



How-To Guide: Tenable.io for Cyber- Ark

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Welcome to Tenable.io for CyberArk

This document provides information and steps for integrating Tenable.io with CyberArk Enterprise Password Vault (CyberArk).

Security administrators know that conducting network vulnerability assessments means getting access to and navigating an ever-changing sea of usernames, passwords, and privileges. By integrating CyberArk with Tenable.io, customers have more choice and flexibility.

The benefits of integrating Tenable.io with CyberArk include:

- Credential updates directly in Tenable.io, requiring less management.
- Reduced time and effort documenting where credentials are stored in the organizational environment.
- Automatic enforcement of security policies in specific departments or business unit requirements, simplifying compliance.
- Reduced risk of unsecured privileged accounts and credentials across the enterprise.

Integrations

View one of the following options for CyberArk integration steps.

[Windows Integration](#)

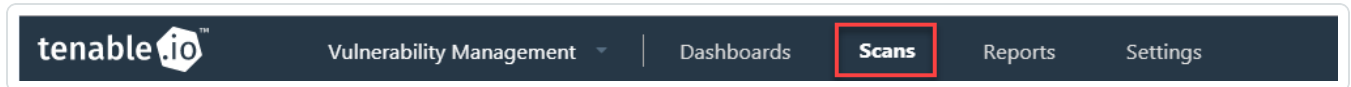
[SSH Integration](#)

Windows Integration

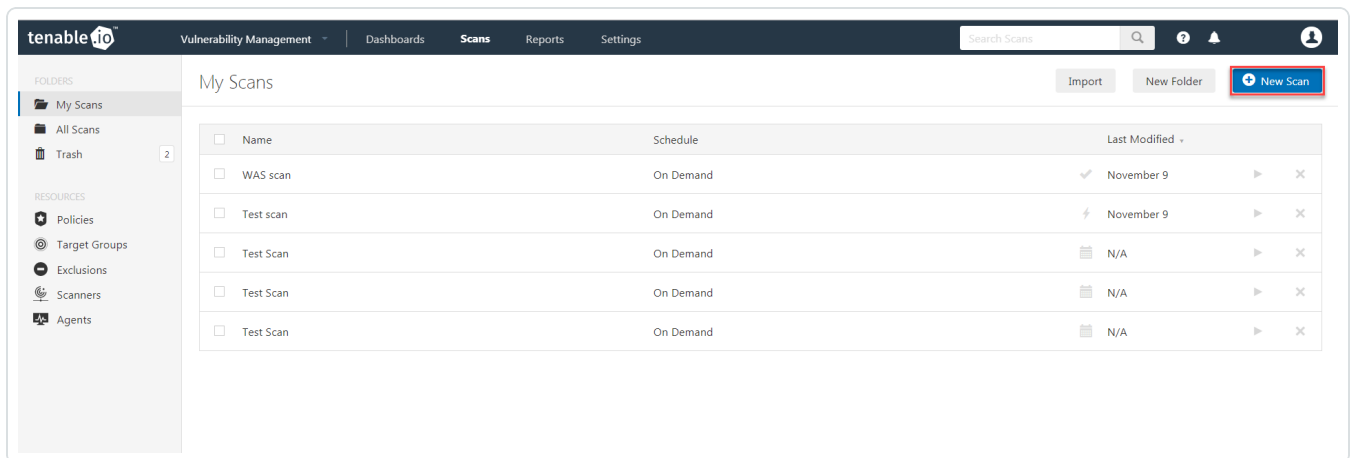
To configure Windows integration for CyberArk with Tenable.io:

1. Log in to Tenable.io.
2. Click **Scans**.

The **My Scans** page appears.

