QSC 2021 Configuration Assessment & Response

Lab Tutorial Supplement

Table of Contents

Policy Compliance Assets

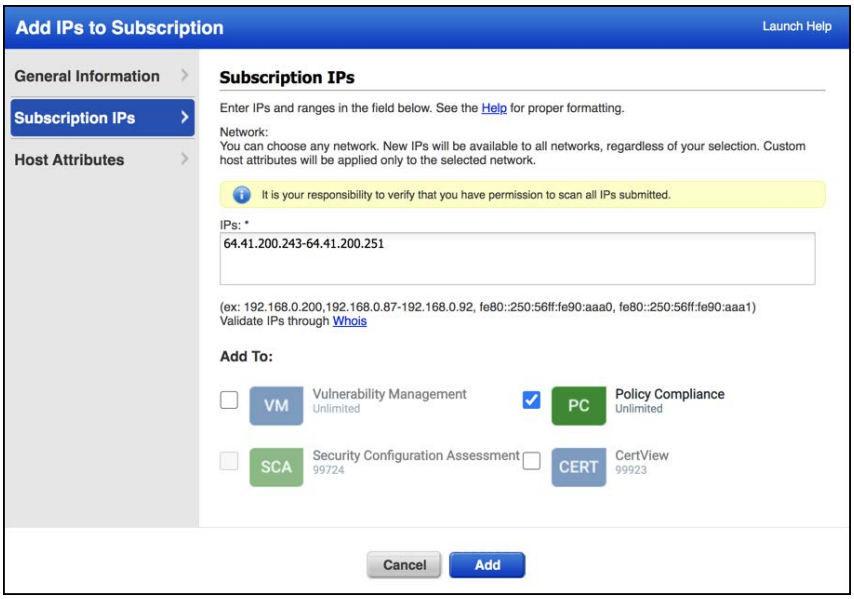
Qualys Policy Compliance (PC) and Security Configuration Assessment (SCA) perform automated compliance assessments on IT systems throughout your network or enterprise architecture.

Navigate to the following URL to view the "Policy Compliance Assets" tutorial:

PLAY LAB 1 - https://ior.ad/7RDL

Scannable Host Assets

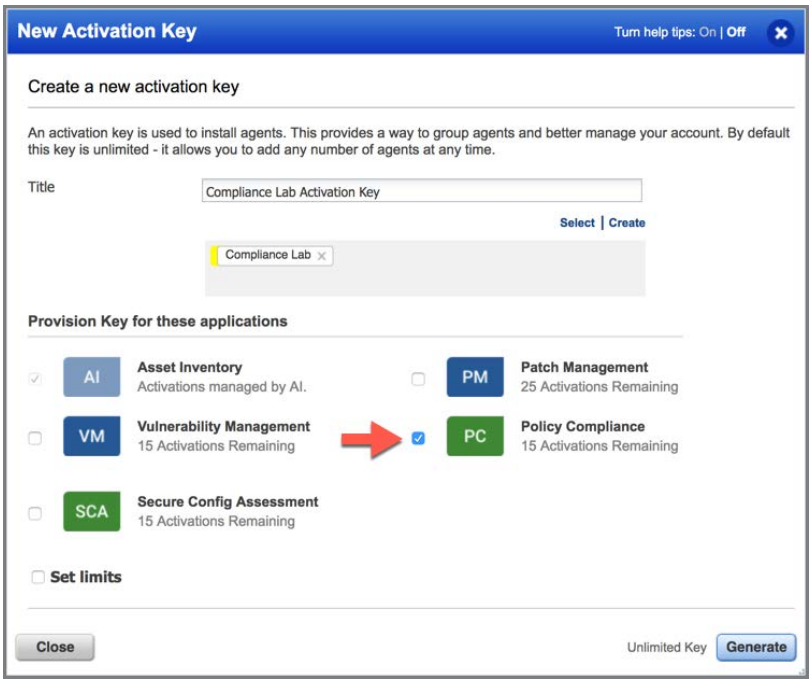
Host assets can be added to your Policy Compliance subscription by adding their IP addresses into the list of "scannable" assets.



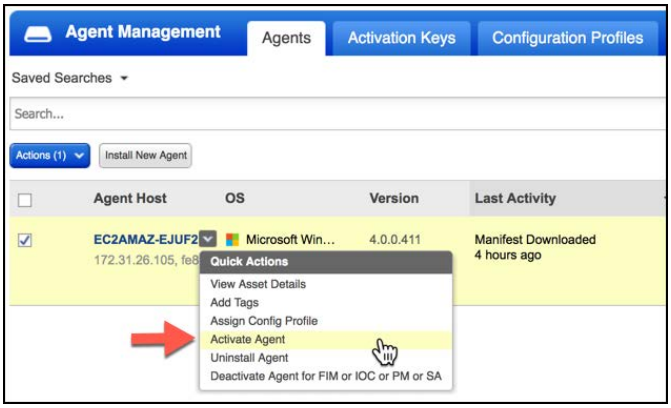
After entering one or more IP addresses, select the PC application module or the Security Configuration Assessment (SCA) module.

Agent Host Assets

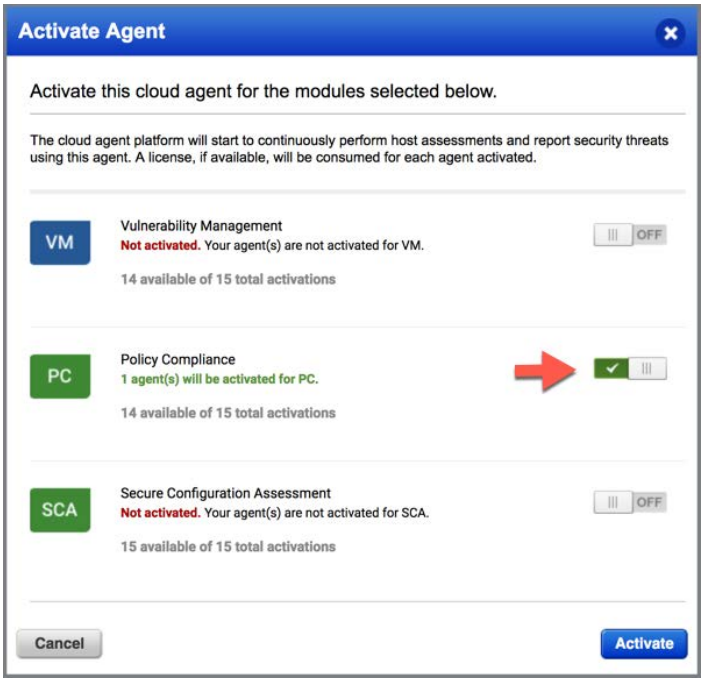
Host assets can also be added to your Policy Compliance subscription by installing one or more Qualys Cloud Agents (with the PC or SCA module enabled) on targeted host assets.



