu and select **Local**.



4. In the left-navigation bar, click **Backup/Restore**.

The **Backup/Restore** page appears.

In the user interface you can specify how many backups to keep and download backups that are stored locally.

Note: In local storage mode, backups are stored in a folder under /opt.

Any backups that have been taken appear in the list of **Available Backups**.



Note: A fixed number of backups are kept with the oldest ones being deleted. Tenable recommends you make sure there is enough space for that number of backups plus one on the disk that contains /opt.

What to do next:

- Perform a backup, as described in [Perform a Backup on Demand](#).
- (Optional) Change your automatic backup schedule, as described in [Change Your Automatic Backup Schedule](#).
- (Optional) Restore a backup, as described in [Restore a Backup](#).



Perform an On-Demand Backup

Perform a backup of your application data anytime between scheduled backups. For more information about scheduled backups, see [Change the Scheduled Backup Time](#).

Note: During a backup or a restore, Tenable Core stops the OT Security application service. You cannot use Tenable Core during this time. After the backup or restore completes, your services restart and OT Security resumes normal function.

Before you begin:

- Configure your remote storage host, as described in [Configure Storage for Tenable Core Backups](#).

To perform an on-demand backup:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Backup/Restore**.

The **Backup/Restore** page appears.

3. In the **AVAILABLE MODULES** section, select the box next to the application you want to back up.

4. Click **Take Backup Now**.

The **BACKUP IN PROGRESS** window appears. The window disappears after the system completes the backup.

What to do next:

- (Optional) Restore the backup, as described in [Restore a Backup](#).



Change the Scheduled Backup Time

By default, Tenable Core backs up your applications daily at 2:30 AM local time. You can edit your schedule preferences in Tenable Core to change the time and frequency of your scheduled backups.

For more information about managing your time preferences, see [Edit Your Time Settings](#).

Note: Tenable Core cannot perform a backup (scheduled or on-demand) until you configure a remote storage host on your computer. For more information, see [Configure Storage for Tenable Core Backups](#).

To change the scheduled backup time:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Backup/Restore**.

The **Backup/Restore** page appears.

3. In the **AUTOMATIC BACKUPS** table, locate the **Timer Config Line** row.

4. Click **Edit**.

The **EDIT TIMER CONFIGURATION** window appears.

5. On the **EDIT TIMER CONFIGURATION** window, update the configuration based on your desired backup frequency:

Note: If you specify a day of the week and a day of the month for your scheduled backups, Tenable Core performs the backups only when those values overlap. For example, if you specify *Monday* and *15*, Tenable Core performs your backups only on Mondays that fall on the 15th day of the month.

Frequency	Configuration
Daily	<ul style="list-style-type: none">• In the Day of Week and Day of Month boxes, type an asterisk (*).• In the Hour box, type the hour when you want Tenable Core to perform a backup as an integer between 0 and 23.• In the Minute box, type the minute when you want Tenable Core



	to perform a backup as an integer between 0 and 59.
Weekly	<ul style="list-style-type: none">• In the Day of Week box, type the day of the week when you want Tenable Core to perform a backup (for example, <i>Monday</i> or <i>Mon</i>).• In the Day of Month box, type an asterisk (*).• In the Hour box, type the hour you want Tenable Core to perform a backup as an integer between 0 and 23.• In the Minute box, type the minute you want Tenable Core to perform a backup as an integer between 0 and 59.
Monthly	<ul style="list-style-type: none">• In the Day of Week box, type an asterisk (*).• In the Day of Month box, type the day of the month when you Tenable Core to perform a backup as an integer (for example, <i>15</i>).• In the Hour box, type the hour you want Tenable Core to perform a backup as an integer between 0 and 23.• In the Minute box, type the minute you want Tenable Core to perform a backup as an integer between 0 and 59.

6. Click **Save**.

Your scheduled backup time updates.

What to do next:

- (Optional) Perform an on-demand backup, as described in [Perform a Backup On Demand](#).
- (Optional) Restore the backup, as described in [Restore a Backup](#).



Restore a Backup

You can restore a backup to return an application to a prior state by uploading a backup to restore, or by restoring from your local storage.

