



# Tenable Security Center Large Enterprise Deployment Guide

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# Welcome to the Tenable Security Center Large Enterprise Deployment Guide

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You may have a number of unique technical and business requirements to consider when planning a large enterprise deployment of Tenable Security Center. If your organization scans 100,000 or more IP addresses, consider the information in this guide when planning, executing, and operationalizing your Tenable Security Center deployment.

This guide can help you plan your deployment, but it does not cover all deployment scenarios or network architectures. Contact Tenable Support or Tenable Professional Services for more assistance.

**Tip:** Tenable recommends using this guide as a companion to the [Tenable Security Center User Guide](#).

- [Plan Your Deployment](#)
- [Plan Your Scanning Strategy](#)
- [Operationalize Your Established Deployment](#)



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# Plan Your Deployment

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Consider the following when planning your Tenable Security Center deployment:

[Air-Gapped Environments](#)

[Tiered Deployments](#)

[Access Control](#)

[Integrations](#)

[API Usage](#)



# Air-Gapped Environments

**Related Reading:** [Offline Repositories](#) in the *Tenable Security Center User Guide*

Consider the following when deploying Tenable Security Center in an air-gapped (offline) environment.

## Architecture

You must deploy a Tenable Security Center and a set of scanners within each air-gapped network.

If you want to consolidate data from other networks with the data generated in your air-gapped network, you can use offline repositories to export data from your air-gapped Tenable Security Center to your other instance of Tenable Security Center. This supports both consolidated and federated reporting structures.

## Upgrades and Updates

Tenable recommends performing Tenable Security Center upgrades at least once a year (quarterly preferred) and plugin/feed updates at least once a month. After you perform a plugin update, run comprehensive scans to take advantage of the new vulnerability data and generate current scan results.

**Note:** A few plugins require internet access and cannot run in an air-gapped environment. For example, Tenable Nessus plugin 52669 checks to see if a host is part of a botnet.

After you perform a plugin update or feed update, verify the files as described in the [knowledge base](#) article.

To perform a Tenable Security Center upgrade or a plugin/feed update offline:

**Tip:** You can use the API to automate some Tenable Security Center upgrade and plugin update process.



1. Download the files in a browser or [via the API](#).
2. Verify the integrity of the files.
  - Tenable Security Center upgrade: Compare the download checksum with the checksum on the [Tenable downloads](#) page
  - Plugin/feed update: [Download and compare the checksums](#).
3. Move the files to your Tenable Security Center instance.
4. Upload the files to Tenable Security Center.
  - Tenable Security Center upgrade: [via the CLI](#).
  - Plugin/feed update: [in a browser](#) or [via the API](#).

## Tenable Nessus Agents

If you deployed Tenable Nessus Manager to manage Tenable Nessus Agents in an air-gapped environment, perform an offline software update (`nessus-agent-updates-X.X.X.tar.gz` on the [Tenable Downloads](#) site) on your Tenable Nessus Manager. Tenable Nessus Manager pushes the update to the managed Tenable Nessus Agents.

For more information, see the [knowledge base](#) article.



# Tiered Deployments

**Related Reading:** [Tiered Remote Repositories](#) in the *Tenable Security Center User Guide* and [Hardware Requirements](#) in the *General Requirements Guide*

A *tiered remote repository* configuration uses remote repositories to share data between multiple Tenable Security Center instances.

- If you plan to support 100,000-249,999 hosts, Tenable recommends a tiered remote repository configuration.
- If you plan to support 250,000 or more hosts, Tenable **requires** a tiered remote repository configuration.

Tiered Tenable Security Center instances perform informal roles in your overall Tenable Security Center deployment. Tenable recommends at least one designated reporting Tenable Security Center and an additional Tenable Security Center instance for every 100,000 to 150,000 hosts on your network.

- A *scanning tier* Tenable Security Center optimizes scanning by managing scan jobs across your attached scanners. Scanning tier Tenable Security Center instances prioritize efficient collection of scan data.
- A *reporting tier* Tenable Security Center optimizes dashboards and reporting by centralizing the data collected by scanning tier Tenable Security Center instances.