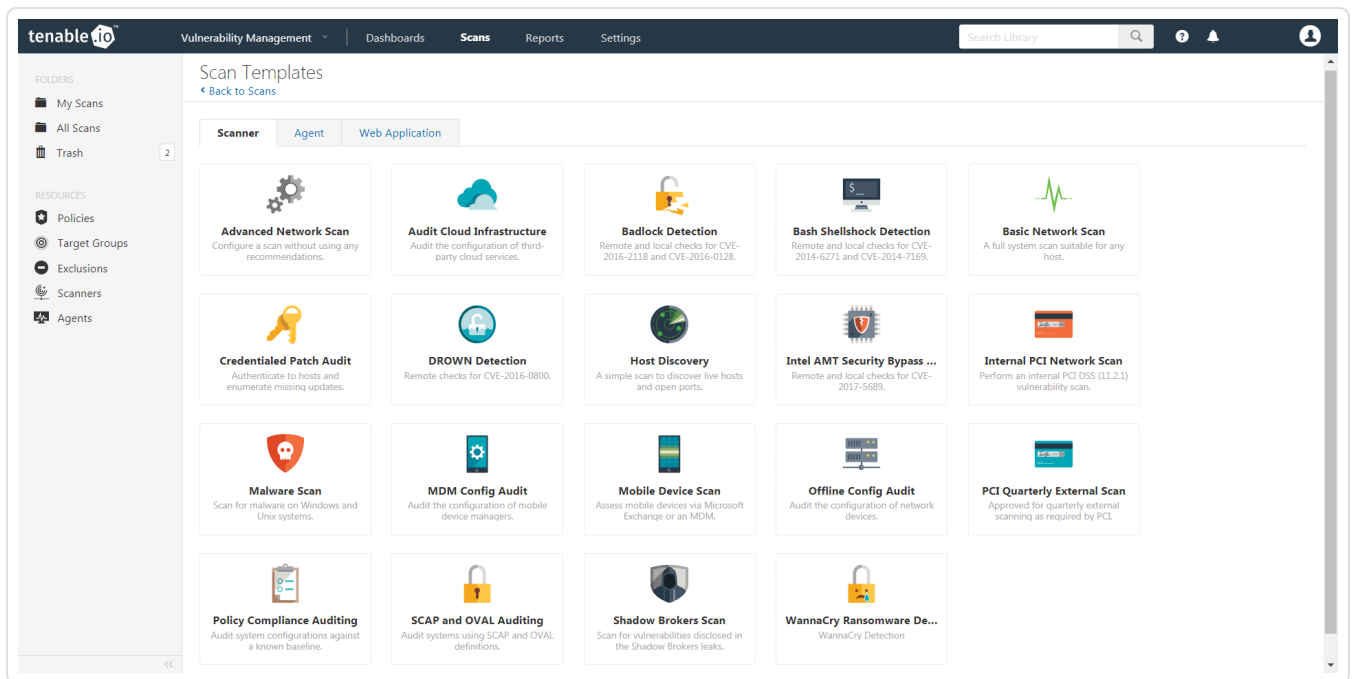


3. Click **+ New Scan**.



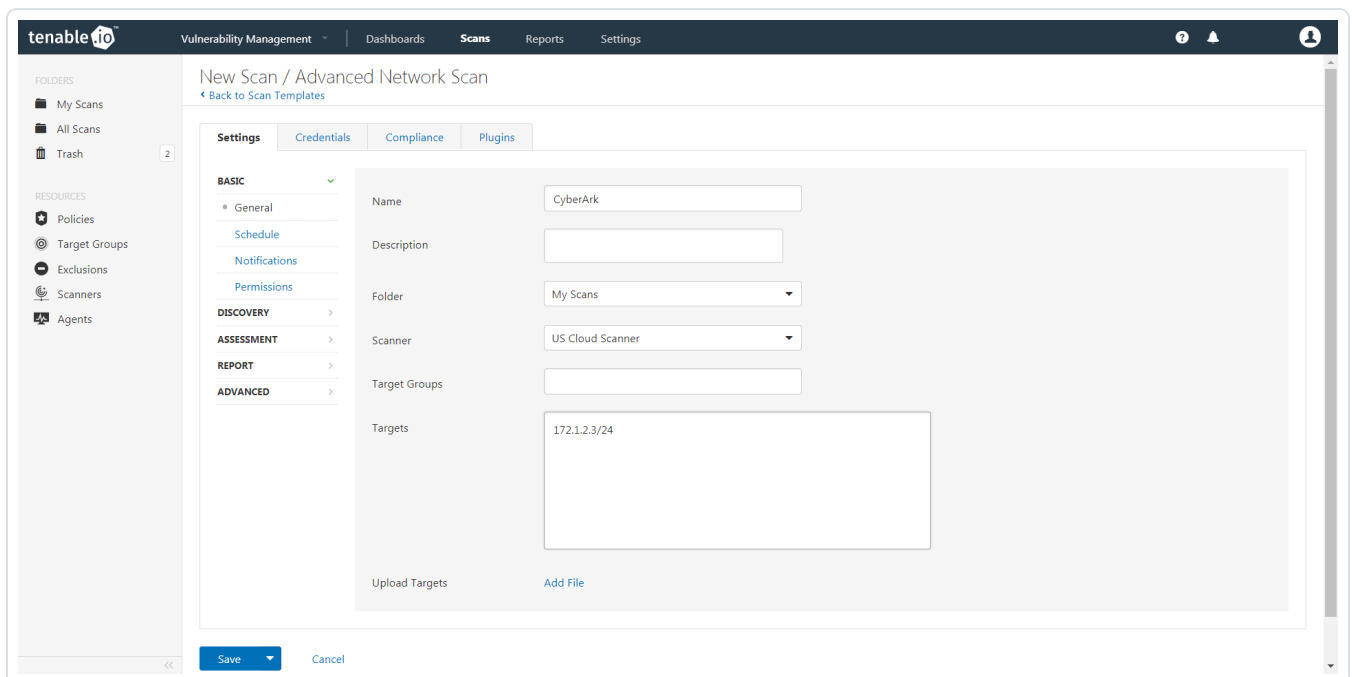
The **Scan Templates** page appears.

4. Select a **Scan Template**. For demonstration purposes, the **Advanced Network Scan** template will be used.



The scan configuration page appears.

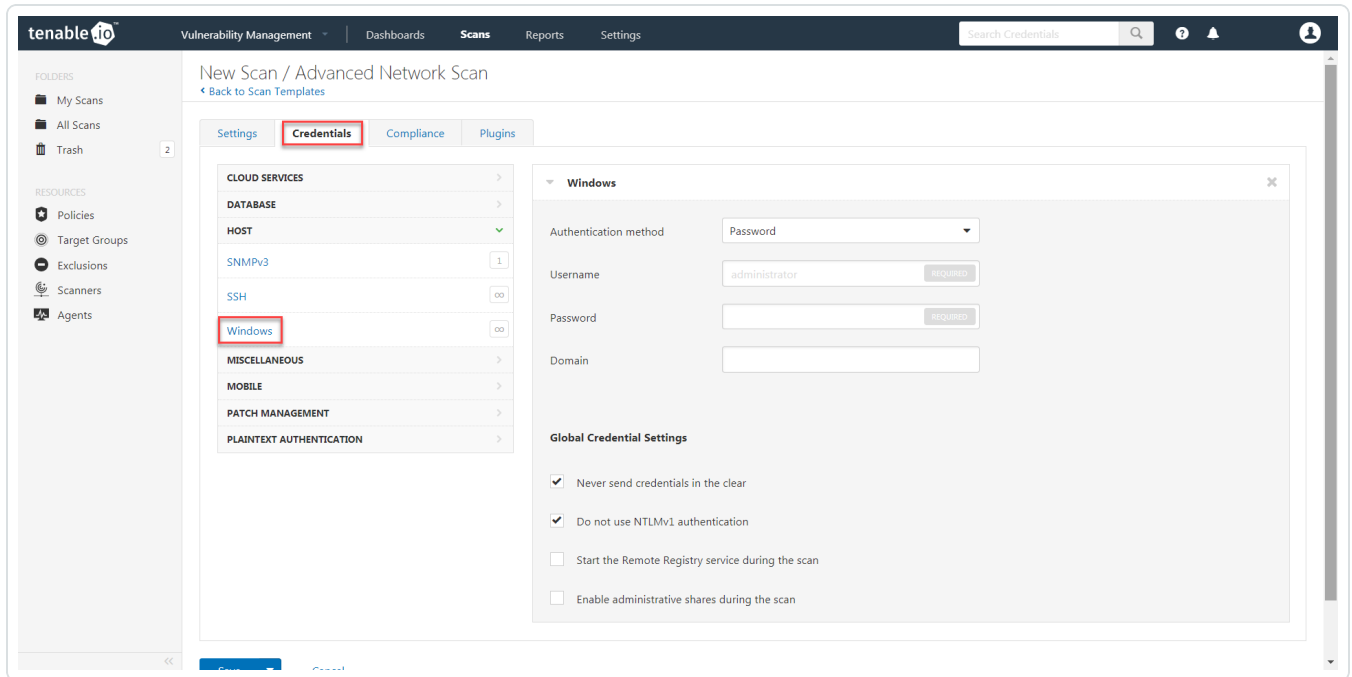
5. Enter a descriptive **Name** and enter the IP address(es) or hostname(s) of the scan **Targets**. In addition, you can add a description, folder location, scanner location, and specify target groups.