Alternatively, you can activate the PC or SCA module after Cloud Agent has been installed.



From the Qualys Cloud Agent application, open the “Quick Actions” menu for any host and select the “Activate Agent” option.



Toggle the PC or SCA switch to the “ON” position and click the “Activate” button. Agents can be activated in bulk, using the Cloud Agent Application Program Interface (API).

Control Library

The Control Library contains thousands of technical controls, which form the building blocks for all policies. Each control has its own unique Control ID (CID).

Types of Controls

System Defined Control (SDC) - These are controls provided by Qualys.

User Defined Control (UDC) - These are custom controls that users create.

The Control Library contains System Defined Controls (provided by Qualys), which are designed around various regulatory requirements, standards, frameworks, benchmarks and best practices.

You can also add your own "custom" User Defined Controls (UDCs) to the Control Library

User Defined Controls

User Defined Controls (UDCs) extend the coverage already provided by System Defined Controls (SDCs). UDCs created and customized by an end user, are automatically added to the Control Library. You can create any number of custom UDCs, to meet the specific needs of your organization.

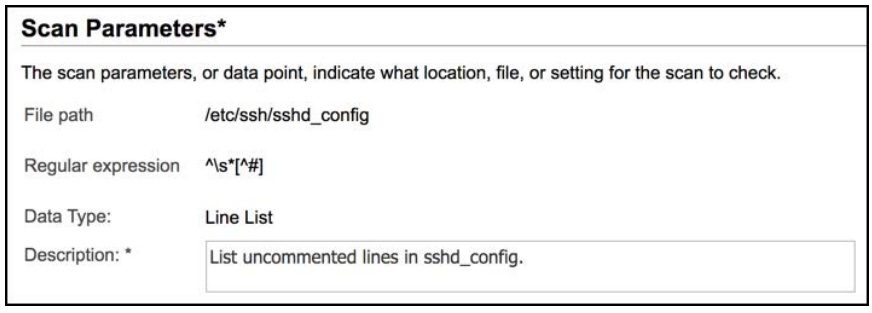
File Content Check UDC

Much useful configuration data can still be found within text-based files (especially on Unix and Linux systems). The "File Content Check" control type, allows you to enumerate the contents of a text-based file.

Navigate to the following URL to view the "File Content Check UDC" tutorial:

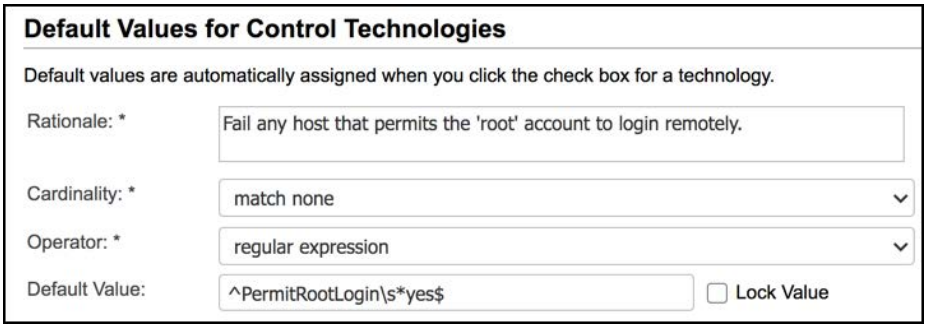
PLAY LAB 2 - https://ior.ad/7S4L

The objective in this example, is to ensure that remote access (via SSH) is disabled for the 'root' user account. The Scan Parameters specify the targeted datapoint or configuration setting this control will evaluate.



In this example, only uncommented lines (^\s*[^#]) within file '/etc/ssh/sshd_config' will be collected.

When the uncommented lines from file 'sshd_config' are listed, they are then compared to this control's "Default Value."



The cardinality setting of "match none," will ensure host assets FAIL this control test, if any of the lines in 'sshd_config' contain the setting that allows the 'root' account to login remotely (i.e., ^PermitRootLogin\s*yes$).

Once the Default Value has been configured, it must then be assigned to specific OS and/or software technologies.

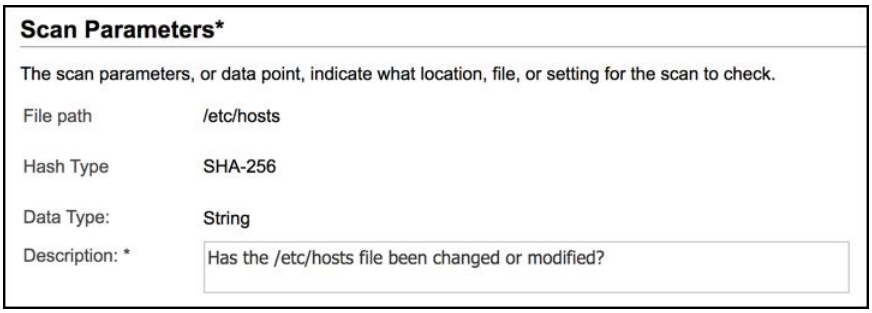
File Integrity Check UDC

Integrity checks can help you to identify when updates or changes are made to critical or sensitive files or directories. Qualys Policy Compliance provides integrity check UDCs for Windows and Linux hosts. In this lab tutorial, you'll create a User Defined Control (UDC) to perform a file integrity check on a UNIX host.