**Note:** Your scanning tier and reporting tier Tenable Security Center instances must be running the same Tenable Security Center version.

Without a tiered remote repository configuration, enterprise-scale scanning and analysis may cause performance issues on a single Tenable Security Center. Tiered remote repositories optimize your analysis and report generation without negatively impacting scanning performance.

**Tip:** While you could connect two Tenable Security Center instances as [offline repositories](#), offline repositories do not establish a true connection between the instances. All data must be transferred manually between offline repositories.

## Connect Tiers Using Repositories



Connect your scanning tiers to your reporting tiers as read-only repositories in your reporting tier Tenable Security Center deployments.

To configure a tiered remote repository deployment:

1. On the scanning tier Tenable Security Center instance, [create one or more repositories](#) for storing scan result data.

**Note:** To view trend data for scanning tier Tenable Security Center instances on your reporting tier Tenable Security Center instance, enable the **Generate Trend Data** option for each repository on your scanning tier Tenable Security Center instances. For more information, see [Agent Repositories](#) and [IPv4/IPv6 Repositories](#).

2. On the scanning tier Tenable Security Center instance, [run scans](#) to populate the repositories with data.
3. On the reporting tier Tenable Security Center instance, [create a remote repository](#) for each repository on your scanning tier Tenable Security Center instance.

The reporting tier Tenable Security Center syncs scan result data from the scanning tier Tenable Security Center repositories.

By default, remote repositories synchronize daily. You can use the Tenable Security Center API to initiate more frequent data refreshes.

## Version and Upgrade Considerations

Your scanning tier and reporting tier Tenable Security Center instances must be running the same Tenable Security Center version. When upgrading to a new version of Tenable Security Center, update your reporting tier instance before your scanning tier instances.

## Hardware Considerations

For optimal performance, customize the hardware on your scanning tier and reporting tier instances.

Scanning Tier Instance	Reporting Tier Instance
Scanning tier instances benefit from: <ul style="list-style-type: none"><li>• High CPU speeds</li></ul>	Reporting tier instances benefit from: <ul style="list-style-type: none"><li>• High capacity, high-speed RAM</li></ul>





Scanning Tier Instance	Reporting Tier Instance
<ul style="list-style-type: none"><li>• High disk I/O speeds</li></ul> <p>Consider adding additional CPU and disk I/O resources to support your active scanning and sensor management.</p>	<ul style="list-style-type: none"><li>• High capacity disk space</li></ul> <p>Consider adding additional RAM and disk space to support your reporting, user management, and data queries.</p> <p>Tenable recommends 128 GB of RAM for every 100,000 active IP addresses (for example, for 150,000 IP addresses, allocate 192 GB of RAM).</p>

For more information, see [Performance](#).

## Plan User Access Control

Grant users access to match the purpose of your scanning tier and reporting tier instances.

Scanning Tier Instance	Reporting Tier Instance
<p>Create accounts for:</p> <ul style="list-style-type: none"><li>• Technical users who need to configure administrative settings on the instance</li><li>• Technical users who need to configure and run scans</li><li>• Technical users who need to generate reports for organization-wide analysis</li></ul>	<p>Create accounts for:</p> <ul style="list-style-type: none"><li>• Technical users who need to manage your repositories and tiered configuration.</li><li>• Business users who need a centralized view of cumulative and trend data for vulnerability analysis.</li></ul>



# Access Control

**Related Reading:** [User Access](#) in the *Tenable Security Center User Guide*

The Tenable Security Center user access model supports role-based access control (RBAC) principles. Each user has a defined *group* membership (for data access) and *role* (for application access) so that users on a team access the same data (by shared group) but with different levels of access (by role) to perform different functions. You configure *organizations* to contain a set of groups and the users within them. Organizations allow for a distinct set of users and groups with unique resources assigned to them. You can use this functionality to mirror your company's organizational structure in Tenable Security Center.