Note: During a backup or a restore, Tenable Core stops the OT Security application service. You cannot use Tenable Core during this time. After the backup or restore completes, your services restart and OT Security resumes normal function.

Note: You can only restore backups that have been taken using the Tenable Core backup utility. Older backups from Tenable OT Security before version 3.18 are not compatible. If you are trying to restore from a backup captured in an older version of Tenable OT Security, before version 3.18, contact support for the necessary instructions and commands.

Before you begin:

- Check your firewall settings and confirm that your computer can access port 8090 on Tenable Core, as described in [Access Requirements](#).

Note: If you do not confirm this ahead of the backup/restore process Tenable Core provides a link to click which opens a connection-check URL in a new tab so you can accept the certificate for port 8090, and have the restoration process try again.

- For help with issues encountered during the process, refer to the [FAQ](#).

To upload and restore an application backup:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Backup/Restore**.

The **Backup/Restore** page appears.

3. In the **UPLOAD AND RESTORE** section, click **Choose a file**.

Your file manager appears.

4. Select the desired backup file.

5. Click **Open**.



A details window for the backup appears.

6. If prompted, confirm that you want to upgrade or downgrade your current Tenable Core application version to match the application version from your backup file.

- a. Click **Install Correct Version**.

A confirmation window appears.

- b. Click **Replace**.

Tenable Core installs the correct version of your application.

The **Restore** window appears.

7. Click **Restore**.

The system restores your backup to Tenable Core.

Note: Do not log out of Tenable Core or close your browser until after the **Uploading the archive** task is complete. If you end your session early, the restore fails.

When the restore finishes, a success message appears.

Tip: If the restore attempt fails, an error message appears with details and remediation instructions. Resolve the errors and click **Retry**.

To restore a locally stored backup:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Backup/Restore**.

The **Backup/Restore** page appears.

3. In the **Upload and Restore** section, click **Restore from local backup storage**.

The **Select Local Backup** pop-up window appears.

4. Select the desired backup file.

5. Click **Restore**.



A details window for the backup appears.

6. Click **Restore**.

The system restores your backup to Tenable Core.

Note: You can use this feature to restore Tenable Core backups uploaded to the system by tools such as scp or rsync. Store the backups in `/opt/tenablecore/remote-storage/localstorage/` before attempting to restore.



Manage Services

You can use the **Services** page to view information about targets, system services, sockets, timers, and paths.

To manage Tenable Core services:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Services**.

The **Services** page appears.

You can:

Tab	Action
Targets	<ol style="list-style-type: none">1. Click Stop, Start, Restart, or Reload. <div>Note: Restarting a service completely stops and restarts the service. Reloading a service only reloads the service's configuration files.</div> <p>The system changes the status of the service.</p>
System Services	<ul style="list-style-type: none">• View a list of system services.• Click a row to view detailed information about a service.• To change the status of a service:<ol style="list-style-type: none">1. Click a row.<p>The service details page appears.</p><ol style="list-style-type: none">2. Click Stop, Start, Restart, or Reload.<div>Note: Restarting a service completely stops and restarts the service. Reloading a service only reloads the service's configuration files.</div><p>The system changes the status of the service.</p>



Sockets	<ul style="list-style-type: none">• View a list of socket services.• Click a row to view detailed information about a service.• To change the status of a service:<ol style="list-style-type: none">1. Click a row.<p>The service details page appears.</p>2. Click Stop, Start, Restart, or Reload.<div>Note: Restarting a service completely stops and restarts the service. Reloading a service only reloads the service's configuration files.</div><p>The system changes the status of the service.</p>
Timers	<ul style="list-style-type: none">• View a list of timer services.• Click a row to view detailed information about a service.• Create a new timer, as described in Create a Timer.• To change the status of a service:<ol style="list-style-type: none">1. Click a row.<p>The service details page appears.</p>2. Click Stop, Start, Restart, or Reload.<div>Note: Restarting a service completely stops and restarts the service. Reloading a service only reloads the service's configuration files.</div><p>The system changes the status of the service.</p>
Paths	<ul style="list-style-type: none">• View a list of path services.• Click a row to view detailed information about a service.• To change the status of a service:



1. Click a row.

The service details page appears.