Navigate to the following URL to view the "File Integrity Check UDC" tutorial:

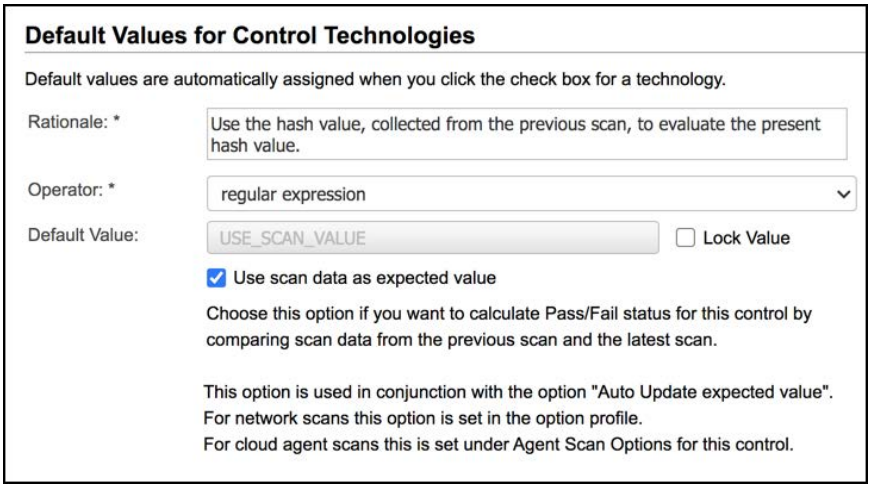
PLAY LAB 3 - https://ior.ad/7S4Q

The objective in this example, is to collect the hash value for file 'etc/hosts' to determine if the file has been modified or changed. The Scan Parameters specify the targeted datapoint or configuration setting this control will evaluate.

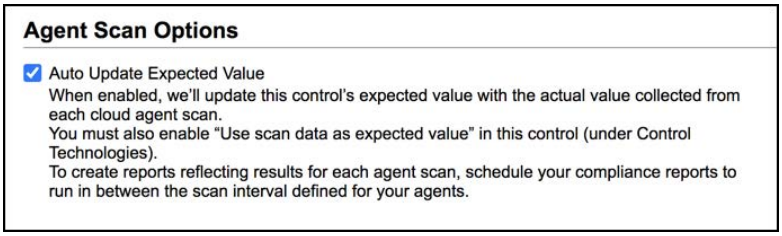


In this example, an SHA-256 hash of file '/etc/hosts' is collected and then compared to this control's "Default Value."

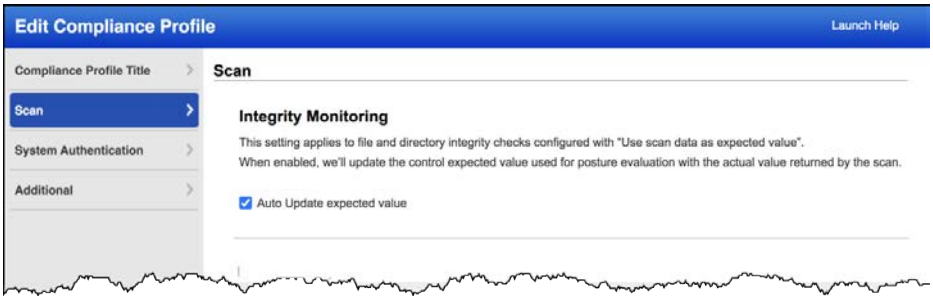
When configuring the Default Value, you have the option to manually enter the file's present hash value or you can have it automatically collected by a Qualys scanner or agent.



Select the "Use scan data as expected value" check box (above), to automatically collect and update the hash value of the targeted file, using compliance scan results.



When the "Use scan data as expected value" option is used with Qualys agent hosts, the "Agent Scan Options" within the UDC (above), should be configured to "Auto Update Expected Value."



For Qualys scanners, this same option is configurable, under Integrity Monitoring, within the "Scan" section of a Compliance Profile.

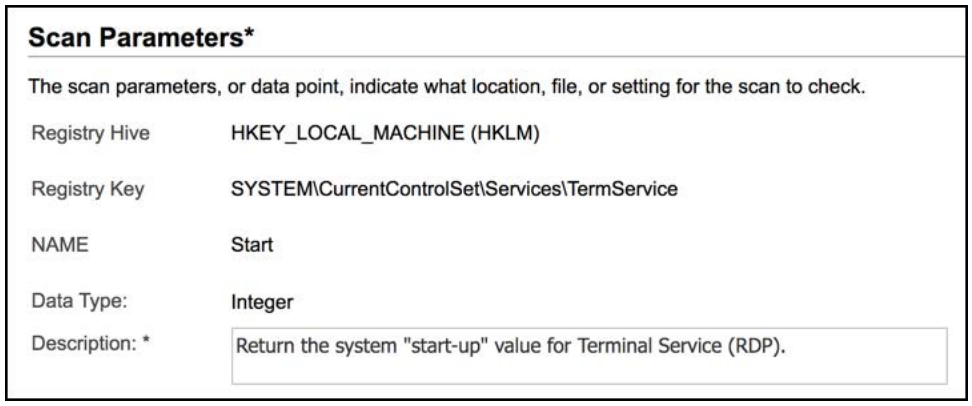
Registry Value Content Check UDC

The Windows System Registry contains a wealth of information that can be used to validate thousands of compliance and auditing objectives. Registry Value Content Checks permit you to validate or verify the content of any registry value.

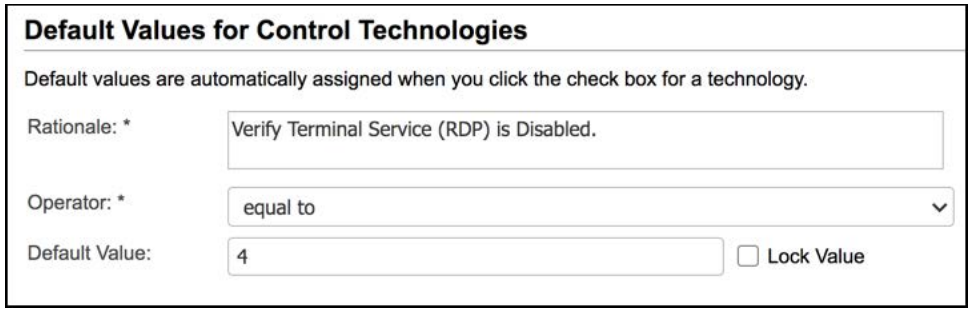
Navigate to the following URL to view the "Registry Value Content Check UDC" tutorial:

PLAY LAB 4 - https://ior.ad/7S4N

The objective in this example, is to ensure remote access is disabled on targeted Windows hosts. The Scan Parameters specify the Registry Value this control will evaluate.