For example, you could:

- Grant complete Security Manager access to a Senior Vulnerability Management Engineer
- Grant no access to C-level executives, but instruct Security Managers to export ARCs and share them
- Grant API export access to a Security Engineer
- Grant API integrations access to a Security Engineer

## Access Control and the API

Tenable Security Center API access is user-based; this allows for both pre-built and custom integrations to utilize the RBAC user model. For more information, see [API Usage](#).

## Access Control and Repositories

You configure *repositories* to store scan result data in Tenable Security Center. Tenable recommends breaking up large sets of data (tens of thousands of IP addresses) into multiple repositories to:

- Perform faster data import and queries
- Increase control and flexibility of user access
- Increase control and flexibility of reporting
- Manage potential issues related to maximum repository size (32 GB)



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## Repository Organization

There are many ways to organize your repositories, depending on your needs. For example:

- By division or department in your organization to simplify reporting across an organization's structure
- By logical network definition to accommodate a centralized IT department or specific needs in a non-federated organization

## Repository Capacity

A single repository can store 32 GB of data, which is around 30,000 to 100,000 IP addresses depending on your asset types and whether you are running credentialed scans.

When you plan your repository organization, estimate the number of IP addresses that will be stored by each repository. If any of your repository estimates approach the maximum, break the repository into two or more repositories. Tenable recommends sizing your repositories conservatively since you cannot move data to another repository after it has been imported.



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## Integrations

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Tenable Security Center supports third-party product integrations of various types to maximize operation inside your organization's network. For information about Tenable-supported integrations, see <https://www.tenable.com/partners/technology> or the [documentation](#).

Most integrations use the Tenable Security Center API to enhance the data within Tenable Security Center and to share Tenable Security Center data with other platforms used by your organization.

Consider the following best practices when using integrations with large deployments of Tenable Security Center:

- Confirm the integration is Tenable-supported. Tenable Support does not provide assistance with Tenable Security Center integrations maintained by third-party vendors.
- Confirm that your Tenable Security Center meets the [environment requirements](#).
- Confirm that your third-party product configuration can handle the size of your Tenable Security Center deployment and your expected data flow.
- Maintain test instances of Tenable Security Center and the third-party product to minimize upgrade risk. Test upgrades and configuration changes on your test instance before deploying the changes to your production environment.

For information about custom integrations for in-house platforms or tools, contact Tenable Professional Services.



## API Usage

The Tenable Security Center API is a RESTful interface to Tenable Security Center functions that provides data in JSON format. Developers often use the REST APIs to integrate Tenable Security Center with other standalone or web applications. Administrators often use the REST APIs to script interactions with the Tenable Security Center server.

For more information, see:

- The [Tenable Security Center API guide](#)
- The [Tenable Security Center API best practices guide](#)
- The [Python SDK guide](#) for common functions

Consider the following best practices when using the API with large deployments of Tenable Security Center:

- From a processing perspective, tasks initiated via the user interface or the API take the same amount of time to complete.
- Tenable Security Center uses the same RBAC system for user API access and user interface access.
- Tenable does not recommend multi-threading API calls to speed up access.
- Tenable generally recommends pulling data from the `/analysis` endpoint instead of parsing individual results from the `/scanResult` endpoint.
- Consider the frequency that data is likely to change when setting the frequency for an API call to submit or request data from Tenable Security Center. For example, you do not need to pull data every hour if you are only performing weekly scans.

**Note:** Tenable may not maintain backward compatibility when extending a protocol or implementation. Consequently, some APIs may change in either structure or function. **The API comes with no guarantee of future compatibility.**

Tenable Support does not assist with custom implementations using the API. For assistance with custom designs or implementations, contact Tenable Professional Services.



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# Plan Your Scanning Strategy

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Consider the following when planning your scanning strategy for your Tenable Security Center deployment:

[Network Scan Coverage](#)

[Assessment Scanning Methods](#)

[Variables Impacting Scan Time](#)

[Data Flow](#)



# Network Scan Coverage

**Related Reading:** [Tenable Security Center Hardware Requirements](#) and [License Requirements](#) in the *General Requirements Guide*

Most organizations have many types of technology on their network, which can complicate getting a clear picture (and total number) of the assets on your network. Your network may include assets with diverse hardware, operating systems, software, and infrastructure purposes.