2. Click **Stop**, **Start**, **Restart**, or **Reload**.

Note: Restarting a service completely stops and restarts the service. Reloading a service only reloads the service's configuration files.

The system changes the status of the service.



Create a Timer

To create a timer:

1. In the left navigation pane, click the **Services** option. The **Services** page displays.
2. In the **Services** page heading, click the **Create Timers** button.

A new window appears.

3. Enter the **Service Name**, **Description**, **Command**, and **Run** information.
4. Click **Save**.

The new timer displays in the enabled section of the list.

Create Timers

Service name

Description

Command

Run

After system boot

After

00

Seconds

Cancel

Save



Manage System Networking

You can use the **Networking** page to view real-time system network traffic information, interface connection options, and logs.

To manage Tenable Core system networking:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Networking**.

The **Networking** page appears.

You can:

Section	Action
Graphs	<ul style="list-style-type: none">• View a graph of the Sending (outbound) network traffic on your instance.• View a graph of the Receiving (inbound) network traffic on your instance.
Firewall section	<ul style="list-style-type: none">• View Firewall rules.• Add Zones.• Add Allowed Services.
Interfaces table	<ul style="list-style-type: none">• Aggregate multiple network interfaces into a single-bonded interface, as described in Add a Bonded Interface.• Add a team of interfaces, as described in Add a Team of Interfaces.• Add a bridge to create a single aggregate network from multiple communication networks, as described in Add a Bridge Network.• Add a VLAN, as described in Add a VLAN.
Networking Logs table	View a log of activity for the system network.



Note: You can only create a new interface by plugging one in, or by adding one to the virtual machine according to the instructions provided by your virtualization tools. This is not provided by Tenable Core.



Add a Bonded Interface

You can add a bond to aggregate multiple network interfaces into a single-bonded interface.

To add a bonded interface to Tenable Core:

1. In the left navigation pane, click the **Networking** option. The **Networking** page displays.
2. In the **Interfaces** heading, click the **Add Bond** button on the **Interfaces** section. A new window appears.
3. Enter a **Name** for the bond.
4. Select the members (interfaces) to bond to in the **Members** section.
5. Select an option for **MAC**.
6. Select the **Mode**.
7. Select a **Primary**.
8. Select the type of **Link Monitoring**. Labeled in the drop-down list is the recommended type.



9. Enter the **Monitoring Intervals** with options to link up or down delay increments.

Bond Settings

Name	<input type="text" value="bond0"/>		
Members	<input type="checkbox"/>	ens160	
	<input type="checkbox"/>	ens32	
MAC	<input type="text"/>		
Mode	Active Backup		
Primary			
Link Monitoring	MII (Recommended)		
Monitoring Interval	<input type="text" value="100"/>		
Link up delay	<input type="text" value="0"/>		
Link down delay	<input type="text" value="0"/>		



Add a Team of Interfaces

To add a team of interfaces to Tenable Core:

1. In the left navigation pane, click the **Networking** option. The **Networking** page displays.
2. In the **Interfaces** heading, click the **Add Team** button on the **Interfaces** section. A new window appears.
3. Enter the **Team Name**.
4. Select the **Ports** needed for the new team.
5. Select the **Runner** and **Link Watch** from the drop-down list.
6. Enter the **Link up** and **Link down delay** increments.

Team Settings

Name	<input type="text" value="team0"/>
Ports	<input type="checkbox"/> ens192
Runner	Active Backup ▼
Link Watch	Ethtool ▼
Link up delay	<input type="text" value="0"/>
Link down delay	<input type="text" value="0"/>



Add a Bridge Network

You can add a bridge to create a single aggregate network from multiple communication networks.

To add a bridge network to Tenable Core:

1. In the left navigation pane, click the **Networking** option. The **Networking** page displays.
2. In the **Interfaces** heading, click the **Add Bridge** button on the **Interfaces** section. A new window appears.
3. Enter a **Name** for the bridge.
4. Select the **Ports** that you want to connect to the bridge.
5. Click the box next to **Spanning Tree Protocol (STP)** to get more STP options.
6. Click **Apply** to add the new bridge.