In this example, the system "start-up" value (Registry Value = Start) is collected for Windows Terminal Service and then compared to this control's "Default Value."



A "Startup" value of "4" specifies that Terminal Service is disabled:

- 2 = Automatic
- 3 = Manual
- 4 = Disabled

To meet the objective of this control, hosts with a value of four (4) will receive a PASS result.

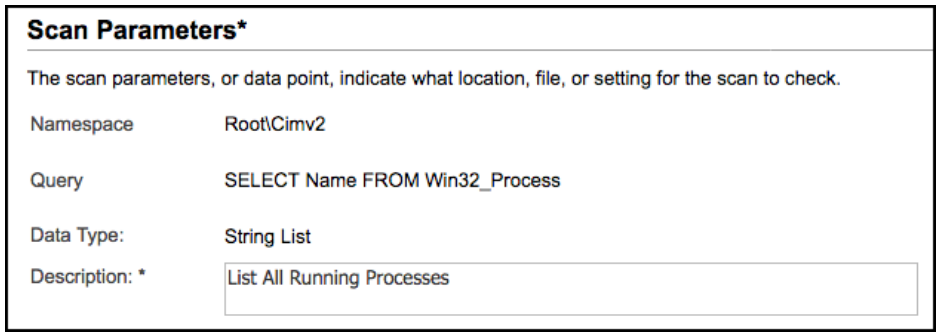
WMI Query Check UDC

This User Defined Control (UDC) will use a WMI Query to enumerate the running processes on a Windows host. This list can then be evaluated to identify the absence of REQUIRED applications, and/or the presence of PROHIBITED applications.

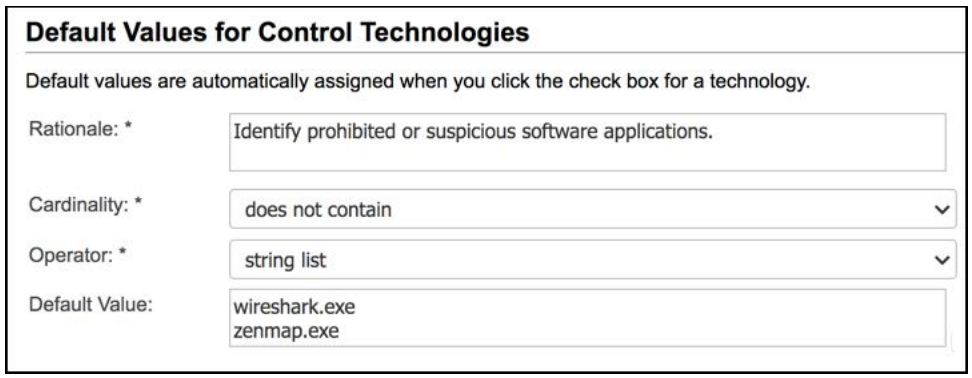
Navigate to the following URL to view the "WMI Query Check UDC" tutorial:

PLAY LAB 5 - https://ior.ad/7S4K

The objective in this example, is to identify the presence of prohibited or suspicious applications that may be running on a host. The Scan Parameters specify the targeted datapoint or configuration setting this control will evaluate.



The query in this example will return the list of running process names, from targeted Windows hosts, which are then compared to the list of "prohibited" applications.



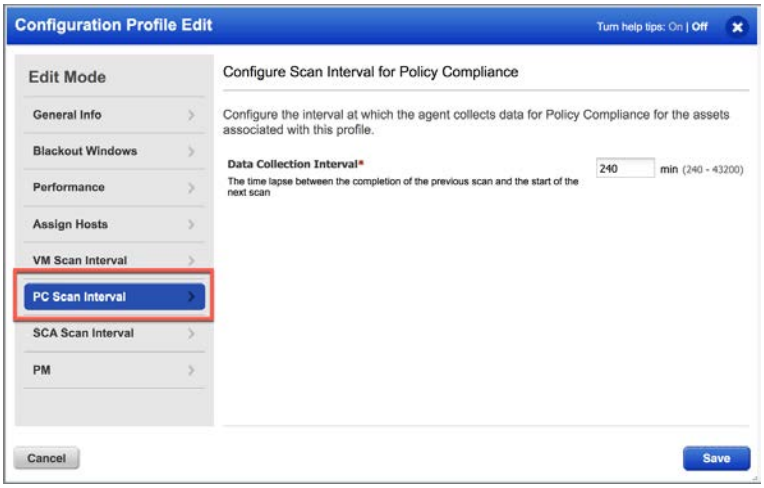
If any of the "prohibited" applications are found to be running on a target host, this control test will produce a FAIL result. The "does not contain" cardinality is required here, to achieve this outcome.

Compliance Scanning

Whether performed by a Qualys scanner or agent, compliance scans collect data points (defined *in the Qualys Control Library*) from host assets in your account. When new controls are added to the library, additional scans are required to collect their associated data points.

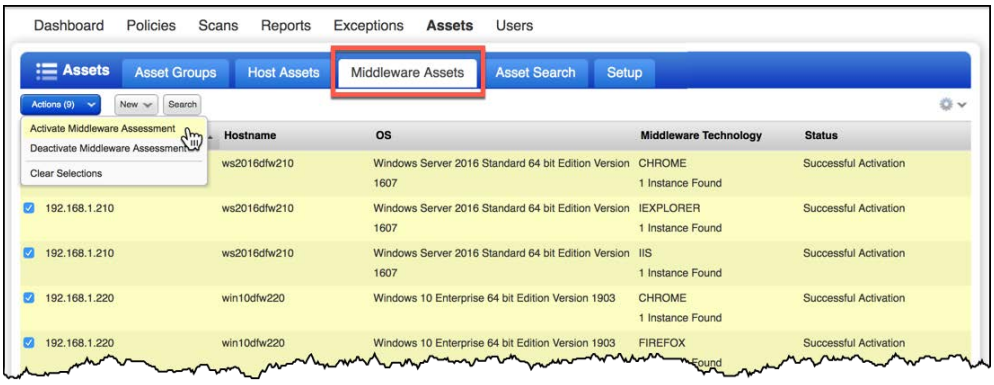
Agent Scans

Qualys Cloud Agent compliance scans, are automatically performed at configurable intervals.