Tenable Security Center is primarily an IP address-based tool; most Tenable Security Center data, scans, queries, and reports are based on asset IP addresses. The IP address count of assets on your network is the primary measure of data when discussing network size and licensing.

If you are new to Tenable Security Center, you should consider deploying Tenable Security Center to support more assets than you are currently tracking on your network. If you have an asset inventory from a different product, Tenable generally recommends increasing your total by 20-30% to account for previously unseen assets (e.g., unknown systems, untracked systems, and systems with multiple IP addresses in use). The exact increase varies, but 20-30% is a good starting point to estimate your network size.

**Tip:** You can also run [discovery scans](#) (for example, a scan configured with the Host Discovery template or an Tenable Nessus Network Monitor instance in discovery mode) to get a more accurate estimate of your actual IP address count.

## Tenable Security Center Instance Configurations

After you estimate your network size, consider that a single instance of Tenable Security Center can support 150,000 to 200,000 IP addresses if properly deployed and scaled.

A *tiered remote repository* configuration uses remote repositories to share data between multiple Tenable Security Center instances.

- If you plan to support 100,000-249,999 hosts, Tenable recommends a tiered remote repository configuration.
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Tiered Tenable Security Center instances perform informal roles in your overall Tenable Security Center deployment. Tenable recommends at least one designated reporting Tenable Security Center and an additional Tenable Security Center instance for every 100,000 to 150,000 hosts on your network.

For more information, see [Tiered Deployments](#).

## Active Scans

If you intend to perform active scanning, consider that Tenable Nessus scanner deployments are designed to be flexible to meet the unique needs of your network architecture. There are many ways to optimize Tenable Nessus coverage. For example, you could configure:

- One scanner dedicated for one scan zone that covers a remote, low-bandwidth network area containing 50 IP addresses
- Ten scanners dedicated for many scan zones that cover a flat network area containing 50,000 IP addresses

Tenable recommends customizing your Tenable Nessus scanner deployment to meet the unique needs of your network architecture. For more information, see [Deployment Considerations](#) in the *Tenable Nessus User Guide*.

For information about placing scanners, see [Assessment Scanning Methods](#).





# Assessment Scanning Methods

Related Reading: [Scanning Overview](#) in the *Tenable Security Center User Guide*

There are two primary methods for assessing your assets: *active* network scans and *agent* scans.

- [Active](#) – use Tenable Nessus or Tenable Vulnerability Management scanners to assess defined networks and targets and send scan data back to Tenable Security Center
- [Agent](#) – use lightweight agents installed on endpoints to send scan data back to Tenable Nessus Manager or Tenable Vulnerability Management

For more information about the benefits and limitations of each type, see [Benefits and Limitations](#) in the *Tenable Nessus Agent Deployment and User Guide*.

Choose your assessment scanning method based on your targets. You may decide to perform both methods (scanning different target types by different methods) to ensure complete coverage and to properly assess your organizational risk.

## Examples

Agent scans are a good choice for a system that is only occasionally on the network (or one that hops between multiple networks). Tenable Nessus Agents can report in from anywhere and do not need to stay within expected networks.

Active network scans are a good choice in most environments to assess systems connected in a data center. These systems usually have numerous listening network services and are always running. Network-based assessment scans assess each service individually and can be scheduled for specific times when the systems are not being heavily utilized.

**Tip:** For other needs, Tenable Security Center Continuous View also supports passive scanning via [Tenable Nessus Network Monitor](#) and event logging with [LCE](#).



# Scan Zones in Active Scanning

**Related Reading:** [Scan Zones](#) in the *Tenable Security Center User Guide*

A complete active scan configuration includes a *scan zone*, which associates one or more scanners with a specific area of your network. Scans of IP addresses within a zone are load balanced between the scanners assigned to that zone. You can customize this to support your unique network topology. For example, you could:

- Create one zone per business unit and add one scanner to each zone.
- Create one large zone and add multiple scanners to the zone.
- Create a zone for an isolated network (a network isolated by a low bandwidth or high latency connection), add one scanner to the zone, and deploy the scanner inside the isolated network.