Bridge Settings

Name	<input type="text" value="bridge0"/>
Ports	<div><input type="checkbox"/> ens192</div> <div><input type="checkbox"/> ens192.1</div>
Spanning Tree Protocol (STP)	<input checked="" type="checkbox"/>
STP Priority	<input type="text" value="32768"/>
STP Forward delay	<input type="text" value="15"/>
STP Hello time	<input type="text" value="2"/>
STP Maximum message age	<input type="text" value="20"/>



Add a VLAN

To add a VLAN to Tenable Core:

1. Click the **Add VLAN** button on the Interfaces section. A new window appears.
2. Select the **Parent** from the drop-down list.
3. Enter the **VLAN Id** and name.
4. Click **Apply** to add the **VLAN**.
5. The new **VLAN** displays in the **Interface** list.

VLAN Settings

Parent	ens192
VLAN Id	1
Name	ens192.1

Cancel

Apply



Manage Certificates

From the **SSL/TLS Security Certificates** page, you can manage the certificates used by Tenable Core and your application.

[Manage the Server Certificate](#)



Manage the Server Certificate

When you first deploy Tenable Core, Tenable provides a default server certificate for accessing the Tenable Core interface.

Tip: By default, Tenable Core uses separate certificates for Tenable Core and OT Security. For information about the OT Security application certificate, see the *OT Security Documentation*.

Note: The default certificate is not signed by a recognized certificate authority (CA). If your browser reports that the Tenable Core server certificate is untrusted, Tenable recommends uploading a custom server certificate signed by a trusted certificate authority (CA) for Tenable Core use. For more information, see [Upload a Custom Server Certificate](#). Alternatively, you can download the Tenable-provided CA certificate (cacert.pem) for your server certificate and upload it to your browser.

If you upload a custom server certificate signed by a custom CA, you must also provide certificates in the chain to validate your custom server certificate.

For more information, see:

- [Upload a Custom Server Certificate](#)
- [Remove a Custom Server Certificate](#)



Upload a Custom Server Certificate

If you do not want to use the Tenable-provided server certificate, you can upload a custom server certificate to Tenable Core. For more information, see [Manage the Server Certificate](#).

You cannot upload multiple custom server certificates to Tenable Core. Uploading a new file replaces the existing file.

Before you begin:

- Confirm your custom server certificate and key files use the *.der, *.pem, or *.crt extension.
- Move the custom server certificate and key files to a location accessible from your browser.

To upload a custom server certificate for Tenable Core:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click **SSL/TLS Certificates**.

The **SSL/TLS Certificates** page appears.

3. Click the **System Certificate** tab.

4. Locate the **Update Certificate** section in the **SERVER CERTIFICATES** section.

Update Certificate:

* Server Certificate:	<input type="button" value="Choose File"/>	No file chosen
* Server Key:	<input type="button" value="Choose File"/>	No file chosen
Intermediate Certificate:	<input type="button" value="Choose File"/>	No file chosen
Custom Root CA Certificate:	<input type="button" value="Choose File"/>	No file chosen

* - Required

5. Provide your **Server Certificate**.



- a. Click **Choose File**.

The upload window appears.

- b. Browse to and select the file.

Tenable Core loads the file.

6. Provide your **Server Key**.

- a. Click **Choose File**.

The upload window appears.

- b. Browse to and select the file.

Tenable Core loads the file.

7. (Optional) If your custom server certificate is signed by a custom CA that requires an intermediate certificate to validate the custom server certificate, provide your **Intermediate Certificate**.

- a. Click **Choose File**.

The upload window appears.

- b. Browse to and select the file.

Tenable Core loads the file.

8. (Optional) If your custom server certificate is signed by a custom CA, upload your **Custom Root CA Certificate**.

- a. Click **Choose File**.

The upload window appears.

- b. Browse to and select the file.

Tenable Core loads the file.

9. Click **Install Server Certificates**.

Tenable Core uploads the files. A success message appears to confirm the upload succeeded.



10. In the left navigation pane, click **Services**.

The **Services** page appears.

11. Restart the **Cockpit** service, as described in [Manage Services](#).

The **Cockpit** service restarts and enables the new certificate.



Remove a Custom Server Certificate

If you no longer want to use your custom server certificate for Tenable Core, you can remove the certificate and revert to using a Tenable-provided server certificate. For more information, see [Manage the Server Certificate](#).

