



Qualys Host Scanning Connector for Jenkins

User Guide

Version 1.0.6

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Preface

Welcome to Qualys Cloud Platform! In this guide, we'll show you how to install and use the Qualys Host Scanning Connector to see your Qualys VM scan data in Jenkins.

About Qualys

Qualys, Inc. (NASDAQ: QLYS) is a pioneer and leading provider of cloud-based security and compliance solutions. The Qualys Cloud Platform and its integrated apps help businesses simplify security operations and lower the cost of compliance by delivering critical security intelligence on demand and automating the full spectrum of auditing, compliance and protection for IT systems and web applications.

Founded in 1999, Qualys has established strategic partnerships with leading managed service providers and consulting organizations including Accenture, BT, Cognizant Technology Solutions, Deutsche Telekom, Fujitsu, HCL, HP Enterprise, IBM, Infosys, NTT, Optiv, SecureWorks, Tata Communications, Verizon and Wipro. The company is also a founding member of the [Cloud Security Alliance \(CSA\)](#). For more information, please visit www.qualys.com

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Introduction to Qualys Host Scanning Connector for Jenkins

The Qualys Host Scanning Connector empowers to automate the VM scanning of host and cloud instance from Jenkins. By integrating scans in this manner, Host or cloud instance security testing is accomplished to discover and eliminate security flaws.

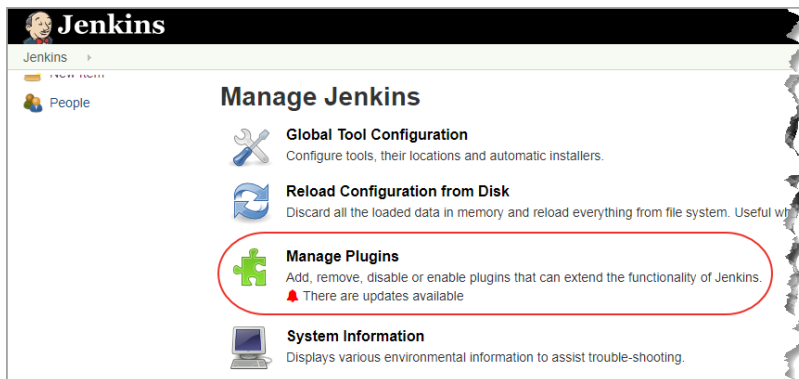
We'll help you: [Install the Plugin](#) | [Configure the Plugin](#)

Install the Plugin

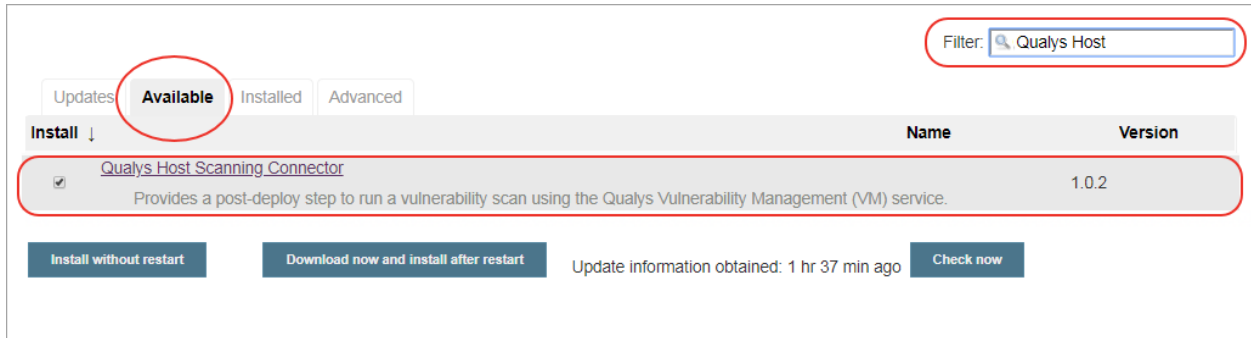
You can install the Qualys Host Scanning Connector from Jenkins. To install the Qualys Host Scanning Connector, log into your instance of Jenkins and click Manage Jenkins.



Next, click Manage Plugins.



If you are installing Qualys Host Scanning Connector for the first time, click the “Available” tab and search for Qualys Host Scanning Connector using the Filter bar. Select the plugin and click either Install without restart or Download now and Install after restart. After the plugin is installed, it will be listed in the Installed tab.



