

Tenable Security Center API Best Practices Guide

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Welcome to Tenable Security Center API Best Practices

The REST API for Tenable Security Center allows you to integrate Tenable Security Center with other standalone or web applications by scripting interactions with the Tenable Security Center server.

This document describes recommended approaches to common tasks using the Tenable Security Center API. For descriptions of all available endpoints for the Tenable Security Center API, see the Tenable Security Center API reference guide.

This document contains recommendations for the following tasks:

- Launch a Remediation Scan on Tenable Security Center
- Retrieve Vulnerability Data for a Specific Time Range
- <u>Retrieve Asset Data from Tenable Security Center</u>
- Add Asset Data to Tenable Security Center

Note: This documentation provides examples in JavaScript Object Notation (JSON).

API Key Authorization

Note: API key authorization requires Tenable Security Center 5.13.x or later. For earlier versions of Tenable Security Center, use the authentication token as described in <u>Token</u> in the *Tenable Security Center API Guide*.

You can generate a unique set of API keys for each user account. These keys allow your application to authenticate to the Tenable Security Center API without a user authentication token.

To authorize your application to use the Tenable Security Center API, you must include the **x-apikey** header element in your HTTP request messages.

Before submitting a request, configure the user account you want to use to submit the requests, as follows:

- Enable API key authentication, as described in Enable API Key Authentication in the Tenable Security Center User Guide.
- Generate API keys for a user with sufficient permissions for your request, as described in <u>Generate API Keys</u> Keys in the *Tenable Security Center User Guide*.

For more information about Tenable Security Center API keys, see <u>API Key Authentication</u> in the *Tenable Security Center User Guide*.

x-apikey Header Element

The x-apikey header element has the following format:

x-apikey: accesskey=ACCESS_KEY; secretkey=SECRET_KEY;

The ACCESS_KEY and SECRET_KEY parameters correspond to the API keys that Tenable Security Center generates for each system user. For more information, see <u>Generate API Keys</u> in the *Tenable Security Center User Guide*.

Example HTTP Request

```
curl -X GET -k --header "x-apikey:
accesskey=4def6bc216f14c1ab86dfba8738ff4a5;
```

secretkey=a47d1d3a071443449a75821129526b96" https://Tenable.sc/rest/currentUser

Error States

Code	Status	Description
400 Bad Request	Returned if your request specified both an authentication token and API keys.	
	Returned if your request specified API keys, but API key authen- tication is disabled for your Tenable Security Center. For more information, see <u>Enable API Key Authentication</u> in the <i>Tenable</i> <i>Security Center User Guide</i> .	
		Returned if your request specified invalid API keys. API keys are invalid if they meet any of the following criteria:
		 The access key and secret key do not have a combined length of 64 characters.
		• The access key does not exist in the Tenable Security Center database (for example, the access key has been deleted).
		• The user associated with the API key is locked from exceed- ing the maximum number of login attempts.
		 The user associated with the API key has insufficient per- missions for the request.
		• The secret key does not match the specified access key.
	Returned if Tenable Security Center encounters any database errors during the API key recognition process.	
	Note: If you encounter this error, resubmit your request. If the error does not resolve on resubmit, contact Tenable Support.	

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Launch a Remediation Scan on Tenable Security Center

A remediation scan evaluates a specific plugin against a specific target or targets where the related vulnerability was present in an earlier scan. A remediation scan is a type of active scan.

Remediation scans allow you to validate whether your vulnerability remediation actions on specific targets have been successful. If a remediation scan can no longer identify the vulnerability on targets where it was previously identified, the system changes the status of the vulnerability instances to mitigated. For more information about the methodology the system uses in remediation scans, see "Mitigation Logic" in the <u>Tenable Security Center User Guide</u>.

To launch a remediation scan on Tenable Security Center, Tenable recommends the following approach:

- 1. Authenticate, if you have not already done so. Be sure to include the authentication token in your request headers. For more information on authentication, see the description of the /token endpoint in the Tenable Security Center API reference guide.
- 2. Identify the plugin ID and plugin family ID for the vulnerability you want to remediate.