To remove a custom server certificate and revert to the Tenable-provided default certificate:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click **SSL/TLS Certificates**.

The **SSL/TLS Certificates** page appears.

3. Click the **System Certificate** tab.

4. In the **SERVER CERTIFICATES** section, in the **Update Certificate** section, click **Reset Server Certificates**.

A confirmation window appears.

5. Click **Reset**.

A success message appears to confirm the reset succeeded.



Manage User Accounts

You can use the **Accounts** page to manage user accounts for your Tenable Core instance.

To manage Tenable Core user accounts:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation bar, click **Accounts**.

The **Accounts** page appears.

Do any of the following:

- Create a new user account, as described in [Create New User Account](#).
- Edit a user account, as described in [Edit a User Account](#).
- Delete a user account, as described in [Delete a User Account](#).



Create New User Account

Required User Role: Administrator

You can create a new user account from the **Accounts** page.

To create a new user account:

1. Log in to Tenable Core, as described in [Log In to Tenable Core](#).
2. In the left navigation bar, click **Accounts**.

The **Accounts** page appears.

3. Click **Create New Account**.

The **Create New Account** window appears.

4. In the **Full Name** box, type the user's full name.
5. In the **User Name** box, type a username for the user account.
6. In the **Password** box, type a password for the user account.

Note: Your password must meet the following minimum requirements:

- Minimum 14 characters long
- Cannot be a palindrome (i.e., a word or phrased spelled the same backward and forward)

Note: (For EL7 operating systems) Your password must meet the following minimum requirements:

- Minimum 14 characters long
- One capital letter
- One lowercase letter
- One numeric digit (0-9)
- One special character (~`!@#\$%^&*()+=-_{}[]\|:;'"?/<>.,)



- Cannot be a palindrome (i.e., a word or phrased spelled the same backward and forward)

7. In the **Confirm** box, retype the password.

8. Click **Create**.

Tenable Core creates the new account and displays it on the **Accounts** page.

What to do next:

- (Optional) If you want to configure the user account, see [Edit a User Account](#).
- (Optional) If you want to delete the user account, see [Delete a User Account](#).



Edit a User Account

Required User Role: Administrator

You can edit a user account configuration, including the user's full name, password, roles, access, and public SSH keys.

Before you begin:

To edit a user account:

1. Log in to Tenable Core, as described in [Log In to Tenable Core](#).
2. In the left navigation bar, click **Accounts**.

The **Accounts** page appears.

3. Click the user account you want to edit.

The account page for the user account appears.

4. On the user account page, you can:

Section	Action
Full Name	Type a name for the user account.
Roles	<ul style="list-style-type: none">• To grant the user account administrator access, select the Server Administrator check box.• To remove administrator access from the user account, clear the Server Administrator check box.
Access	<ul style="list-style-type: none">• To lock the user account, select the Lock Account check box to lock the user account.• To unlock the user account, clear the Lock Account check box to unlock the user account.• To configure the account to remain unlocked indefinitely:<div>Note: If you do not configure the account to remain unlocked</div>



	<div>indefinitely, Tenable Core automatically locks the account on the set expiration date.</div> <ol style="list-style-type: none">1. Click Never lock account. The Account Expiration window appears.2. Select the Never lock account option.3. Click Change. Tenable Core sets the account to remain unlocked indefinitely. <ul style="list-style-type: none">• Select an expiration date for the account:<ol style="list-style-type: none">1. Click Never lock account. The Account Expiration window appears.2. Select the Lock account on option.3. Click the box next to the Lock account on option. A calendar drop-down box appears.4. In the calendar drop-down box, select the date when you want the account to age out.5. Click Change. Tenable Core sets the expiration date for the user account.
Password	<ul style="list-style-type: none">• To set a new user account password:<ol style="list-style-type: none">1. Click Set Password. The Set Password window appears.2. In the New Password box, type the password you want to use for the account. <div>Note: Your password must meet the following minimum</div>



requirements:

- Minimum 14 characters long
- Cannot be a palindrome (i.e., a word or phrased spelled the same backward and forward)

Note: (For EL7 operating systems) Your password must meet the following minimum requirements:

- Minimum 14 characters long
- One capital letter
- One lowercase letter
- One numeric digit (0-9)
- One special character (~!@#\$%^&*()+=-_{ }[]\|:;'"?/<>.,.)
- Cannot be a palindrome (i.e., a word or phrased spelled the same backward and forward)

3. Click **Set**.

Tenable Core updates the user account password.