Scan zones are crucial to the success of an enterprise Tenable Security Center deployment. Assigning scanners to scan zones restricts the scanners to scanning their own limited portion of the network, avoiding issues created by scanning through firewalls or across WAN links.

## Deployment Examples

You can specify scan zone IP addresses as a single IP address, a range of IP addresses, or subnets in CIDR notation so that you can segment scanning on your network by logical group, physical location, or IP address range.

In general, multiple scanners are most efficient in large, flat networks where Tenable Security Center can automatically distribute the scan load across your scanners. Large organizations commonly deploy several scanners in their core network and additional scanners in more segregated or remote networks. You can also design a mixed architecture to suit your unique network infrastructure.

Optimal deployments vary depending on your network and the needs of your organization; there is no one-size-fits-all deployment methodology.

For example, two regional banks with 30 physical sites may have different optimal deployments:

- Bank A: deploys five scanners internally at a data center and performs scans only over the network links.
- Bank B: deploys one scanner at each physical site.



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Furthermore, there is no optimal recommendation based on network size:

- Customer A: deploys 40 Tenable Nessus scanners to scan a total of 300,000 IP addresses
- Customer B: deploys 300 Tenable Nessus scanners at 300 physical sites with local scanner requirements to scan a total of 37,000 IP addresses

### **Recommendations for Large Enterprise Deployments**

In large enterprise deployments, Tenable recommends:

- Adding, at minimum, one scanner for every 5,000 active IP addresses in a zone
- Adding a single scanner to a single zone. Tenable does not recommend adding a scanner to multiple zones.
- Disabling [automatic scan distribution](#) if your scan zones contain [overlapping IP addresses](#)
- Disabling [automatic scan distribution](#) if you are scanning any of your IP addresses from scanners located both inside and outside your network and storing the IP address data in multiple repositories



# Agent Scanning

**Related Reading:** Agent Use Cases ([High Latency Networks](#), [Mobile/Distributed Workforces](#), and [Hardened Systems](#)) and [Large-Scale Deployment Considerations](#) in the *Tenable Nessus Agent Deployment and User Guide*

Tenable Nessus Agents can increase the flexibility of your Tenable Security Center deployment since agent scanners are not limited by the same network architecture considerations as active scanners. Tenable Nessus Agents are also a good solution for high latency networks, unreachable networks, and hardened systems.

You can deploy Tenable Nessus Agents to communicate through an intermediary manager: Tenable Vulnerability Management (cloud-based) or Tenable Nessus Manager (on-premises). If you deploy large numbers of Tenable Nessus Agents, review the large-scale deployment considerations.



## Variables Impacting Scan Time

There are many variables in your configurations and environment that can impact your scan performance. The following list summarizes the most common variables to consider when planning your deployment.

**Tip:** Tenable recommends contacting Professional Services to jointly architect a successful large deployment of Tenable Security Center.

Variable	Impact
Your rate of simultaneous assessment	<p>The number of IP addresses you can assess simultaneously depends on two things:</p> <ul style="list-style-type: none"><li>• The number of available Tenable Nessus scanners</li><li>• Your <b>Max Simultaneous Hosts Per Scan</b> setting in the scan policy</li></ul> <p>Increasing one or both of these is the fastest way to improve your rate of simultaneous assessment and overall scan time. However, large enterprise networks often have infrastructure or technology limitations that prohibit increasing these values beyond a certain maximum.</p> <p>Since Tenable Security Center sends jobs to Tenable Nessus scanners in chunks and there are eight IP scan segments, you may want to consider setting <b>Max Simultaneous Hosts Per Scan</b> to a multiple of eight.</p> <p><b>Note:</b> Real-world performance is highly dependent on your local environment.</p>
Your Tenable Nessus environment specifications	<p>Tenable Nessus scanners should meet the <a href="#">hardware requirements</a> whenever possible.</p> <p>In rare cases, you may need to install a Tenable Nessus scanner on in an underpowered environment. In this case, limit the scan targets the underpowered Tenable Nessus scanner is responsible for.</p> <p>Similarly, when deploying Tenable Nessus on a virtual machine, assume a 20% decrease in performance and adjust your specifications. Do not deploy Tenable Nessus on an over-utilized or over-subscribed virtual infra-</p>