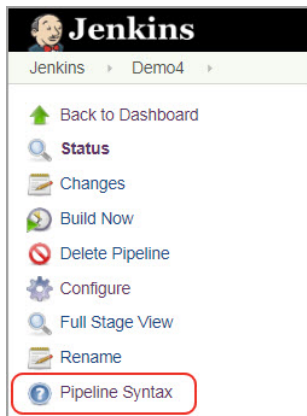
If the plugin is already installed in Jenkins and you want to update the Qualys Host Scanning Connector, go to the Updates tab, search for the plugin and click “Download now and Install after restart”.

Note that the plugin is also listed in the plugin store at <https://plugins.jenkins.io/>.

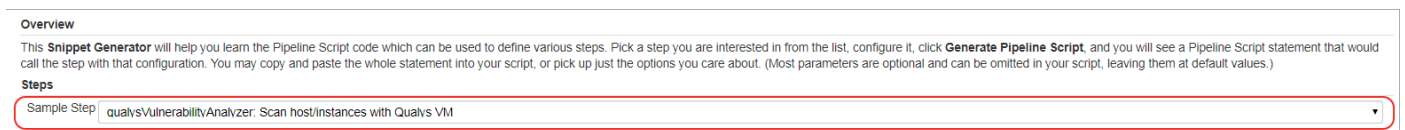
That’s it! The installation is now complete. Read on to learn about configuring the plugin.

Configure the Plugin for Pipeline projects

Open your application’s pipeline project and click "Pipeline Syntax" to enter the Snippet Generator.



Select "qualysVulnerabilityAnalyzer: Scan host/instances with Qualys VM" from the drop-down menu.



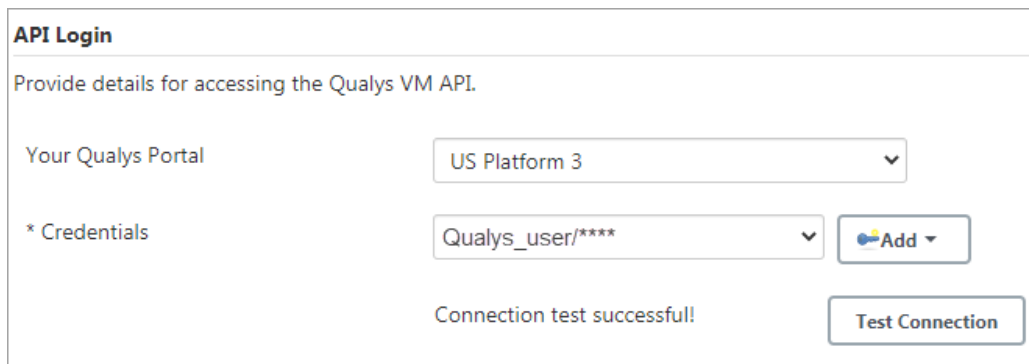
Configure API Login

Now you are ready to configure the plugin. The first step is to confirm that Jenkins can communicate to the Qualys Cloud Platform via the Qualys VM API. You'll need valid account credentials for an active Qualys VM subscription. The account must have API access enabled as well as a role assigned with all necessary permissions. Qualys recommends using a service account restricted to API access only (no UI access) and having the least privileges possible.

Select the Qualys platform/portal where your Qualys account resides and your account credentials for authenticating to the to the VM API server. Use the Add button to add account credentials in the Jenkins store for the new user. Once added, the credential is listed in the "Credentials" drop-down.

Note that what you select here depends on the Qualys platform your organization is using. [Learn more](#).

If your Jenkins instance does not have direct Internet access and a proxy is required, click the "Use Proxy Settings" checkbox and enter the required information.