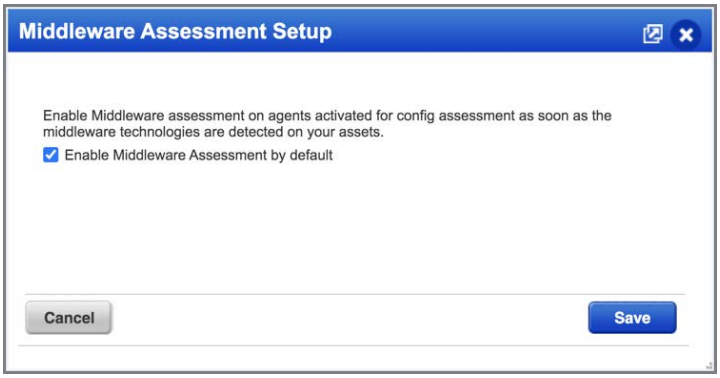
You can customize the “Data Collection Interval” from every four hours, to every 30 days.

From the “Middleware Assets” tab (within the Policy Compliance application) use the “Actions” button to “Activate Middleware Assessment” (for selected host assets).



This will add the Middleware technology manifest to selected agent hosts.

Alternatively, enable Middleware Assessments for all agent hosts in your PC or SCA subscription.



From the PC/SCA application, navigate to: Assets > Setup > Middleware Assessment.

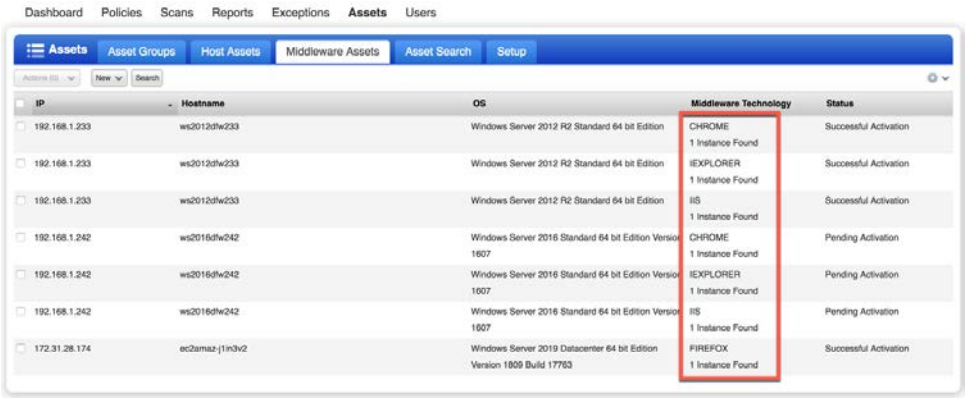
Presently, Qualys Cloud Agent supports the following Linux and Windows middleware technologies.

Linux Agent 2.8.x RHEL/OEL/CentOS/Ubuntu/Amazon Linux	Windows Agent 4.0.x All Windows flavors
Apache Tomcat 7, 8, 9	Apache Tomcat 7, 8, 9
Pivotal tc Server 3.x	MS IIS 7, 8, 10
vFabric tc Server 2.9.x	Internet Explorer 9, 10, 11
Docker 1.x, Docker CE/EE	Microsoft Office (Access, Excel, Outlook, PowerPoint, Word) 2013, 2016, 2019

Middleware includes software that provides common services and capabilities to applications outside of what's offered by the operating system.

Agent Middleware Technologies Discovered

Middleware technology instances discovered during Qualys Cloud Agent scans, are displayed under the “Middleware Assets” tab, within the PC/SCA application.



You can “Activate Middleware Assessments” for individual hosts or all PC/SCA agent hosts.

Scanner Appliance Scans

To complete a compliance scan, using a Qualys Scanner Appliance, you must provide:

1. Host authentication credentials (via Qualys Authentication Record)
2. Your scanning options and preferences (via Qualys Compliance Profile)

Compliance Profile

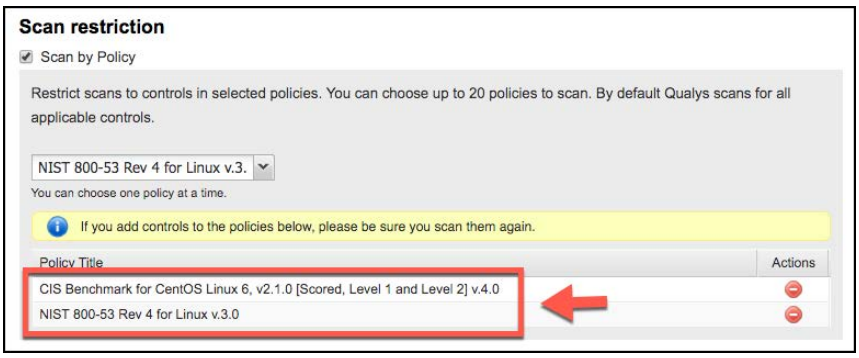
A Compliance Profile contains your scanning options and is a required component of every compliance scan.

Navigate to the following URL to view the "Compliance Profile" tutorial:

PLAY LAB 6 - https://ior.ad/7SdX

Scan by Policy

By default, a Qualys scanner will attempt to collect all data points that have been defined within the Control Library (depending; of course, on the host technologies targeted by the scan).

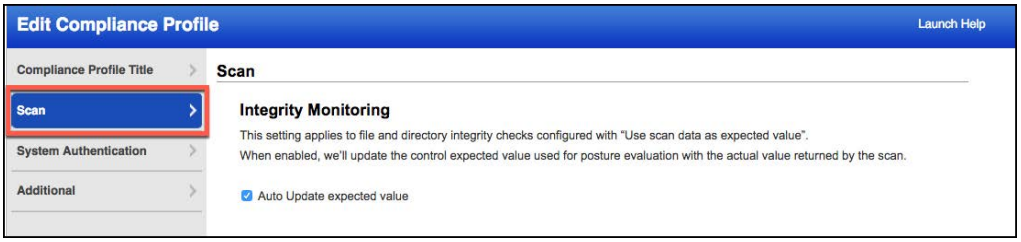


The "Scan by Policy" option allows you to restrict your compliance scans to focus exclusively on data points contained within the policies you specify.