You can determine the plugin ID and plugin family ID from the vulnerability results of a standard scan. For more information on retrieving these results, see <u>Retrieve Vulnerability Data for</u> <u>a Specific Time Range</u>.

Alternatively, if you know the plugin ID but not the plugin family ID, use the /pluginFamily/{id} endpoint to retrieve the plugin family ID. For more information about this endpoint, see the description of the /pluginFamily endpoint in the Tenable Security Center API reference guide.

HTTP Request Syntax:

GET /rest/pluginFamily/pluginID

HTTP Request Example:

GET /rest/pluginFamily/97833

HTTP Response Example:

```
{
    "type" : "regular",
    "response" : {
        "id" : "1000030",
        "name" : "Malware",
        "type" : "passive",
        "type" : "passive",
        "plugins" : [],
        "count" : 0
    },
    "error_code" : 0,
    "error_msg" : "",
    "warnings" : [],
    "timestamp" : 1408728549
}
```

The **id** field in this response is the plugin family ID. Retain this value for use in the next HTTP request (specifically, in the **families** parameter of the **/policy** request).

3. Create a scan policy for one-time use.

The policy you create in this step cannot be retrieved in a GET request to the **/policy** endpoint. This policy can be used only for this particular remediation scan.

Note: If you launch a remediation scan from the Tenable Security Center user interface, the system automatically creates a default policy, so there is no action in the Tenable Security Center user interface that is equivalent to this step.

HTTP Request Syntax:

POST /rest/policy{parameters}

Parameters must include:

Parameter	Value
context	scan

families	Both of the following:
	 the plugin for the vulnerability you want to remediate (spe- cifically, the plugin ID and plugin family ID you identified in Step 2)
	 the Nessus Scan Information plugin (plugin ID 19506; plu- gin family ID 41)
	Note: If you omit plugin 19506, the remediation scan returns incomplete scan information, if any.
<pre>policyTemplate{id}</pre>	The code for the Advanced Template (1).
<pre>preferences {parameter,)</pre>	Specifies parameters corresponding to custom scan policy options.
	The HTTP request example below includes the following para- meters with their default settings:
	 portscan_range—equivalent to Port Scanning > Ports > Port scan range
	 tcp_scanner—equivalent to Port Scanning > Network Port Scanners > TCP
	 syn_scanner—equivalent to Port Scanning > Network Port Scanners > SYN
	 udp_scanner—equivalent to Port Scanning > Network Port Scanners > UDP
	 syn_firewall_detection—equivalent to Port Scanning Network Port Scanners > Override automatic firewall detection
	For more information on these parameters, see the <u>Tenable</u> <u>Security Center User Guide</u> .

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HTTP Request Example:

```
{
  "name": "",
  "description": "",
  "context": "scan",
  "createdTime": 0,
  "modifiedTime": 0,
  "groups": [],
  "policyTemplate": {
    "id": 1
  },
  "auditFiles": [],
  "preferences": {
    "portscan_range": "default",
    "tcp_scanner": "no",
    "syn_scanner": "yes",
    "udp_scanner": "no",
    "syn_firewall_detection": "Automatic (normal)"
  },
  "families": [
    {
      "id": "20",
      "plugins": [
        {
          "id": "97833"
        }
      1
    },
    {
      "id": "41",
      "plugins": [
       {
          "id": "19506"
```

```
>
}
}
```

4. When you receive an HTTP response to your POST /policy request, retain the id element for use in the next HTTP request (that is, the POST /scan request).

HTTP Response Example:

```
"type": "regular",
"response":
    {
        "id": "1000007",
        "name": "_1513112172_0.87691100_1_1_192.0.2.186_9070_scan_
e448b4e5c935ed3738b1d06527975e73",
        "description": "",
        "tags": ""
    }
```

In this example, the policy ID is 1000007.