- To force a user to change their user account password:

1. Click **Force Change**.


The **Force password change** window appears.

2. Click **Reset**.

Tenable Core disables the password for the user account.
The user must change the password on the next login attempt.

- Configure the user account password to remain active indefinitely:




	<div>Note: If you do not configure the password to remain active indefinitely, Tenable Core automatically ages out the password on the set expiration date.</div> <ol style="list-style-type: none">1. Click Never expire password. The Password Expiration window appears.2. Select the Never expire password option.3. Click Change. Tenable Core sets the password to remain active indefinitely. <ul style="list-style-type: none">• Select an expiration date for the user account password:<ol style="list-style-type: none">1. Click Never expire password. The Password Expiration window appears.2. Select the Require password change every [blank] days option.3. In the Require password change every [blank] days section, type the number of days that you want to pass between password expiration dates (for example, type <i>90</i> if you want the password to age out every 90 days).4. Click Change. Tenable Core sets the expiration date for the user account password.
Authorized Public SSH Keys	<ul style="list-style-type: none">• To add a public SSH key to the user account:<ol style="list-style-type: none">1. In the Authorized Public SSH Keys table, click the  icon. The Add public key window appears.2. In the text box, type or paste your public SSH key.



3. Click **Add key**.

Tenable Core adds the SSH key to the user account.

- To remove a public SSH key:

1. In the **Authorized Public SSH Keys** table, next to the key you want to remove, click the  icon.

Tenable Core removes the SSH key from your account.



Delete a User Account

Required User Role: Administrator

You can delete a user account from the **Accounts** page.

To delete a new user account:

1. Log in to Tenable Core in a browser, as described in [Log In to Tenable Core](#).

2. In the left navigation bar, click **Accounts**.

The **Accounts** page appears.

3. Click the user account you want to delete.

The account page for the user account appears.

4. In the upper-right corner, click **Delete**.

The delete window for the user account appears.

5. (Optional), if you want to delete files attached to the user account, select the **Delete Files** check box.

Note: This file deletion is permanent. If you do not delete them, the files remain attached to the Tenable Core instance, along with their existing access permissions. Users who were previously granted access can still access the files.

6. Click **Delete**.

Tenable Core delete the user account.



Change Performance Profile

To change the performance profile for your Tenable Core instance:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click the **Overview** option.

The **Overview** page displays.

3. Click on the **edit** link next to the **Performance profile** option in the **Configuration** tile. A new window appears displaying **Performance Profile** options.

4. Select the desired **Performance Profile**. The recommended profile is labeled in the list.

5. Click **Change Profile** to confirm the new selection.

Change Performance Profile

powersave

Optimize for low power consumption

throughput-performance

Broadly applicable tuning that provides excellent performance across a variety of common server workloads. This is the default profile for RHEL7.

virtual-guest

Optimize for running inside a virtual guest.

recommended

Cancel

Change Profile



Restart Tenable Core

To restart your Tenable Core instance:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click the **System** option.

The **System** page displays.

3. Next to the **Power Options** item, click the **Restart** button or select it from the drop-down box.

A new window appears.

4. Enter a message for the users in the text box.

5. Select the delay time from the drop-down menu. This is the time that the restart begins.

Choose from one of the minute increments or enter a specific time. There is also an option to restart immediately with no delay.

6. Click the **Restart** button to initiate and save the updated information.

Restart

Message to logged in users

Delay

1 Minute

Cancel

Restart



Shut Down Tenable Core

To shut down your Tenable Core instance:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click the **System** option.

The **System** page displays.

3. Next to the **Power Options** item, click the arrow by **Restart** to display the drop-down menu. Select **Shut Down**.

A new window appears.

4. Enter a message for the users in the text box.
5. Select the delay time from the drop-down menu. This is the time that the shutdown begins. Choose from one of the minute increments or enter a specific time. There is also an option to Shut Down immediately with no delay.
6. Click **Shut Down** to initiate and save the updated information.