Variable	Impact
	structure, as scan performance will suffer and you may experience data corruption.
Your Tenable Nessus scan settings	The scan engine has many parameters that are used to modify the scan engine runtime operation. These parameters range from the number of simultaneous hosts scanned to the number of concurrent open TCP sessions. These parameters are meant to allow customers to individually tune the engine parameters to best fit their network by tuning the performance up or down.
Your Tenable Security Center scan policy configuration	<p>Your scan policy configuration specifies the depth of your scan. In general, increasing the depth of your scan increases the time to run the scan. Consider the following when evaluating your scan depth:</p> <ul style="list-style-type: none"><li>• What type of port scanning is being performed?</li><li>• What ports are being scanned?</li><li>• What vulnerabilities are you scanning for?</li><li>• Are you running credentialed scans?</li><li>• Are you performing malware checks, filesystem checks, or configuration audits?</li></ul> <p>You can use Tenable-provided templates to perform targeted checks. You can create custom policies to customize all possible policy settings.</p>
Your scanner's proximity to your targets	<p>Tenable recommends placing your scanners close to your targets, connected with minimum latency. Latency has an additive effect on every packet exchanged between a scanner and its target. The largest impacts tend to be network latency and simultaneous plugin checks.</p> <p>For example:</p> <ul style="list-style-type: none"><li>• Scanning through routers, VPNs, load balancers, and firewalls can impact the fidelity of your scan results by blocking ports that should be open or by auto-responding to closed ports.</li></ul>



Variable	Impact
	<ul style="list-style-type: none"><li>• Scanning numerous hosts behind a single piece of network infrastructure can increase the load on your equipment, given the large number of sessions exchanged between scanner and host.</li></ul>
Your number of live hosts	Scanning a dead host takes less time than scanning a live host. A distribution of IP addresses with a low number of associated hosts takes less time to scan than a distribution of IP addresses with a higher number of hosts.
Your target configurations	Scanning a locked-down system with few exposed network services takes less time than complicated target configurations. For example, a Windows server with a web server, database, and host intrusion prevention software takes more time to scan.
Your target resources	The resources available to the scan target can impact scan time as well. A public-facing system (a system with load) takes longer to scan than an idle backup system.



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## Data Flow

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For information about data flow in Tenable Security Center and Tenable Security Center Continuous View, see the [Tenable Continuous Network Monitoring Architecture Overview](#).





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# Operationalize Your Established Deployment

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Consider the following when operationalizing your established Tenable Security Center deployment:

[Upgrades and Tenable Product Lifecycles](#)

[Backup and Failover](#)

[Logging](#)

[Security](#)

[Performance](#)



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## Upgrades and Tenable Product Lifecycles

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In most large environments, Tenable recommends updating your Tenable products quarterly to take advantage of the feature and security updates in the latest versions of Tenable products.

To plan and prepare for a Tenable Security Center upgrade:

- Review the [Tenable Security Center Release Notes](#) for information about new features, bug fixes, supported upgrade paths, and integrated product version requirements.

If your upgrade path skips versions of Tenable Security Center (e.g., upgrading from 5.6.2.1 to 5.12.0), Tenable recommends reviewing the release notes for all skipped versions. You may need to update your configurations because of features and functionality added in skipped versions.

Tenable Security Center versions sometimes require:

- A specific minimum version of a downstream product (for example, Tenable Nessus) for complete feature support.
- An updated set of minimum hardware requirements.
- A separate installation or configuration for a third-party product integration.
- Perform a backup and validate it before beginning the upgrade, as described in [Backup and Failover](#).
- Test the upgrade in a test environment before deploying it to your production environment.
- Tenable recommends performing upgrades on your highest tier Tenable Security Center instances first. For example, upgrade your reporting tier Tenable Security Center instance, then your scanning tier Tenable Security Center instance, then your individual scanners.