5. Use the **/scan** endpoint to launch a remediation scan.

HTTP Request Syntax:

POST /rest/scan{parameters}

Recommended parameters include:

Parameter	Value
assets	Specifies the asset or assets you want the remediation scan to target.
	Note: You can use either the assets parameter or the

ipList parameter to specify assets, but you cannot use both parameters in a single request.

Use an array of objects with the id attribute to specify individual assets. You can obtain asset IDs from the original scan results.

For example:

"assets": {	[
"id":	24
},	
{	
"id":	20
},	
{	
"id":	19
}	
]	
-	er corresponds to the Targets section of an the Tenable Security Center user interface.

classifyMitigatedAge

Specifies the number of days the system waits to remove vulnerabilities from the cumulative database if the related hosts do not reply to the scan. If this parameter is set to 0, the system removes the vulnerabilities immediately. If this parameter is set to any other valid value, the system waits that number of days before removing the vulnerabilities. Valid values include: 1, 2, 3, 4, 5, 6, 30, 60, 90, and 365 (default).

This parameter corresponds to the following parameters

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	 in the Settings section of an active scan in the Tenable Security Center user interface: Immediately remove vulnerabilities from scanned hosts that do not reply Number of days to wait before removing dead hosts
dhcpTracking	Specifies whether the system uses tracks hosts asso- ciated with changed IP addresses. The default value is false. Networks using DHCP require that this parameter be set to true to properly track hosts. This parameter corresponds to the Track hosts which have been issued new IP address parameter in the Settings section of an active scan in the Tenable Security Center user interface.
emailOnLaunch	Specifies whether the system emails you a notification when the scan launches. If you set this parameter to true, the system uses the email associated with the user account making the API request. This parameter cor- responds to the E-mail me on Launch parameter in the Post Scan section of an active scan in the Tenable Secur- ity Center user interface.
emailOnFinish	Specifies whether the system emails you a notification when the scan completes. If you set this parameter to true, the system uses the email associated with the user account making the API request. This parameter cor- responds to the E-mail me on Completion parameter in the Post Scan section of an active scan in the Tenable Security Center user interface.
ipList	Specifies the IP address or addresses of the asset or assets you want to scan.

	Note: You can use either the assets parameter or the ipList parameter to specify assets, but you cannot use both parameters in a single request.
	This value can be an IPv4 or IPv6 address (depending on the repository to be scanned), a CIDR address, or a DNS name.
	For example:
	"ipList": "198.168.1.1"
	This parameter corresponds to the Targets section of an active scan in the Tenable Security Center user interface.
maxScanTime	Specifies the number of hours after which the scan stops running. The default value is unlimited. This parameter corresponds to the Max scan duration parameter in the Settings section of an active scan in the Tenable Security Center user interface.
name	Specifies the display name of the remediation scan.
	To preserve consistency with remediation scans launched from the Tenable Security Center user inter- face, use the following name format:
	Remediation Scan of Plugin #pluginID
	This parameter corresponds to the Name parameter in the General section of an active scan in the Tenable Security Center user interface.
policy	Specifies the ID of the policy you created earlier. See Step 4 in this procedure.
pluginID	Specifies the ID of the plugin you want to remediate.
	Note: The plugin family ID is <i>not</i> required in this request.

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repository	Specifies the ID of the repository where you want to import the remediation scan results. The repository for the remediation scan must be the same repository as the original scan.
	You can obtain the repository ID from the vulnerability results of the original scan. For more information on retrieving these results, see <u>Retrieve Vulnerability Data for a</u> <u>Specific Time Range</u> .
	This parameter corresponds to the Import Repository parameter in the Settings section of an active scan in the Tenable Security Center user interface.
rolloverType	Specifies how the system schedules the rollover scan it creates. This field is required if the timeoutAction is set to rollover. Valid values are:
	 nextday—Create a rollover scan scheduled to launch the next day at the same start time as the just completed scan.
	 template—Create a rollover scan as a template for users to launch manually.
	This parameter corresponds to the Rollover Schedule parameter in the Settings section of an active scan in the Tenable Security Center user interface.
scanningVirtualHosts	Specifies whether the system treats a new DNS entry for an IP address as a virtual host as opposed to a DNS name update. The default value is false. This parameter corresponds to the Scan Virtual Hosts parameter in the Settings section of an active scan in the Tenable Security Center user interface.
schedule	Specifies the schedule for the scan. For a remediation