The "Scan by Policy" option is required for compliance scans performed within the Qualys Security Configuration Assessment (SCA) application.

Integrity Monitoring

The "File Integrity Check" control type you created earlier, is configured to "Use scan data as expected value."

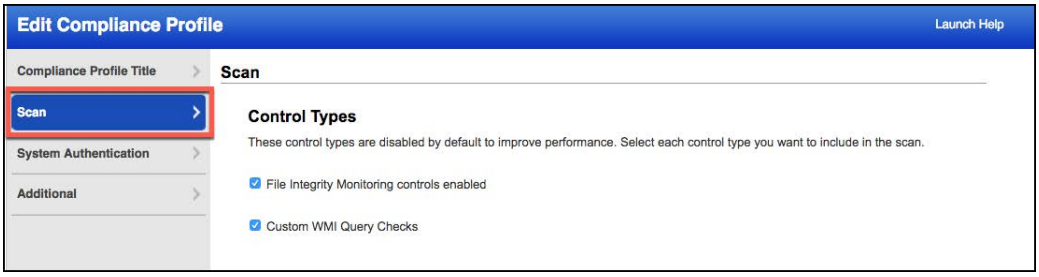


To ensure this works successfully, select the check box to **"Auto Update expected value,"** here in the "Scan" section of the Compliance profile.

This same option (Auto Update expected value), was configured for AGENT host assets, within the "File Integrity Check" UDC (see Lab Tutorial: "File Integrity Check UDC").

Control Types

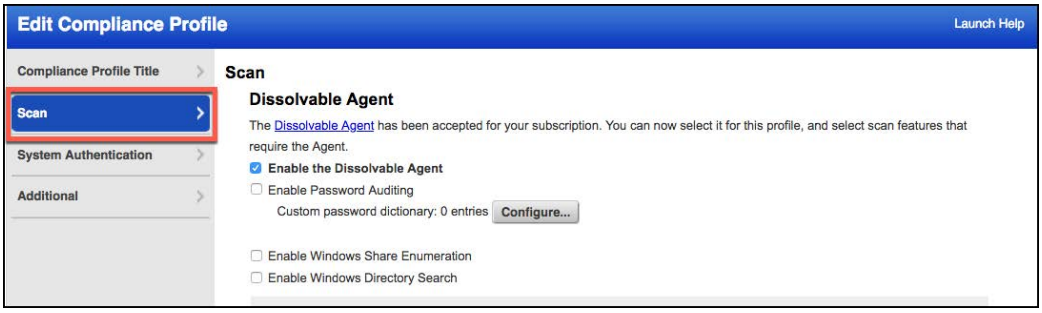
To improve scan performance, both Integrity Monitoring and WMI Query Check control types are disabled (by default), and must be explicitly selected within each Compliance Profile.



- **Integrity Monitoring** – Enable to collect the hash values needed to perform integrity checks on both Unix and Windows systems.
- **WMI Query Checks** – Enable to perform WMI queries on Windows systems.

Dissolvable Agent

The "Dissolvable Agent" works exclusively with Windows hosts and helps to collect compliance data, especially when the Windows Remote Registry Service is unavailable.



Optionally, you can enable Password Auditing, Windows Share Enumeration, or Windows Directory Searches, once the Dissolvable Agent has been accepted and enabled.

- **Password Auditing** – Perform password auditing tests to identify user accounts with: empty passwords (CID 3893), passwords equal to the user name (CID 3894), or passwords found in your own custom password dictionary (CID 3895).
- **Windows Share Enumeration** - Find Windows shares that are readable by everyone and report the number of files for each share on each host (Control ID 4528) and whether the files are writable. This is good for identifying groups of files that may need tighter access control.
- **Windows Directory Search** - Select this option to include one or more Windows Directory Search UDCs in the scan, that search for files/directories using many criteria such as file name, user accounts, and specific user access permissions.

At scan time, Dissolvable Agent is installed on Windows devices to collect data, and once the scan is finished it is completely removed from target systems.

For more Compliance Profile details, enroll in the “Policy Compliance Strategies & Best Practices Self-Paced Training” course (qualys.com/learning).

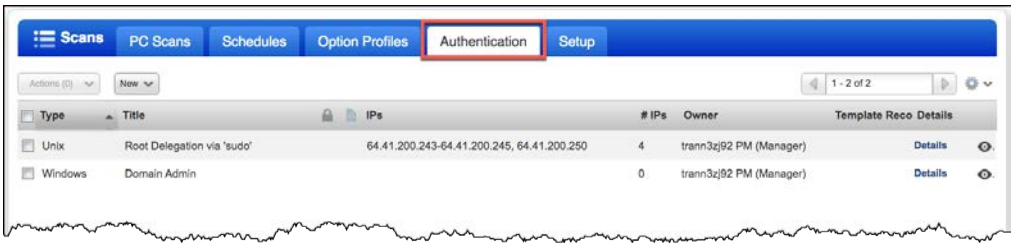
Launch Compliance Scan

Before launching or scheduling a compliance scan, ensure you have the correct scanning options defined in a Compliance Profile and that you have created Authentication Records for the host assets you intend to target.