6. Next, click the **Credentials** tab.

The **Credentials** options appear.

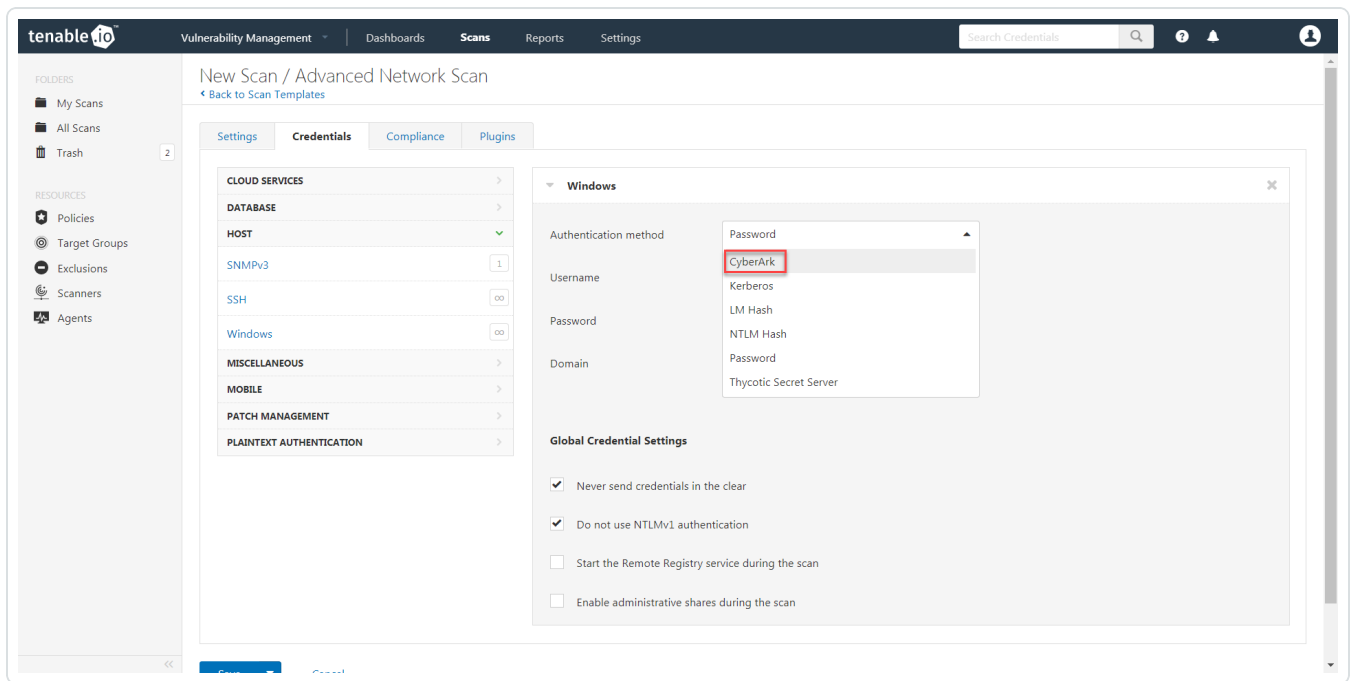
7. Select **Windows** from the left-hand menu.



The **Windows** options appear.

8. Click the **Authentication method** drop-down.

9. Select **CyberArk**.



10. Configure each field for the **Windows** authentication. See the [Tenable.io User Guide](#) to get detailed descriptions for each option.

Caution: Tenable strongly recommends encrypting communication between Tenable.io and the CyberArk AIM gateway using HTTPS and/or client certificates. For information on securing the connection, refer to the [Tenable.io User Guide](#) and the **Central Credential Provider Implementation Guide** located at cyberark.com (login required).

The screenshot shows the Tenable.io interface for configuring a new scan. The main content area is titled "New Scan / Advanced Network Scan" and has a "Back to Scan Templates" link. The "Credentials" tab is selected, and the "SSH" sub-tab is active. The configuration is organized into several sections:

- CLOUD SERVICES**: Includes Database and Host sections.
- HOST**: Includes SNMPv3 and SSH (selected) sections.
- MISCELLANEOUS**: Includes Windows section.
- MOBILE**: Includes Patch Management and Plaintext Authentication sections.

The **SSH** configuration details are as follows:

- Authentication method**: CyberArk
- Username**: root (REQUIRED)
- CyberArk AIM Service URL**: (empty)
- Central Credential Provider Host**: vault_host.yourcompany.com (REQUIRED)
- Central Credential Provider Port**: 443 (REQUIRED)
- Central Credential Provider Username**: (empty)
- Central Credential Provider Password**: (empty)
- Safe**: (empty) (REQUIRED)
- CyberArk Client Certificate**: Add File (Note: Only RSA and DSA OpenSSH certificates are supported)
- CyberArk Client Certificate Private Key**: Add File (Note: Only RSA and DSA OpenSSH keys are supported)
- CyberArk Client Certificate Private Key Passphrase**: (empty)
- AppId**: (empty) (REQUIRED)
- Folder**: (empty) (REQUIRED)
- PolicyId**: (empty)
- Use SSL**:
- Verify SSL Certificate**:
- CyberArk Account Details Name**: (empty)
- CyberArk Address**: (empty)
- CyberArk elevate privileges with**: Nothing

Global Credential Settings

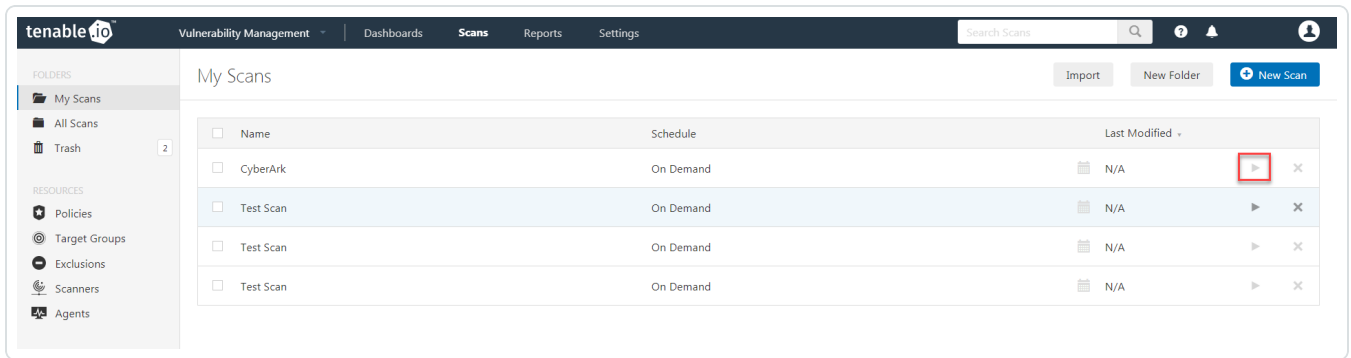
- known_hosts file**: Add File
- Preferred port**: 22
- Client version**: OpenSSH_5.0
- Attempt least privilege**: (Note: Enable dynamic privilege escalation. If the working credentials for the target include privilege escalation, commands will first be attempted without privilege escalation. Commands will be run again with privilege escalation only if needed.)