## Architecture Review and Hardware Refresh

Tenable recommends performing an architecture review and considering a hardware refresh every three to five years. You may want to do this more frequently if your underlying environment changes or increases in size, or if your vulnerability policies change (for example, you increase your data retention from 180 to 365 days).

## Tenable Product Lifecycles



For information about end-of-support (EOS) and end-of-life (EOL) dates for Tenable products, see the [Tenable Software Release Lifecycle Matrix](#).



# Backup and Failover

**Related Reading:** [Backup and Restore](#) in the *Tenable Security Center User Guide*

Tenable Security Center encourages all organizations, but especially large organizations, to maintain Tenable Security Center backups for disaster recovery.

Consider the following when planning and performing your backup:

- In general, linked scanners (e.g., Tenable Nessus scanners) do not need to be backed up since they do not permanently store vulnerability data.
- In general, vulnerability trending snapshots consume the most storage in Tenable Security Center deployments. Consider creating a separate backup policy for this data; once Tenable Security Center creates the nightly vulnerability trending snapshot, the data does not change.
- Tenable does not recommended backing up volatile directories (for example, `/opt/sc/admin/tmp` and `/opt/sc/data/scans`).
- Since Tenable Security Center does not encrypt most data on disk, consider encrypting your backups.

Tenable Security Center does not support high availability failover scenarios, but you can maintain a cold standby system using system backups.



# Logging

**Related Reading:** [System Logs](#) in the *Tenable Security Center User Guide*

You may need to monitor a variety of log sources related to your Tenable Security Center deployment.

## Tenable Security Center

Log Location	Description
<code>/opt/sc/admin/logs/&lt;yyyymm&gt;.log</code>	Contains detailed information about functionality to troubleshoot unusual system or user activity.  You can view the same log activity in the Tenable Security Center interface.
<code>/opt/sc/admin/logs/install.log</code>	Written at installation. Review this log only if instructed by Tenable Support.
<code>/opt/sc/admin/logs/upgrade.log</code>	Written during upgrades. Review this log only if instructed by Tenable Support.

## Tenable Nessus

**Note:** Your Tenable Nessus `data_directory` location depends on your operating system, as described in [Data Directories](#) in the *Tenable Nessus User Guide*.

Log Location	Description
<code>data_directory/logs/nessusd.messages</code>	Contains Tenable Nessus startup and scan parameters, as well as start and stop times for individual IP addresses. You can enable troubleshooting logs using <a href="#">touch debugging</a> , but Tenable does not recommend leaving touch debugging enabled in a production environment.
<code>data_directory/logs/backend.log</code>	Contains backend Nessus application processes. Review this log only if instructed by Tenable Support.



# Security

**Related Reading:** [User Access](#) (including [LDAP Authentication](#), [Certificate Authentication](#), [SAML Authentication](#), and [WebSeal](#)) and [Encryption Strength](#) in the *Tenable Security Center User Guide*

Review the following information about Tenable Security Center security features and considerations.

## Tenable Security Center

At its core, Tenable Security Center is a web application served with Apache and written in PHP. While controls have been put in place to secure the user interface, Tenable recommends deploying Tenable Security Center on a secure, internal-facing network. In high security environments, you may want to restrict the interface only to authorized networks and systems. For more information, see the [port requirements](#).

From a user perspective, Tenable Security Center supports a role-based access control model for user data interaction and separation of duties. This allows you to grant application administrators control over management tasks without exposing organizational vulnerability data. Users can authenticate to Tenable Security Center in a variety of ways, including local authentication, LDAP/AD authentication, certificate/smart card authentication, SAML authentication, and WebSeal authentication. All user interface interaction, including user authentication, takes place over HTTPS.

You can [customize the default Tenable Security Center HTTPS certificate](#) to meet your organizational requirements.