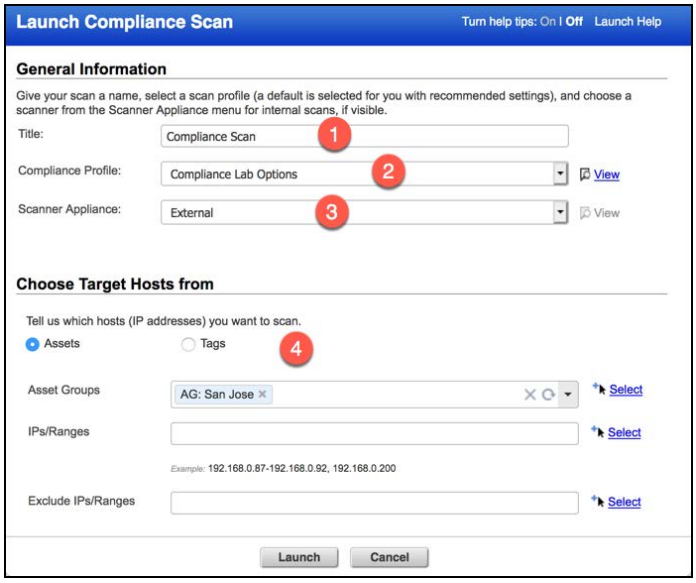
Navigate to the following URL to view the "Compliance Scan" tutorial:

PLAY LAB 7 - https://ior.ad/7RC3

To be successful, compliance scans must be performed in "authenticated" mode. If a Qualys scanner fails to authenticate to a host, it will not attempt to collect its compliance data and will simply move to the next host target.

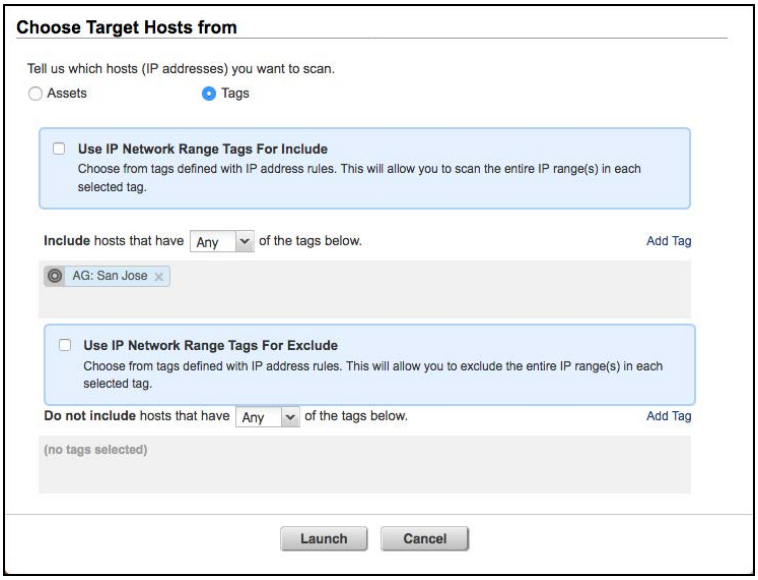


To view authentication results (from scans already completed), just click the "Details" link at the right-side of any Authentication Record. Alternatively, you can view authentication results by creating an Authentication Report.



When launching a compliance scan, you must provide: 1) Title, 2) Compliance Profile, 3) Scanner Appliance, and 4) Target Hosts.

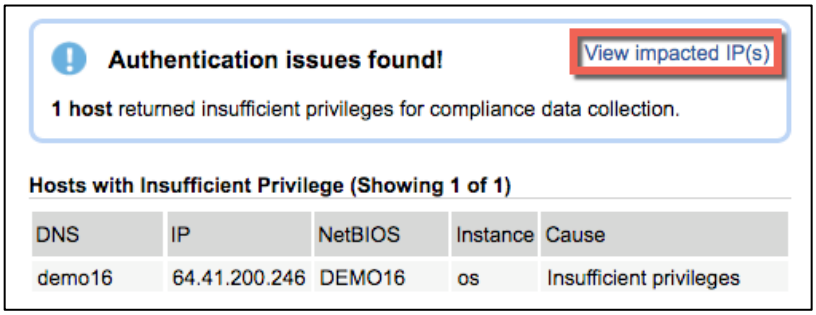
When choosing a target host, select from: Asset Groups, Asset Tags, or IPs.



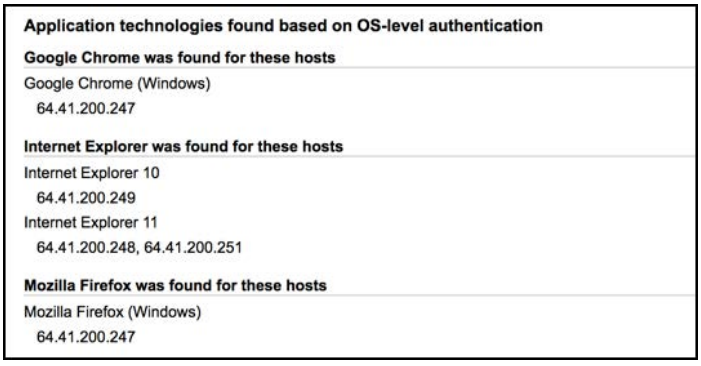
You can monitor the status of any compliance scan, from the "PC Scans" tab. All scans are initially queued, before they begin running. **Note: scans can only collect data points for controls already in the Controls Library.**

Scan Results

When a compliance scan is finished, any "Authentication Issues" encountered during the scan will be included in the scan results.



Application technologies found on the host are also listed in the scan results.



Policy Scope

Any policy you create or import, must identify the host assets it will audit; this is known as the Policy Scope. Both Asset Groups and Asset Tags are used to define the "scope" of a policy.

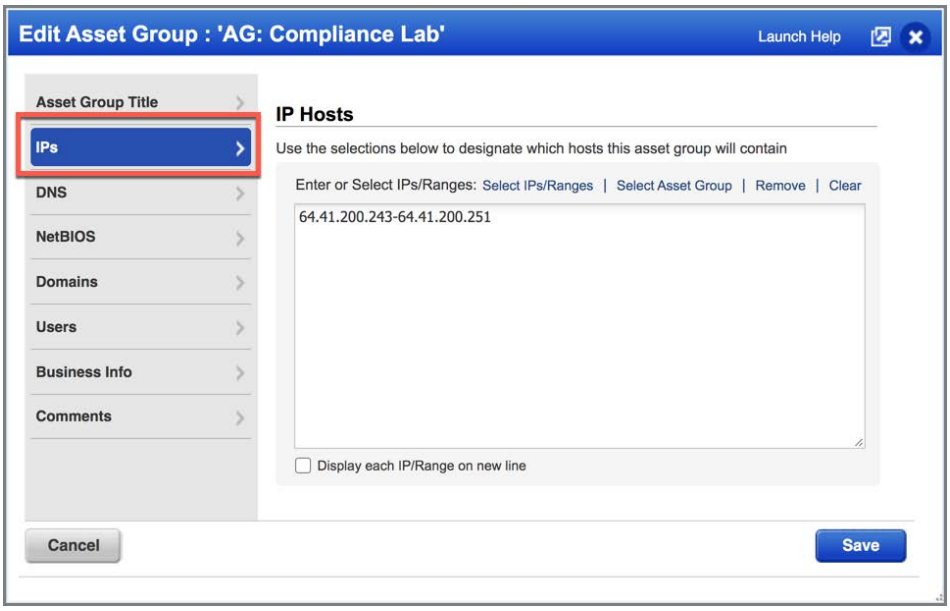
This tutorial, creates an Asset Group containing the Training Lab IPs and then identifies its matching Asset Tag that is automatically generated.