At the bottom left, there is a "Save" button and a "Cancel" button.

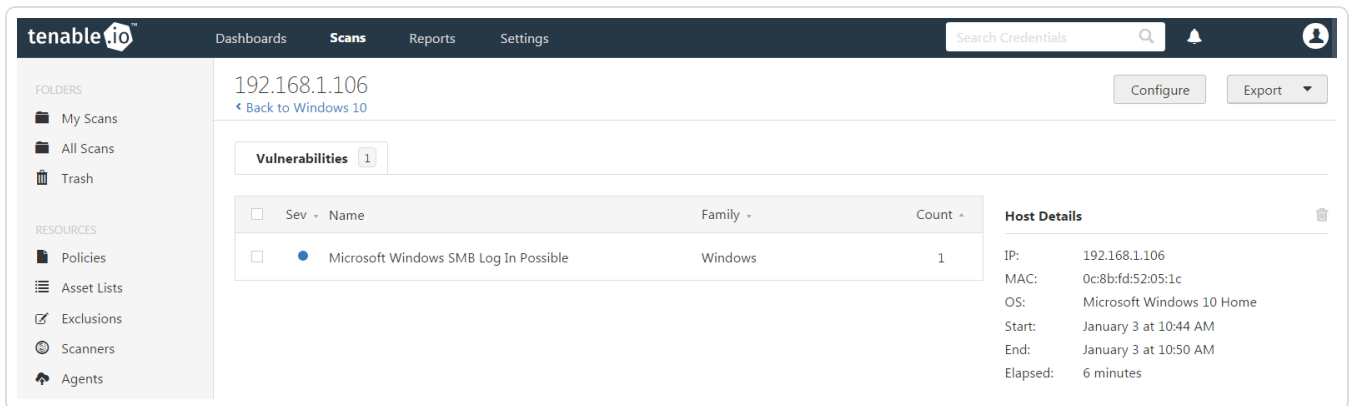
11. Click **Save**.

Verification

1. To verify the integration is working, click the **Launch** button to initiate an on-demand scan.



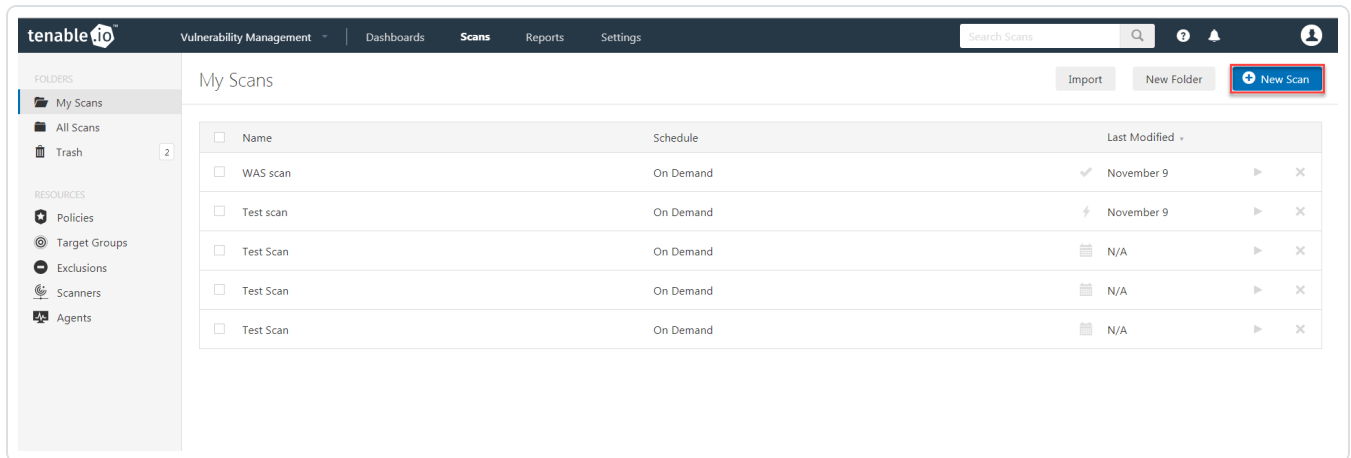
2. After the scan completes, click the scan to view the results.
3. Look for **Plugin ID 10394** . This validates that the authentication was successful. If the authentication is not successful, refer to the [Debugging CyberArk Issues](#) section of this document.