Shut Down

Message to logged in users

Delay

1 Minute ▼

Cancel

Shut Down



Edit Your Tenable Core Hostname

To edit the hostname for your Tenable Core instance:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. In the left navigation pane, click the **Overview** option.

The **Overview** page displays.

3. Click the **edit** link next to the **Hostname** option in the **Configuration** tile.

A new window appears with the options to enter or edit the **Pretty Host Name** and **Real Host Name**.

4. Enter the **Pretty Host Name** for the machine.

The **Real Host Name** updates as you enter the **Pretty Host Name**.

5. Click **Change** to update the name.

The new name displays next to the **Hostname** option.

Change Host Name

Pretty Host Name	<input type="text" value="New Host Machine"/>
Real Host Name	<input type="text" value="new-host-machine.dev"/>



Edit Your Time Settings

Caution: Do not edit time settings on Tenable Core + Tenable OT Security using any method other than the one described in the following process.

To edit the system time and time zone settings for your Tenable Core instance:

1. Log in to Tenable Core via the user interface, as described in [Log In to Tenable Core](#).

The Tenable Core web user interface page appears.

2. Access the OT Security interface, as described in [Configure OT Security in the OT Security User Interface](#).

The OT Security interface appears.

3. Log in to OT Security.
4. Modify your system time settings as described in the *OT Security User Guide*.

Tenable Core + Tenable OT Security reboots.



FAQ

When are Tenable Core offline update ISOs released?

Tenable Core releases offline updates throughout the year on a quarterly basis, within **three weeks** after the end of a quarter.

Can I skip offline updates?

Tenable recommends that you apply updates in order. Tenable does not test, or support, skipping updates. If you have an old version of Tenable Core, it is best to back up the data and restore it on a newer version of Tenable Core.

Does Tenable provide old Tenable Core ISOs?

The [downloads page](#) has the current ISO and images from the last four quarters. Tenable does not provide any ISOs older than what is available on the downloads page. If you are looking for an older ISO to downgrade one of the products, you can follow the Tenable Core [documentation](#).

How can I find out what updates are in an offline Tenable Core ISO?

The [release notes](#) for offline ISOs have a section for package updates that are present in the ISO.

How long does it take for a Tenable software update to be available in Tenable Core?

Tenable Core holds a new version of Tenable Nessus until the general availability (GA) date in Tenable Vulnerability Management. This is usually a week after the stand-alone Tenable Nessus GA. Releases for other products on Tenable Core usually occur within 24 hours of the GA date. To see which versions of the products are currently available on each operating system version of Tenable Core, see the [Versions](#) page.

How can I disable or reen able automatic updates?

Automatic update configuration is in Tenable Core [documentation](#).

Can I use a local repository for software updates?



Tenable Core does not support this feature. Tenable encourages you to submit a feature request.

How long will Tenable Core support RHEL/CentOS 7?

Tenable Core bases off of CentOS 7 and support ends when RHEL 7 support officially ends.

Why is Tenable Security Center down every morning?

Tenable Core shuts down Tenable Security Center if you have automatic updates enabled while detecting an updated version. If the update fails for any reason, or stalls because a service is not stopping, Tenable Security Center remains down pending user intervention. Automatic backups can also shut down Tenable Security Center, and if a problem occurs, it may not properly restart.

Does Tenable support X software that I installed on my Tenable Core instance?

You can install any software you wish on Tenable Core instances. Tenable does not support the additional software, but fully supports Tenable Core and the installed product in that situation. Tenable reserves the right to require that you remove the additional software if it is impacting an issue you are having, and requesting support for.

Do any services need to be enabled to allow access to cockpit (https://ip.address:8000)?

No. Cockpit is enabled by default and services start automatically on boot. Any messages regarding cockpit on system boot can be disregarded.

How do I reset my administrator password in Tenable Core?

The process to reset your password is in this [Tenable Community Knowledge Article](#).

How can I connect to port 8090 during the Tenable Core backup/restore process?



If you did not confirm access to port 8090, during the process Tenable Core provides a link to click which opens that connection-check URL in a new tab so you can accept the certificate for that port and have the restoration process try again. See [Backup/Restore](#).