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	scan, this parameter must include the following fields:
	 start—The time you want the scan to launch. Use the following format:
	TZID=timezone
	The time zone must be in the iCalendar date-time format.
	 repeatRule—The frequency of the scan. Use the fol- lowing value for this field:
	FREQ=NOW;INTERVAL=1
	 type—The type of scan. Use the following value for this field:
	now
	This value causes the system to delete the related one-time scan policy after the scan completes.
	For example:
	<pre>"schedule": { "start": "TZID=America/New_ York:20171212T160900", "repeatRule": "FREQ=NOW;INTERVAL=1", "type": "now" },</pre>
timeoutAction	Specifies how the system responds if it cannot complete the scan.
	Valid values are:
	 discard—Do not import any of the results obtained by the scan to the database.

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	 import-Import the results of the current scan and discard the information for any unscanned targets. rollover-Import the results from the scan into the database and create a rollover scan that may be launched at a later time to complete the scan.
	This parameter corresponds to the Scan Timeout Action parameter in the Settings section of an active scan in the Tenable Security Center user interface.
type	Specifies the scan type. To use the scan policy you cre- ated earlier, this value must be policy.

HTTP Request Example:

```
{
 "name": "Remediation Scan of Plugin #97833",
 "description": "",
 "context": "",
 "createdTime": 0,
 "modifiedTime": 0,
 "groups": [],
 "repository": {
   "id": 1
 },
 "schedule": {
    "start": "TZID=America/New_York:20171212T160900",
   "repeatRule": "FREQ=NOW;INTERVAL=1",
    "type": "now"
 },
 "dhcpTracking": "true",
 "emailOnLaunch": "false",
 "emailOnFinish": "false",
 "reports": [],
```

```
"type": "policy",
 "policy": {
   "id": 1000007
  },
 "pluginID": "97833",
 "timeoutAction": "rollover",
 "rolloverType": "template",
  "scanningVirtualHosts": "false",
  "classifyMitigatedAge": 0,
 "assets": [
   {
    "id": 24
   },
    {
    "id": 20
   },
   {
    "id": 19
   }
 ],
 "ipList": "",
 "credentials": [],
 "maxScanTime": "unlimited"
}
```

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Retrieve Vulnerability Data for a Specific Time Range

To retrieve vulnerability data using the Tenable Security Center API, Tenable recommends the following approach:

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- 1. Authenticate, if you have not already done so. Be sure to include the authentication token in your request headers. For more information on authentication, see the description of the /token endpoint in the Tenable Security Center API reference guide.
- 2. Use the POST version of the /analysis endpoint.

HTTP Request Syntax:

POST /rest/analysis{parameters}

Recommended parameters are:

Parameter	Value
query	Specifies the parameters of the data you want to retrieve for analysis.
	This parameter encapsulates the functionality of the /query endpoint.
	For the /query parameters Tenable recommends in this specific case, see <u>recommended query parameters</u> below.
	For a full description of the available /query parameters, see the <u>Ten-able Security Center API reference guide</u> .
sortDir	Specifies the sort order for the data, using the field you specify in sortField. Requires companion parameter, sortField.
	Valid values are:
	 asc–Sorts data in ascending order (A-Z, 0-9).
	 desc—Sorts data in descending order (Z-A, 9-0).
sortField	Specifies the field the system uses to sort the data. Requires companion parameter, sortDir.
	For vulnerabilities data, Tenable recommends you sort by severity:

	"sortField": "severity"
sourceType	Specifies the status of the vulnerabilities you want to analyze.
	This field corresponds to the Options > Switch to options on the Vul- nerability Analysis page in the Tenable Security Center user inter- face.
	Valid values are:
	<pre>cumulative-Analyzes cumulative vulnerabilities. This parameter cor- responds to Options > Switch to Cumulative on the Vulnerability Analysis page.</pre>
	patched—Analyzes mitigated vulnerabilities. This parameter cor- responds to Options > Switch to Mitigated on the Vulnerability Ana- lysis page.
type	Specifies the type of data you want to analyze. For vulnerability data, use vuln.
	This field corresponds to the options available when you click Ana- Iysis in the top navigation bar of the Tenable Security Center user interface. Specifying vuln is equivalent to clicking Analysis > Vul- nerabilities .

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For all parameters supported for the **/analysis** endpoint, see the <u>Tenable Security Center API</u> <u>reference guide</u>.

Recommended Query Parameters:

Tenable recommends that you use the following parameters for the query element of the **/ana-Iysis** endpoint when retrieving vulnerability data:

Parameter	Value
endOffset	Specifies the last record in the range you want to retrieve. For example, if this value is 50, the retrieved data range stops at the 50th result that meets the query criteria. This parameter requires the pres-

	ence of the startOffset parameter.
filters	Specifies the filter criteria for the data you want the system to retrieve.
	Filter parameters include:
	 filterName—The name of the field on which the query filters. To limit your query results to a specific date range, use the fol- lowing:
	 firstSeen—Equivalent to filtering on Vulnerability Dis- covered on the Vulnerability Analysis page of the Ten- able Security Center user interface.
	 lastSeen–Equivalent to filtering on Vulnerability Observed on the Vulnerability Analysis page of Tenable Security Center user interface. Requires that the sourceType parameter is cumulative.
	 lastMitigated—Equivalent to filtering on Vulnerability Mitigated on the Vulnerability Analysis page of Tenable Security Center user interface. Requires that the sourceType parameter is patched.
	 operator—An operator that specifies the relationship between the filterName and the value elements.
	 value—A code in the format #:# specifying a date range rel- ative to the current day. The first number represents the start- ing day, and the second number represents the last day of the range.
	For example:
	<pre>"filters": { "filterName": "firstSeen", "operator": "=",</pre>

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	"value": "#:#" }
	In this example, if the sourceType for the query is cumulative, and this filter value is set to 0:11, the query retrieves all vulnerabilities first discovered between today and 11 days ago. To set this filter to a single date, use the same number for both elements. For example, a value of 0:0 retrieves all vulnerabilities first discovered today.
sourceType	Specifies the status of the vulnerabilities you want to retrieve.
	Valid values are:
	cumulative-Retrieves vulnerabilities from the cumulative database. Equivalent to Options > Switch to cumulative in the Vulnerability Analysis page.
	patched–Retrieves vulnerabilities from the mitigated database. Equivalent to Options > Switch to Mitigated in the Vulnerability Analysis page.
startOffset	Specifies the first record in the range you want to retrieve. For example, if this parameter is 0, the retrieved data starts at the first result that meets the query criteria. This parameter requires the presence of the endOffset parameter.
tools	Specifies the level of vulnerability detail you want to retrieve.
	This field corresponds to the drop-down options on the Vulnerability Analysis page in the Tenable Security Center user interface.
	Valid values include:
	 listvuln—Equivalent to the Vulnerability List option on the Vulnerability Analysis page.
	 vulndetails—Equivalent to the Vulnerability Details List option on the Vulnerability Analysis page.

type	Specifies type of data you want to retrieve. For vulnerability data, use
	vuln.