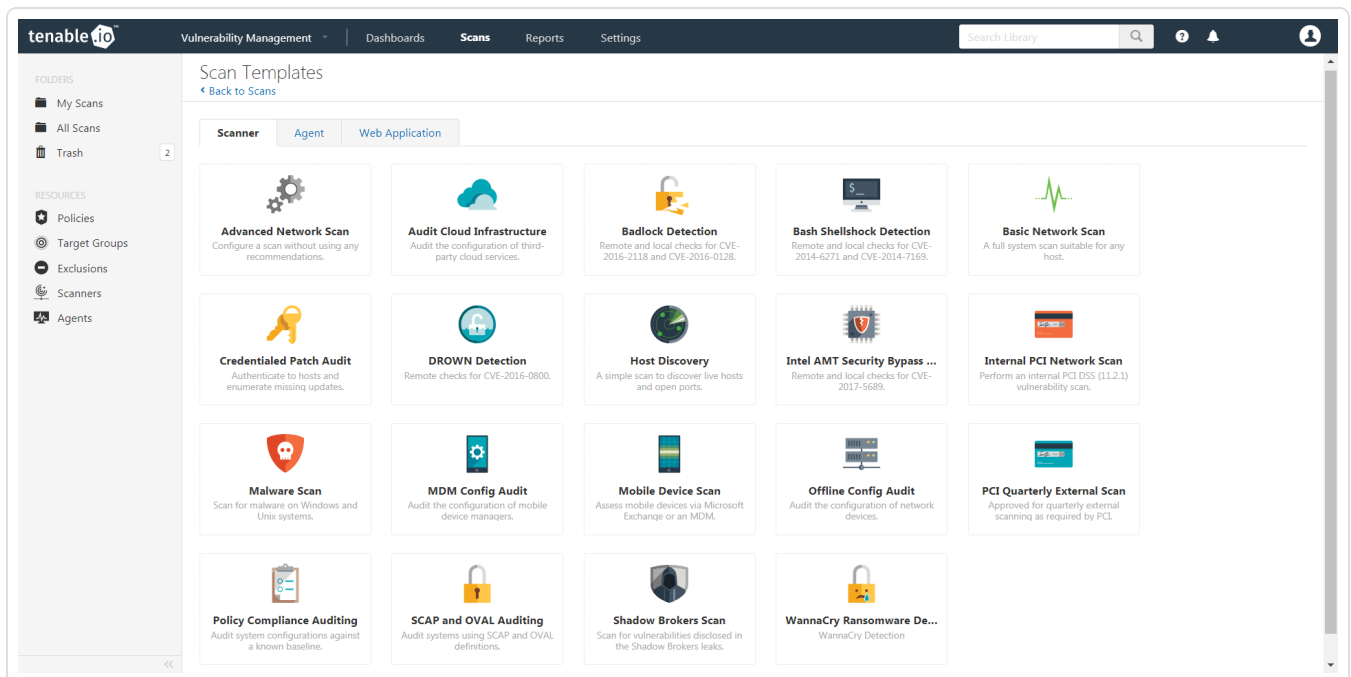
SSH Integration

To configure SSH integration for CyberArk with Tenable.io:

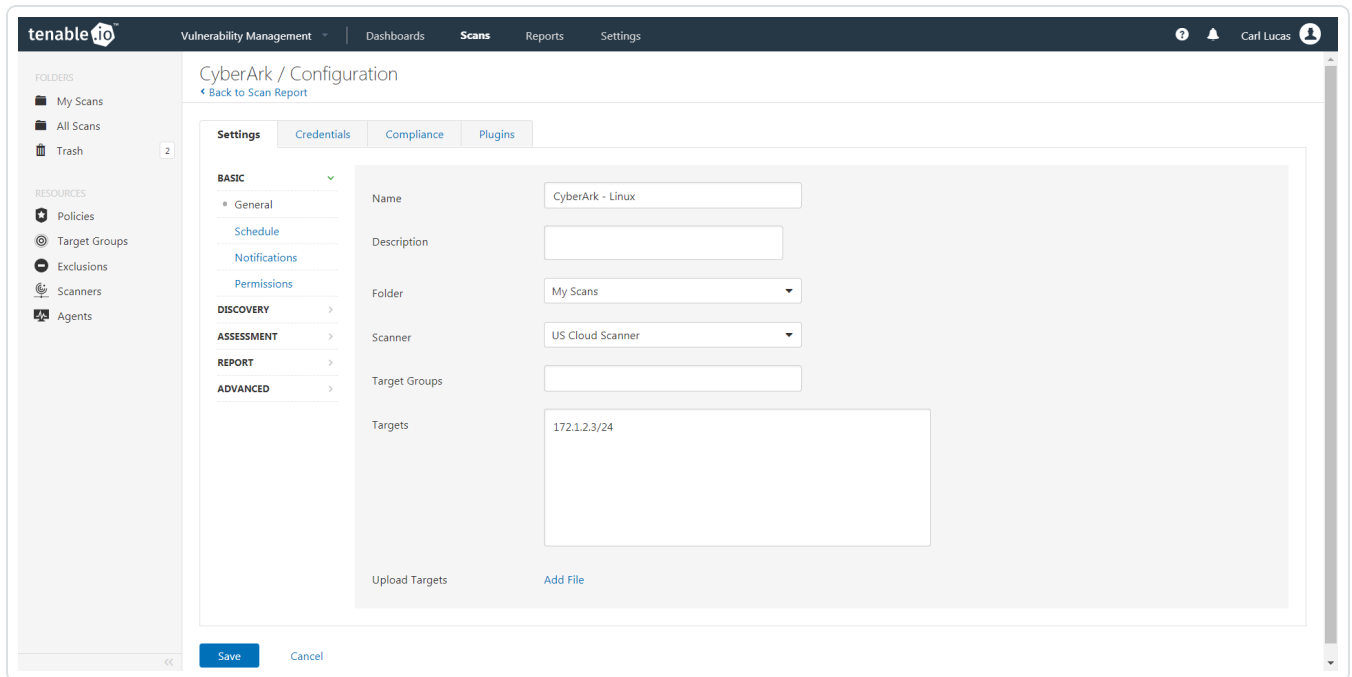
1. Log in to Tenable.io.
2. Click **Scans**.
3. Click **+ New Scan**.