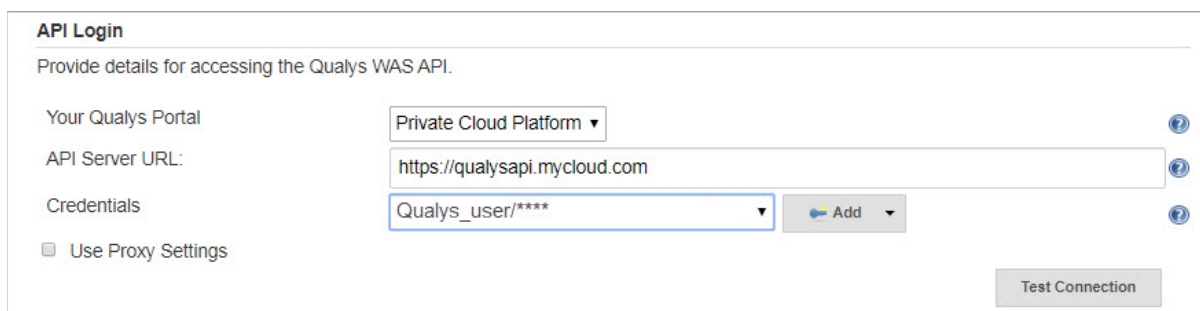


The screenshot shows the 'API Login' configuration form for the Qualys VM API. The form is titled 'API Login' and has a subtitle 'Provide details for accessing the Qualys VM API.' It contains the following fields and buttons:

- 'Your Qualys Portal': A dropdown menu with 'US Platform 3' selected.
- '* Credentials': A dropdown menu with 'Qualys_user/****' selected, and an 'Add' button with a plus icon.
- 'Connection test successful!': A message displayed below the credentials field.
- 'Test Connection': A button located at the bottom right of the form.

Click the "Test Connection" button. Assuming you have entered the correct API server URL for your subscription and the credentials are valid, you will see the message "Connection test successful!".

Note that if your Qualys account resides on a private cloud platform, select "Private Cloud Platform" as your Qualys cloud platform, specify the API server URL and your account credentials to access the API.

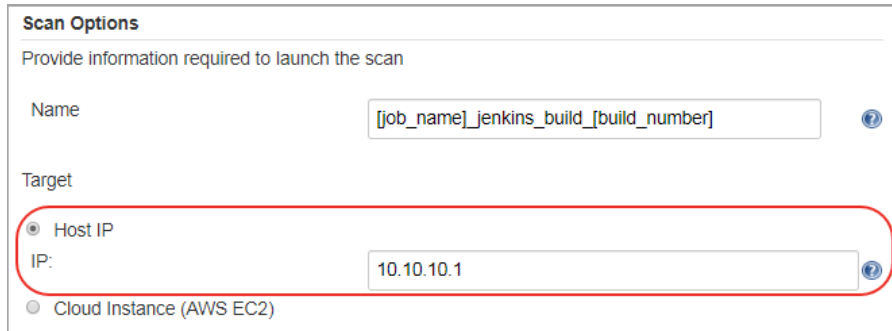


The screenshot shows the 'API Login' configuration form for the Qualys WAS API. The form is titled 'API Login' and has a subtitle 'Provide details for accessing the Qualys WAS API.' It contains the following fields and buttons:

- 'Your Qualys Portal': A dropdown menu with 'Private Cloud Platform' selected.
- 'API Server URL:': A text input field containing 'https://qualysapi.mycloud.com'.
- 'Credentials': A dropdown menu with 'Qualys_user/****' selected, and an 'Add' button with a plus icon.
- 'Use Proxy Settings': A checkbox that is currently unchecked.
- 'Test Connection': A button located at the bottom right of the form.

Configure Scan Options

Next, either enter the host IP in your Qualys VM account or AWS EC2 Cloud Instance information that you wish to scan. Note that we currently support scanning only single IP or EC2 instance.



Scan Options

Provide information required to launch the scan

Name

Target

Host IP

IP:

Cloud Instance (AWS EC2)

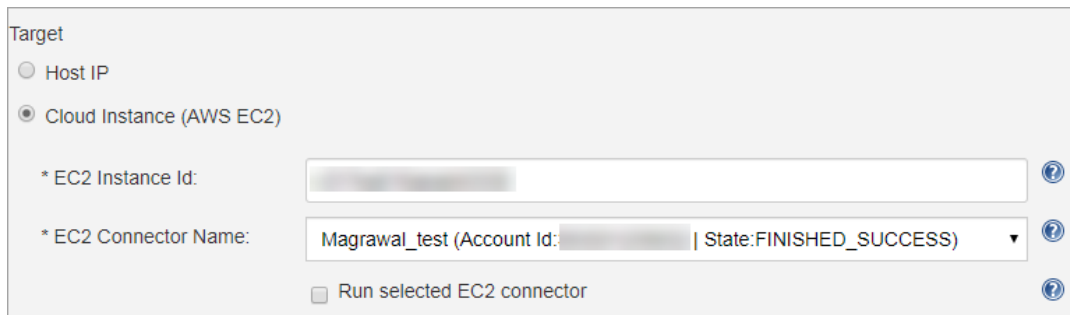
By default, the VM scan name will be:

[job_name]_jenkins_build_[build_number] + timestamp

You can edit the scan name, but a timestamp will automatically be appended regardless.