## Tenable Nessus and Tenable Nessus Manager

From a network interface perspective, Tenable Nessus only requires a connection to Tenable Security Center for operational usage; you may want to consider restricting interface access to only the Tenable Security Center server. Before restricting access, consider:

- You may need user interface access to Tenable Nessus for setup or troubleshooting.
- You need user interface access to Tenable Nessus Manager for operational usage.

When connected to Tenable Security Center, Tenable Nessus does not store any vulnerability or credential data. Tenable Nessus runs the scan and transmits the scan data to Tenable Security Center using an HTTPS connection. Then, Tenable Nessus deletes the scan data.



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If you are using Tenable Nessus Agents with Tenable Security Center, vulnerability data is stored in Tenable Nessus Manager or Tenable Vulnerability Management.

## Data Storage Encryption

Credentials are stored encrypted on the Tenable Security Center server, while vulnerability and application data is not encrypted. Tenable Security Center also integrates with [PAM solutions](#), allowing Tenable Nessus to access a centralized password store during a network scan.

If your organization requires data at rest encryption for vulnerability data or backup data, Tenable recommends hardware-level disk encryption. Tenable Support does not assist with hardware-level disk encryption.

## Communications Encryption

Tenable Security Center encrypts all communications over the network. This includes user interaction with the user interface and API as well as all scanner communications and communications with Tenable. You can [customize](#) these encryptions to meet specific organizational requirements.

[By default](#), Tenable Nessus uses encrypted protocols to authenticate to targets, but the security of this traffic is based on the protocols that the targets support for authentication.

## Product Upgrades

In most large environments, Tenable recommends updating your Tenable products quarterly to take advantage of the feature and security updates in the latest versions of Tenable products.

In addition, you can:

- View security-related product updates in our [Tenable Product Security Advisories](#) and [RSS feed](#).
- [Report vulnerabilities in Tenable products](#). Tenable releases detections for Tenable product vulnerabilities in our plugin feeds to ensure visibility for outstanding issues.



# Performance

Use the following sections to begin optimizing your performance. Tenable strongly recommends using [Professional Services Health Checks](#) to optimize Tenable Security Center for your specific environment and organizational processes.

Before beginning performance optimization, confirm that your Tenable Security Center and scanner deployments meet the environment requirements described in the [General Requirements Guide](#).

## Tenable Security Center

- Very large deployments should designate instances as scanning tier or reporting tier instances. For more information, see [Tiered Deployments](#).
- If you have complex reporting requirements, consider offloading certain functions to applications designed to handle very large amounts of data with frequent access requests (for example, a SIEM).
- For standalone instances and reporting tier instances, allocate 128 GB of RAM for every 100,000 active IP addresses (for example, for 150,000 IP addresses, allocate 192 GB of RAM).
- If you do not use specific static disk locations (for example, trend data), you can use mount points to offload them to larger, slower storage.
- Unless specially recommended or assisted by Tenable Support or Professional Services, comply with these resource recommendations for all of your Tenable Security Center instances:
  - 500 or fewer Tenable Security Center user accounts
  - 50 or fewer concurrent Tenable Security Center user account sessions
  - 50 or fewer organizations
  - 250 or fewer attached scanners
  - 200 or fewer repositories

**Note:** Generally, several smaller repositories perform better than one large repository (for example, five repositories with 5000 IP addresses each generally perform better than a single repository with 25,000 IP addresses).





- In Tenable Security Center 5.11 or later, [disable creation of sample content](#) (for example, sample dashboards and assets) if they are not needed.

## Scanners

- Confirm your Tenable Nessus scanner network placement is optimal for the scanner's environment, considering the information in [Assessment Scanning Methods](#).
- Enable Tenable Nessus scanner event logging and monitor the logs for signs of performance issues related to overloaded scans.
- In high performance environments (for example, environments where scans must finish by specific deadlines), dedicate hardware resources to Tenable Nessus either through physical systems or with dedicated resource pools in virtual environments.
- Review and consider the implications described in [Variables Impacting Scan Time](#).