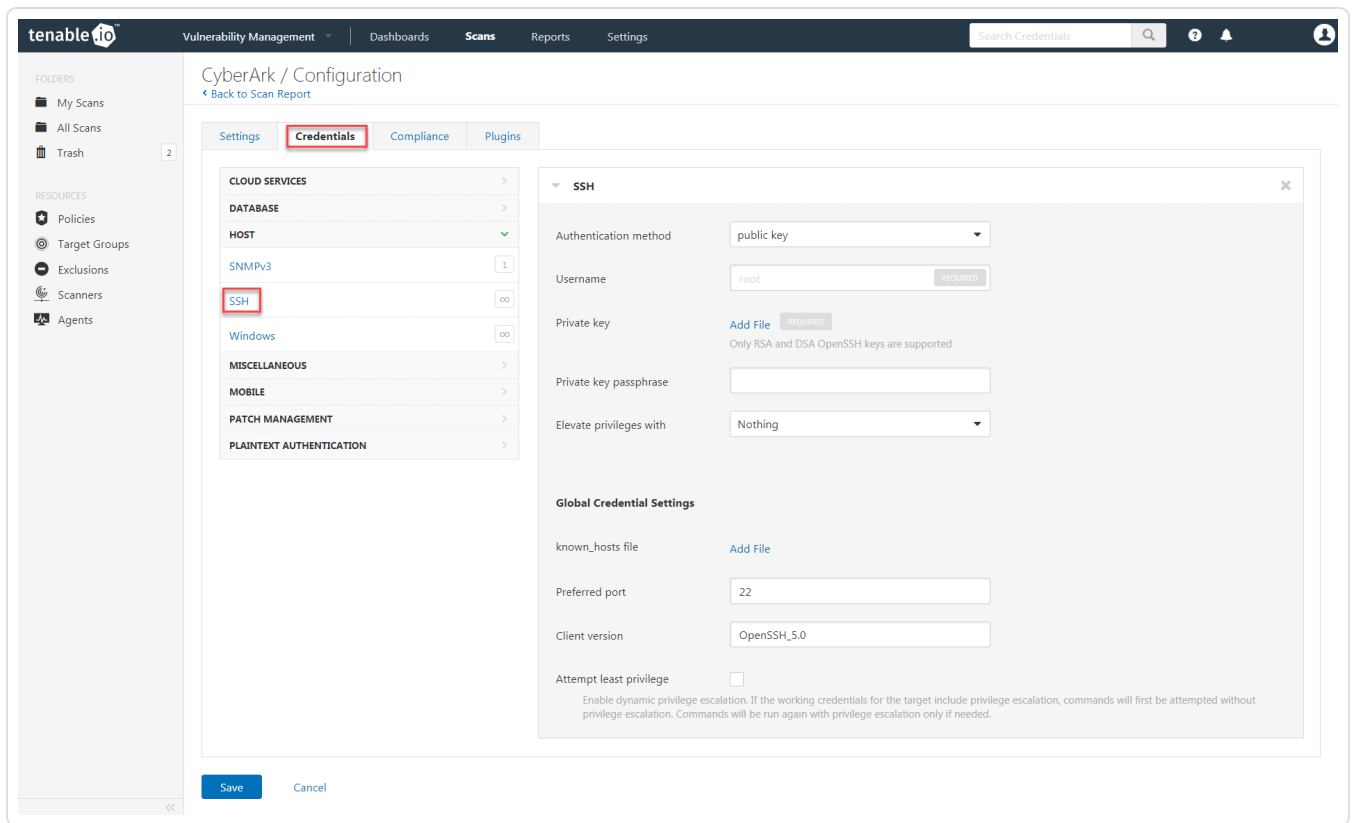
4. Select a **Scan Template** for the scan type required for your scan. For demonstration purposes, the **Advanced Network Scan** template is used.



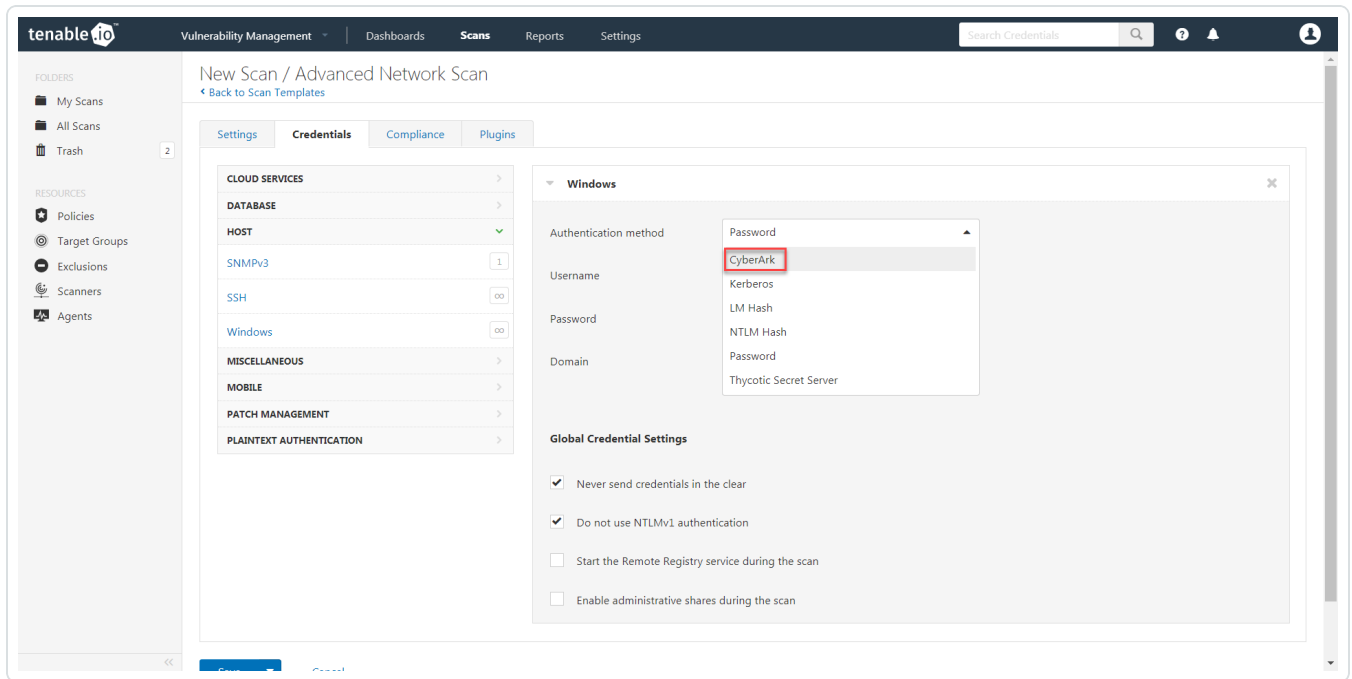
5. Enter a descriptive **Name** and IP address(es) or hostname(s) of the scan **Targets**. In addition, you can add a description, folder location, scanner location, and specify target groups.