HTTP Request Example–Cumulative Vulnerabilities:

```
{
  "query": {
    "name": "",
    "description": "",
    "context": "",
    "createdTime": 0,
    "modifiedTime": 0,
    "groups": [],
    "type": "vuln",
    "tool": "vulndetails",
    "sourceType": "cumulative",
    "startOffset": 0,
    "endOffset": 50,
    "filters": [
      {
        "filterName": "firstSeen",
        "operator": "=",
        "value": "0:11"
      },
      {
        "filterName": "lastSeen",
        "operator": "=",
        "value": "0:12"
      }
    ]
  },
  "sourceType": "cumulative",
  "sortField": "severity",
  "sortDir": "desc",
```

```
"columns": [],
"type": "vuln"
}
```

HTTP Request Example–Mitigated Vulnerabilities:

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```
{
  "query": {
    "name": "",
    "description": "",
    "context": "",
    "createdTime": 0,
    "modifiedTime": 0,
    "groups": [],
    "type": "vuln",
    "tool": "listvuln",
    "sourceType": "patched",
    "startOffset": 0,
    "endOffset": 50,
    "filters": [
      {
        "filterName": "lastMitigated",
        "operator": "=",
        "value": "0:25"
       },
    ]
  }
  "sourceType": "patched",
   "sortField": "severity",
  "sortDir": "desc",
  "columns": [],
  "type": "vuln"
}
```

Retrieve Asset Data from Tenable Security Center

To retrieve asset data from Tenable Security Center, Tenable recommends the following approach:

- 1. Authenticate, if you have not already done so. Be sure to include the authentication token in your request headers. For more information on authentication, see the description of the /token endpoint in the Tenable Security Center API reference guide.
- 2. Use the GET version of the /asset endpoint.

HTTP Request Syntax:

GET /rest/asset?filter=filter,...&fields=field,...

To retrieve data based on the default filters in the **Assets** page of the Tenable Security Center user interface, Tenable recommends the following:

filter=excludeAllDefined,usable

For a full list of filter and field values for the **/asset** endpoint, see the <u>Tenable Security</u> <u>Center API reference guide</u>.

HTTP Request Example:

GET /rest/asset?filter=excludeAllDefined,usable&fields=owner,groups, ownerGroup,status,name,type,template,description,createdTime, modifiedTime,ipCount,repositories,targetGroup,tags,creator

Note: This example includes line breaks for readability. In actual use, the request cannot include line breaks.

Add Asset Data to Tenable Security Center

Tenable recommends that you add asset data to Tenable Security Center as a static IP list of assets.

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To add assets:

- 1. Authenticate, if you have not already done so. Be sure to include the authentication token in your request headers. For more information on authentication, see the description of the /token endpoint in the Tenable Security Center API reference guide.
- 2. Use the POST version of the /asset endpoint.

HTTP Request Syntax:

POST /rest/asset{parameters}

Recommended parameters include:

Parameter	Value
definedIPs	Specifies the IP addresses for the assets you want to add.
	Use commas or newline characters (n) to separate values in this field.
	This field can accept individual IP addresses, CIDR addresses, or IP address ranges. You can use multiple address types in a single entry. For example, the following valid value includes a single IP address, a CIDR address, and a range of IP addresses:
	"definedIPs": "127.0.0.1,192.0.2.0/24,198.168.1.1- 198.168.1.11"
	This parameter corresponds to the IP Addresses parameter in the cus- tom asset list options in the SecurityCenter user interface.
name	Specifies the display name of the static IP list of assets.
	This parameter corresponds to the Name parameter in the custom asset list options in the Tenable Security Center user interface.

type	Specifies the type of custom asset list you are adding. Tenable recom-
	mends static.

For a full list of parameters for the **/asset** endpoint, see the <u>Tenable Security Center API ref</u>erence guide.

HTTP Request Example:

```
{
    "tags": "",
    "name": "static test list",
    "description": "",
    "context": "",
    "status": -1,
    "createdTime": 0,
    "modifiedTime": 0,
    "groups": [],
    "type": "static",
    "definedIPs": "127.0.0.1,198.168.1.1"
}
```

3. To verify that the system correctly added the assets, view the assets in the Tenable Security Center user interface, or use the **/asset** endpoint to <u>Retrieve Asset Data from Tenable Security</u> <u>Center</u>.