Provide the Host/Asset IP. You can also specify an environment variable for the Host IP.

Optionally, to scan your assets residing on an EC2 cloud instance: 1) Provide ID of Amazon EC2 Instance on which you want to launch the VM scan, 2) select the connector name for the instance.



Target

Host IP

Cloud Instance (AWS EC2)

* EC2 Instance Id:

* EC2 Connector Name:


Run selected EC2 connector


Currently, we support scanning a single Instance ID. You can also specify an environment variable for the EC2 ID.

When you select the “Run selected EC2 connector” check box, we run the connector to get the updated information about the instance and then launch the scan if the instance status is not known. If we have the instance status information, we do not run the connector and directly launch the scan. By default, this check box is selected.

We call the “hostasset” API with the “Id” and “accountId” of the ec2 instance to get the region/endpoint details.

Next, configure scan parameters.

* Option Profile: 

* Scanner Name: 

Option Profile – The option profile contains the various scan settings such as the vulnerability types that should be tested (detection scope), scan intensity, error thresholds, etc. This is the recommended setting; however, you can also select the Other option and choose a specific option profile ID if desired. Default value is Initial Options.

Scanner Name – Select the scanner appliance name from the drop-down that VM will use to scan your host assets on your network or on an EC2 instance for vulnerabilities. Default value is External scanner. Selecting the Host IP option will show you all the scanners including the scanners configured for scanning EC2 instances.

When you select Cloud Instance (AWS EC2) option, we will show you only those scanners that are configured to scan EC2 instances. Select the appropriate scanner that is configured to scan your ec2 instance.

Note that option profiles and scanners may take a bit longer to populate after connection to the API server is successful.


Configure Scan Pass/Fail Criteria

Next, configure the pass/fail criteria for a build, scan status polling frequency and timeout duration for the scan.


Configure Scan Pass/Fail Criteria

Set the conditions to fail the build job. The build will fail when ANY of conditions are met.


Failure Conditions

By Vulnerability Severity 


Fail with Severity or above.

By QID 


Fail with any of these QIDs:

By CVE 


Fail with any of these CVEs:


By CVSS score 

Fail with: BASE score or above.

By PCI Vulnerability Detections 

Fail if any PCI Vulnerabilities are identified

Apply above fail conditions to potential vulnerabilities as well 

Exclude Conditions 

Failure Conditions

You can set conditions to fail a build by vulnerability severity, Qualys Vulnerability Identifiers (QIDs), CVE IDs, CVSSv2 or V3 with a specific base score and PCI vulnerability detections. A build

will fail if the scan results contain vulnerabilities that match any of the specified failure conditions.

The failure condition by a vulnerability severity fails a build if a vulnerability with a specified or higher severity is found. For example, if you set vulnerability severity to 2 then a build will fail if a vulnerability found in scan has severity equal to or greater than 2, that is 2,3,4 and 5.

Note that a Qualys severity “5” rating is the most dangerous vulnerability while severity “1” is the least.


You also have the option to fail the build if the scan contains potential vulnerabilities. By default, failure conditions configured will be applicable only to “Confirmed” vulnerabilities. If you want to apply the conditions to Potential vulnerabilities as well, enable this option. A build will fail if the scan results contain potential vulnerabilities that match the conditions specified in the failure conditions. When you select this option, at least one failure conditions must be set.


Exclude Conditions

You can use the Exclude Conditions option to ignore specified CVE IDs or QIDs while evaluating the vulnerabilities for failure conditions. For example, we will not fail a build if an excluded QID is detected for a vulnerability in the scan even if that vulnerability meets the failure condition such as vulnerability severity. We evaluate the Exclude conditions first and remove the vulnerabilities that matches the exclude conditions before starting to evaluate the Failure Conditions.

Timeout Settings

Timeout Settings
Qualys VM Scan results will be collected per these settings. For each enter a value in minutes or an expression like 2*60 for 2 hours.