6. Once the **Name** and **Targets** are configured, click **Credentials**.



7. Select **SSH** from the left-hand menu.
8. Click **Authentication method**.
A drop-down appears.

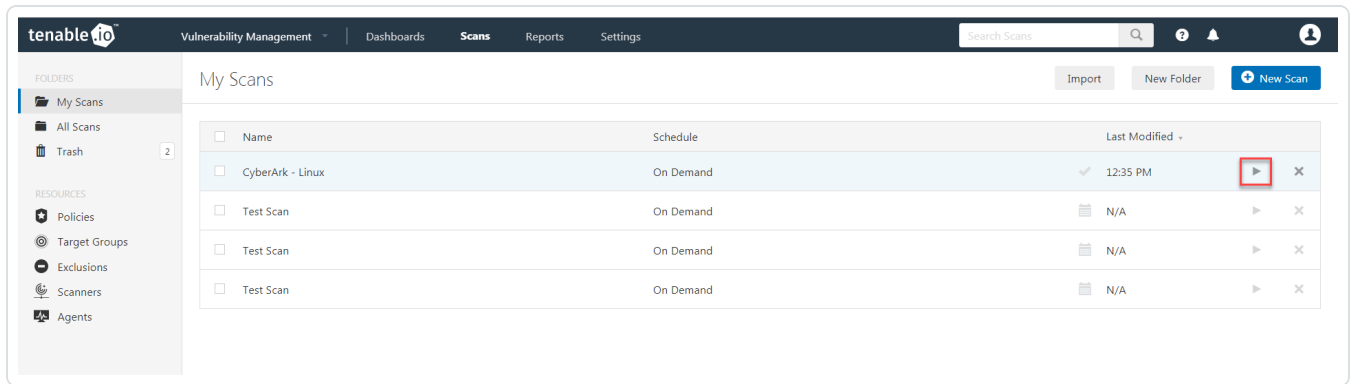


9. Select CyberArk.

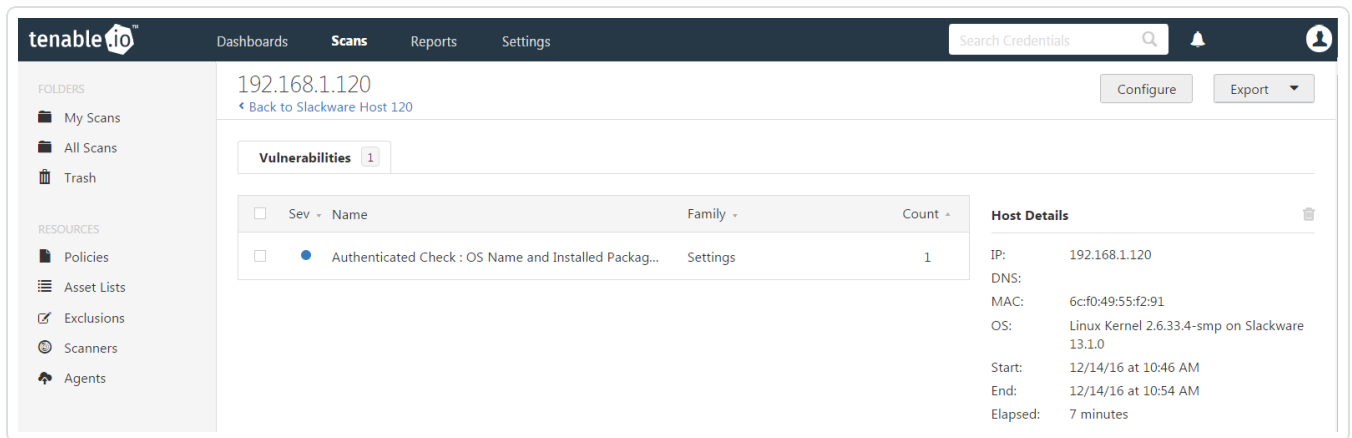
The CyberArk SSH options appear.

The screenshot displays the Tenable.io interface for configuring SSH authentication. The left sidebar contains navigation options such as 'My Scans', 'All Scans', 'Trash', 'Policies', 'Target Groups', 'Exclusions', 'Scanners', and 'Agents'. The main area is titled 'CyberArk / Configuration' and includes tabs for 'Settings', 'Credentials', 'Compliance', and 'Plugins'. The 'SSH' configuration panel is active, showing various settings for authentication, including the authentication method (CyberArk), username (root), and central credential provider details. A 'Save' button is located at the bottom left of the configuration panel.

10. Configure each field for SSH authentication. See the [Tenable.io User Guide](#) to get detailed descriptions for each option.
11. Click **Save** to finalize the changes.
12. To verify the integration is working, click the **launch** button (highlighted below) to initiate an on-demand scan.



- Once the scan has completed, select the completed scan and look for **Plugin ID 12634**, which validates that authentication was successful. If the authentication is not successful, refer to the [Debugging CyberArk Issues](#) section of this document.



Privilege Escalation with CyberArk Credentials

Tenable.io supports the use of privilege escalation, such as *su* and *sudo*, when using SSH through the CyberArk authentication method.

To add a CyberArk Password Vault credential set:

1. Select SSH as the Type and CyberArk as the Authentication Method.

The screenshot shows the Tenable.io interface for configuring a new scan. The main heading is "New Scan / Advanced Network Scan". The left sidebar contains navigation options like "My Scans", "All Scans", "Trash", "Policies", "Target Groups", "Exclusions", "Scanners", "Agents", and "Agents". The main content area is divided into tabs: "Settings", "Credentials", "Compliance", and "Plugins". The "SSH" configuration panel is open, showing the following fields:

- Authentication method: CyberArk
- Username: root
- CyberArk AIM Service URL: (empty)
- Central Credential Provider Host: vault_host.yourcompany.com
- Central Credential Provider Port: 443
- Central Credential Provider Username: (empty)
- Central Credential Provider Password: (empty)
- Safe: (empty)
- AppId: (empty)
- Folder: (empty)
- PolicyId: (empty)
- Use SSL:
- Verify SSL Certificate:
- CyberArk Account Details Name: (empty)
- CyberArk Address: (empty)
- CyberArk elevate privileges with: Nothing
- Global Credential Settings:
 - known_hosts file: [Add File](#)
 - Preferred port: 22
 - Client version: OpenSSH_5.0
 - Attempt least privilege:

At the bottom of the configuration panel, there are "Save" and "Cancel" buttons.

2. An option for **CyberArk elevate privileges with** appears near the bottom of the configuration page. Multiple options for privilege escalation are supported, including *su*, *su+sudo* and *sudo*. For example, if **sudo** is selected, additional fields for **sudo user**, "**CyberArk Account Details Name** and **Location of sudo** (directory) are provided and can be completed to support authentication and privilege escalation through CyberArk Password Vault. Additional information about

all of the supported privilege escalation types and their accompanying fields can be found in the [Tenable.io User Guide](#).

CyberArk elevate privileges with: Nothing

Global Credential Settings

known_hosts file: Nothing

Preferred port: .k5login

Client version: OpenSSH_5.0

Attempt least privilege:

Enable dynamic privilege escalation. If the working credentials for the target include privilege escalation, commands will first be attempted without privilege escalation. Commands will be run again with privilege escalation only if needed.

Note: When asked for a **CyberArk Account Details Name**, perform the following steps to obtain the correct value:

1. Log in to CyberArk Password Vault.
2. Choose the secret (password) you wish to use.
3. Look at the name parameter (such as in the image below) in the Account Details page; this is the value to supply in the **CyberArk Account Details Name** field.

POLICIES ACCOUNTS APPLICATIONS REPORTS ADMINISTRATION

Account Details

Home Edit Change Reconcile Verify Delete Move Send Link Refresh

Password: ***** Show Copy

SSH Connect Copy Shortcut

Platform Name: **Unix via SSH**

Device Type: **Operating System**

Safe: **Unix Accounts**

Name: **Operating System-UnixSSH-172.26.22.201-root**

Last verified: **N/A**

Last modified: **Administrator (6/13/2016 10:32:35 PM)**

Last used: **Administrator (6/20/2016 11:32:29 AM)**

Address: **172.26.22.201**

Username: **root**



Additional Information

[CyberArk Domain and DNS Support](#)

[Tenable.io Priority Scanning for CyberArk](#)

[Retrieving Addresses to Scan from CyberArk](#)

[Debugging CyberArk Issues](#)

CyberArk Domain and DNS Support

Tenable's support for CyberArk allows Tenable.io to use its target list to query CyberArk Enterprise Password Vault for the target system's credentials, and Tenable.io can use a flexible system to allow for DNS and domain support. See [Tenable.io Priority Scanning for CyberArk](#) for explanation of the logic used by Tenable.io for scans using credentials from CyberArk Enterprise Password Vault.

Tenable.io Priority Scanning for CyberArk

Tenable.io sets a priority system that allows for flexible querying. The following is set out to describe the order Tenable.io tries values and the logic behind it.

1. Tenable.io will query CyberArk with the target value entered into the Tenable.io **Targets** configuration field. For example, if you put a FQDN in the target list, Tenable.io will query CyberArk with the address value of the FQDN. If you enter an IP address or range such as 192.168.1.1-20, Tenable.io will try to query using the IP address or IP range of the target system(s) in the CyberArk **Address** value. If the target system uses FQDN and can be resolved, then it will be contacted.
2. If the target value fails, Tenable.io will then look to see if there is a domain value (for a Windows system). If a domain value is present, Tenable.io will query CyberArk using the domain value for the address value to attempt to use domain credentials.
3. If the configured target value and the domain value both fail, Tenable.io will then pull the IP address of the system. If the IP address does not match one of the IP addresses supplied in the target list, Tenable.io will then query CyberArk using the IP address of the target itself. This is checked against the target value in the configuration to prevent querying CyberArk twice with the same value.

Debugging CyberArk

To enable debugging when you configure a scan in Tenable.io, go to **Settings->Advanced->Debug Settings** and Check **Enable plugin debugging**. If an issue is found, review the results of plugin **Debugging Log Report** (84239). If debug output for the system exists in the debug log, one or more of the following files will be present:

- logins.nasl: Used for Windows credentials. Shows higher level failures in Windows authentication
- logins.nasl~CyberArk: Used to output specific CyberArk- related debug information
- ssh_settings: Used for SSH credentials. Shows higher level failures in SSH authentication
- ssh_settings~CyberArk: Used to output specific CyberArk-related debug information

Example of output:

```
[2015-11-17 22:17:04] HTTP/1.1 500 Internal Server Error returned
[2015-11-17 22:17:04] HTTP 500 : Server was unable to process request. ---
&gt; APPAP004E Password object matching query [Safe=Unix Account-
s;UserName=credtester;Folder=Root;Address=172.26.22.26] was not found (Dia-
gnostic Info: 5). Please check that there is a password object that
answers your query in the Vault and that both the Provider and the applic-
ation user have the appropriate permissions needed in order to use the
password.
[2015-11-17 22:17:04] HTTP/1.1 500 Internal Server Error returned
[2015-11-17 22:17:04] HTTP 500 : Server was unable to process request. ---
&gt; APPAP004E Password object matching query [Safe=Unix Account-
s;UserName=admin;Folder=Root;Address=172.26.22.26] was not found (Dia-
gnostic Info: 5). Please check that there is a password object that
answers your query in the Vault and that both the Provider and the applic-
ation user have the appropriate permissions needed in order to use the
password.
[2015-11-17 22:17:04] HTTP/1.1 500 Internal Server Error returned
[2015-11-17 22:17:04] HTTP 500 : Server was unable to process request. ---
&gt; APPAP229E Too many password objects matching query [Safe=Unix Account-
s;UserName=admin;Folder=Root] were found: (Safe=Unix
```

Accounts;Folder=Root;Object=Operating System-WinDesktopLocal-172.26.22.205-admin, Safe=Unix Accounts;Folder=Root;Object=Operating System-WinDesktopLocal-172.26.22.66-admin and more. See trace log for more information). (Diagnostic Info: 41)

The [Tenable.io Priority Scanning for CyberArk](#) section shows that a single system may send multiple requests that fail before finding a successful one. Because of this, the output to the debugging log may not show an issue with the scan, but it can be used as an audit trail if there is an issue. To address issues using the log, look for the parameters to match the intended query and see what error output was reported for that query. For example, if you intended to scan target 172.26.22.66 using parameters of (Safe=Unix Accounts;UserName=admin;Folder=Root), then you could discern from the log above that the reason the scan failed is because there were too many matching items to this query, and therefore no results were returned.

Retrieving Addresses to Scan from CyberArk

Tenable.io is able to use a feature in CyberArk to pull a list of targets to scan. Below is a description of how to pull the target system values and how to use them.

Note:The following method of target address retrieval cannot be done from the default administrator account. You must create an account that is a member of the PVWAMonitor group to generate the following reports.

1. Click on **Report** at the top of the CyberArk Enterprise Password Vault web interface.
2. Click **Generate Report** at the top of the Report page.
3. Choose **Privileged Account Inventory**.
4. Click **Next**.
5. Specify the search parameters for the systems you want to scan.
6. Click **Next**.
7. Click **Finish**.
8. Download the CSV or XLS report.
9. Confirm the targets for Tenable.io to scan.
10. Confirm the values can all be resolved by Tenable.io.
11. Copy the values from the **Target system address** column.
12. Enter the values into Tenable.io. Either:
 - a. Paste the values from addresses into the target list in Tenable.io.
 - b. Paste the values into a file and use a file target list in Tenable.io.

About Tenable

Tenable transforms security technology for the business needs of tomorrow through comprehensive solutions that provide continuous visibility and critical context, enabling decisive actions to protect your organization. Tenable eliminates blind spots, prioritizes threats, and reduces exposure and loss. With more than one million users and more than 20,000 enterprise customers worldwide, organizations trust Tenable for proven security innovation. Tenable's customers range from Fortune Global 500 companies, to the U.S. Department of Defense, to mid-sized and small businesses in all sectors, including finance, government, healthcare, higher education, retail, and energy. Transform security with Tenable, the creators of Nessus and leaders in continuous monitoring, by visiting tenable.com.