Frequency
How often to check for data minutes. 

Timeout
How long to wait for scan results minutes. 

In the Timeout settings, specify the polling frequency in minutes for collecting the VM scan status data and the timeout duration for a running Jenkins build. The default value for polling frequency is 2 minutes and 120 minutes is the default timeout duration.

Next, click "Generate Pipeline Script". This is your pipeline snippet for launching a VM scan.

Generate Pipeline Script

```
qualysVulnerabilityAnalyzer byCvss: 'cvss_base', bySev: 5, credsId: 'uspod3', cveList: 'CVE-2010-0422', cvssBase: '0.0', doExclude: true, excludeList: '', failByCves: true, failByCvss: true, failByPci: true, failBySev: true, hostIp: '10.10.10.10', optionProfile: 'Initial Options', platform: 'US_PLATFORM_3', pollingInterval: '2', scanName: '[job_name]_jenkins_build_[build_number]', scannerName: 'External', useHost: true, vulnsTimeout: '60*2'
```

The pipeline snippet is now ready to be plugged into your pipeline script.

Configure the Plugin for Freestyle Projects

As the configuration settings are same as Pipeline Project, see “Configure the Plugin Pipeline Project” for detailed configuration.

To create a Freestyle Project, click the Post-build Actions tab and Go to the Post-build Actions section. Select the "Scan host/instances with Qualys VM" option from the "Add post -build action" drop-down menu and then provide the following configuration details:

1) Provide your login account credentials to access the Qualys VM API server on the Qualys cloud platform. Select Use Proxy Settings to provide proxy information if your Jenkins server is behind a firewall.

2) Click Test Connection to verify that the plugin can connect to the Qualys VM API server.

3) Provide parameters: scan name, target host IPs or AWS EC2 information required to call the launch scan API.

For Host/AssetIP and EC2 Instance ID, you can also specify an environment variable in this format:
`env.{variable name}`

For example:

If your environment variable name for Host IP is "hostIp" then the input for Host IP field should be `env.hostIp`.

If your environment variable name for EC2 Instance ID is "ec2Id" then the input for EC2 ID field should be `env.ec2Id`.

4) Optional parameters that you can pass to launch scan API. 5) Build fail conditions by vulnerabilities detected for severity types and by QIDs CVE IDs, CVSSv2 or V3 with a specific base score and PCI and potential vulnerability detections.

5) Provide data collection frequency and timeout duration for the running scan.

6) Finally, click Save.

Qualys VM Scan Status

After the scan completes, go to Qualys VM Scan Results. Click the Summary tab. Report has a header and four sections: Results Summary, Confirmed Vulnerabilities, Potential Vulnerabilities and Pass/Fail Criteria Results Summary.

The Header shows along with other information build pass/fail status based on the scan results and scan completion status. Results Summary shows the scan launch date, duration and other details. Confirmed and Potential Vulnerabilities show graphical break up of confirmed and potential vulnerabilities by vulnerability severity type. Move your mouse over the graphical chart to view the number of vulnerabilities for each category of severity.

The Pass/Fail Criteria Results Summary section shows the pass/fail criteria and whether they are violated or satisfied. When the criteria are violated, the **✗** icon is shown while for satisfied criteria, the **✓** icon is shown.

QUALYS VULNERABILITY RESULTS

Scan Build Status: **FAILED** Scan Name: test_pipeline_jenkins_build_4_2019-05-21-10-18-26
 Scan Status: Finished Scan Reference: scan/1558433919.96883

Results Summary

Type: API
 Launch Date: 05/21/2019 10:18:39
 Network: Global Default Network
 Total Duration: 00:04:09
 Scan Target: 10.113.197.71

Confirmed Vulnerabilities (4)

Legend: Sev 5 (0), Sev 4 (0), Sev 3 (0), Sev 2 (4), Sev 1 (0)



Potential Vulnerabilities (9)

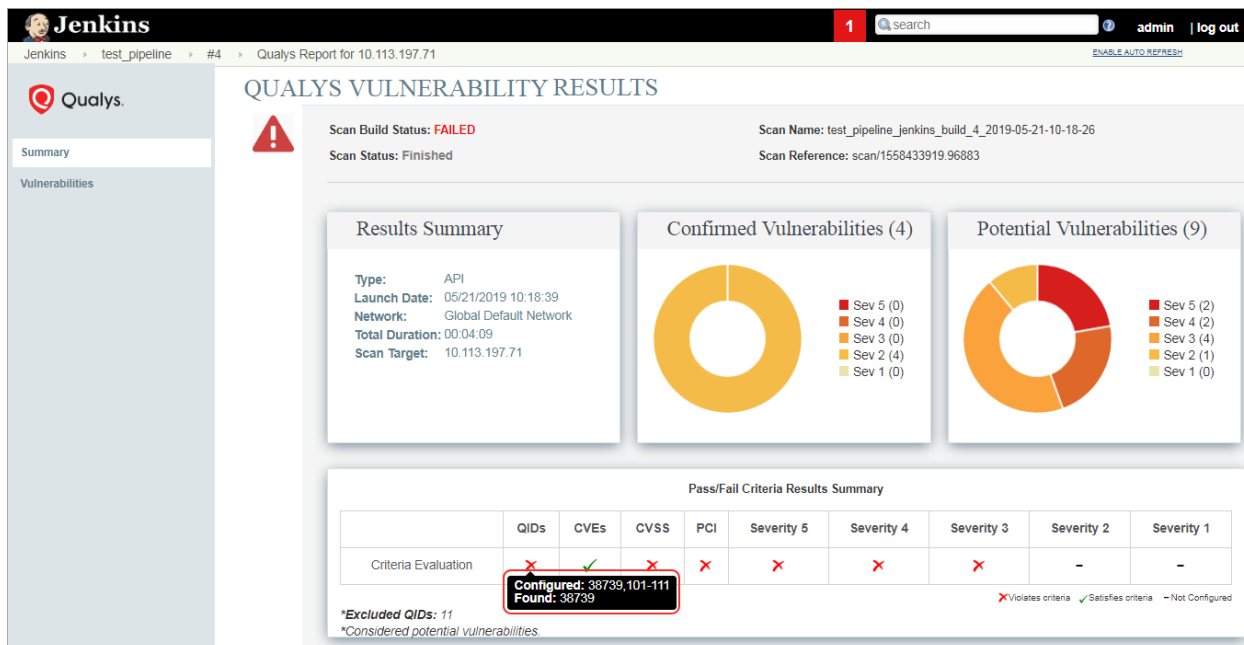
Legend: Sev 5 (2), Sev 4 (2), Sev 3 (4), Sev 2 (1), Sev 1 (0)

	QIDs	CVEs	CVSS	PCI	Severity 5	Severity 4	Severity 3	Severity 2	Severity 1
Criteria Evaluation	✗	✓	✗	✗	✗	✗	✗	-	-

*Excluded QIDs: 11
 *Considered potential vulnerabilities

✗ Violates criteria ✓ Satisfies criteria - Not Configured

Move the mouse over the  and  icons to view the value that you have configured for the criteria, and the actual value obtained after the scan.



QUALYS VULNERABILITY RESULTS

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 Scan Status: Finished Scan Reference: scan/1558433919.96883

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- Scan Target: 10.113.197.71

Confirmed Vulnerabilities (4)

- Sev 5 (0)
- Sev 4 (0)
- Sev 3 (0)
- Sev 2 (4)
- Sev 1 (0)

Potential Vulnerabilities (9)

- Sev 5 (2)
- Sev 4 (2)
- Sev 3 (4)
- Sev 2 (1)
- Sev 1 (0)

Pass/Fail Criteria Results Summary


	QIDs	CVEs	CVSS	PCI	Severity 5	Severity 4	Severity 3	Severity 2	Severity 1
Criteria Evaluation								-	-

***Excluded QIDs: 11**
***Considered potential vulnerabilities**

Configured: 38739,101-111
Found: 38739

Violates criteria Satisfies criteria Not Configured

The Vulnerabilities tab is available to provide you the details of vulnerabilities, such as QIDs, vulnerability titles, CVE ID, vulnerability severity, CVSS V2 and/or V3 scores, vulnerability type.



QUALYS VULNERABILITY RESULTS

Show: 10 entries Show Only: Severity All PCI Vuln All Vuln Type All

QID	Title	CVE ID	Severity	CVSSv2 Base Score	CVSSv3 Base Score	Category	PCI Vuln?	Type	Bug Traq id
11	Hidden RPC Services	-	2	5 (AV/NAC/LAU/N/C:P/I/N/A/N)	-	RPC	yes	Confirmed	-
38003	TCP Test-Services	-	2	5 (AV/NAC/LAU/N/C:P/I/N/A/N)	-	General remote service	yes	Confirmed	-
38623	OpenSSH Xauth Command Injection Vulnerability	CVE-2016-3115	3	5.5 (AV/NAC/LAU/S/C:P/I/PI/A/N)	6.4	General remote service	yes	Potential	84314
38679	OpenSSH Multiple Vulnerabilities	CVE-2015-5600, CVE-2015-6563, CVE-2015-6564	4	8.5 (AV/NAC/LAU/N/C:P/I/N/A/C)	-	General remote service	yes	Potential	75990, 91787, 52012, 76317
38692	OpenSSH 7.4 Not Installed Multiple Vulnerabilities	CVE-2016-10009, CVE-2016-10010, CVE-2016-10011, CVE-2016-10012, CVE-2016-8959	4	7.5 (AV/NAC/LAU/N/C:P/I/PI/A/P)	7.5	General remote service	yes	Potential	84312, 94958, 94972, 94977, 94975, 93776
38725	OpenSSH Information Disclosure and Denial of Service Vulnerability	CVE-2016-0777, CVE-2016-0778	3	4.6 (AV/NAC/H/AU/S/C:P/I/PI/A/P)	8.1	General remote service	yes	Potential	80695, 80696
38726	OpenSSH Username Enumeration Vulnerability	CVE-2016-15473	3	5 (AV/NAC/LAU/N/C:P/I/N/A/N)	5.3	General remote service	yes	Potential	105140
38738	SSH Server Public Key Too Small	-	2	5 (AV/NAC/LAU/N/C:N/P/I/A/N)	5.5	General remote service	yes	Confirmed	-
38739	Deprecated SSH Cryptographic Settings	-	2	9.4 (AV/NAC/LAU/N/C:CI/CI/A/N)	9.1	General remote service	yes	Confirmed	-
42413	OpenSSH LoginGraceTime Denial of Service Vulnerability	CVE-2018-5107	3	5 (AV/NAC/LAU/N/C:N/I/N/A/P)	-	General remote service	no	Potential	58162, 58162

Showing 1 to 10 of 13 entries Previous 1 2 Next

Frequently Asked Questions (FAQ)

What are the possible causes of scan not getting launched resulting in build failure?

Cause	Build Status
EC2 instance not found	We will not launch the scan and abort the build with appropriate error message.
No host Alive	Qualys Host Scanning Connector will try to launch the scan, but the build will fail as no alive hosts are found.
Disabled Connector	We will not launch the scan and abort the build with appropriate error message. We recommend that you check the connector state and the scanner appliance status while configuring them.

What happens if the "Run selected EC2 connector" check box is selected?

We will run the connector if the EC2 instance state is unknown and then launch the scan. Note that Qualys Host Scanning Connector won't be able to run the connector if the connector is disabled.

What happens if the "Run selected EC2 connector" check box is not selected?

We directly run the scan if we have the instance information.

URL to the Qualys API Server

The Qualys API URL you should use for API requests depends on the Qualys platform where your account is located.

Click [here](#) to identify your Qualys platform and get the API URL.

What's New

Improvements in 1.0.5

Drop-down provided to Select Qualys platform

- We now provide a drop-down that you can use to select your Qualys platform that has your account in the API login section for accessing the Qualys VM API.

Support environment variable for Host IP and EC2 instance Id

- Qualys Host Scanning Connector will now also support environment variable input for Host IP and EC2 instance Id for Freestyle project. The format for specifying the environment variable is "env. {variable name}" For example: env.hostIp for Host IP where hostIp is the variable name or env.ec2Id for EC2 instance Id, where ec2Id is the variable name.

See the Qualys Host Scanning Connector for Jenkins guide for more information on improvements.

Fixed Issue

- Qualys Host Scanning Connector will now retry API calls if encountered by the 'concurrent API limit reached' error. Retries will take place every 2 seconds for 2 minutes or until plugin receives 200 responses.

Improvements in 1.0.6

Fixed Issue

We added a fix that will allow the plugin to correctly interpret special characters in the connector names and option profile names so that valid data is passed in API call made through plugin.