Navigate to the following URL to view the "Asset Groups & Tags" tutorial:

PLAY LAB 8 - https://ior.ad/7RCh

Asset Groups

Asset Groups allow you to group host assets within your Qualys Account. Simply create a new Asset Group and manually add IP address members. A single IP address can be a member of multiple Asset Groups.

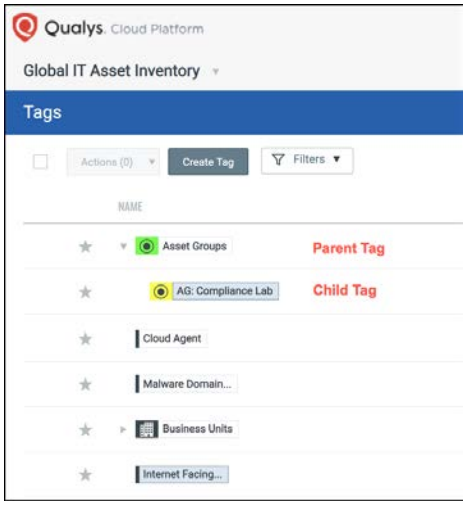


Optionally, Asset Group members can also be added by their DNS or NetBIOS names.

To help distinguish Asset Groups from Asset Tags with similar names, the Asset Group "Title" commonly begins with the "AG:" prefix (e.g., AG: Compliance Lab).

Asset Tags

The Qualys platform will automatically create a matching Asset Tag for each Asset Group you add to your account. All matching Asset Tags are initially placed under the “Asset Groups” hierarchy (Parent Tag above).



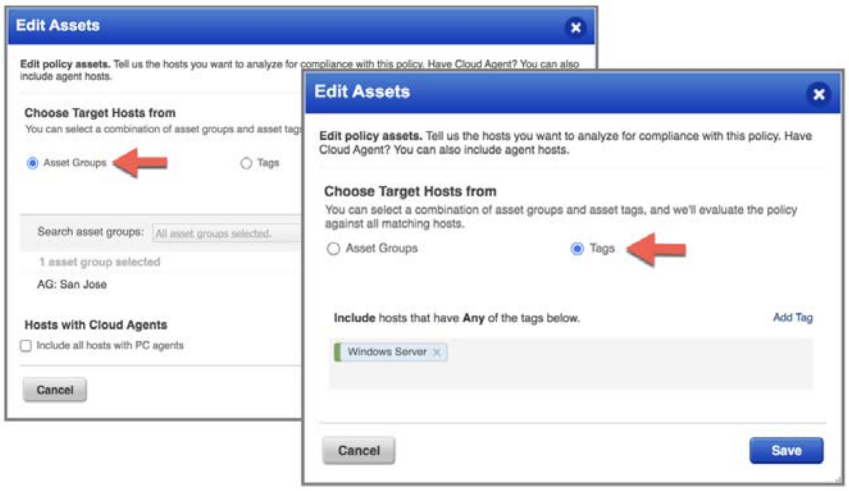
Static Tags – Are assigned manually to host assets and are commonly used as the starting point of an Asset Tag Hierarchy.

Dynamic Tags - Host assignment is determined by an Asset Tag Rule Engine and dynamically changes with updates to a host.

Asset Tag Hierarchy - Tags are typically nested, creating various parent/child relationships. A child tag should represent a subset of its parent tag.

Policy Scope

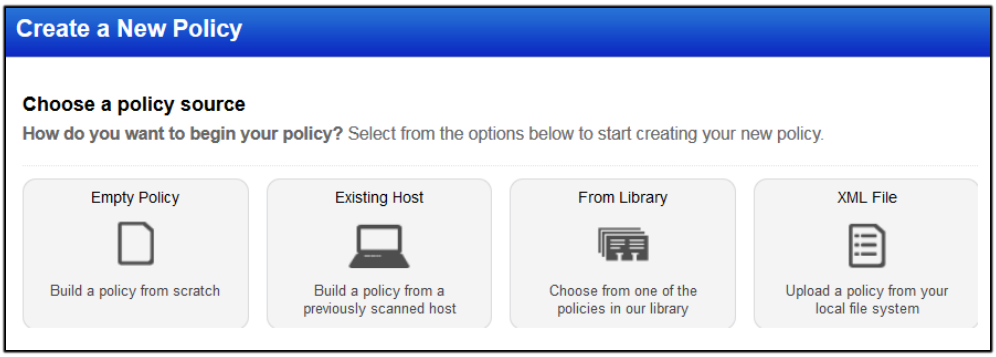
The Asset Groups and Asset Tags within your account, will serve to define the “scope” of the policies you create.



When building Asset Groups and Tags, keep in mind the host assets you will assess for compliance.

Create Policy

A Qualys Policy contains controls that reflect the requirements of security frameworks, regulations, standards, mandates, benchmarks and your own internal security policies. The Qualys Policy Compliance applications offers multiple ways to create a policy:



- Empty Policy – Build a policy from scratch.
- Existing Host – Build a policy from a previously scanned host.
- From Library – Choose from one of the policies in the Qualys Policy Library.
- XML File – Upload a policy from your local file system.

Regardless of which method you choose, all policies must contain three basic components: 1) technologies, 2) controls, and 3) host assets.

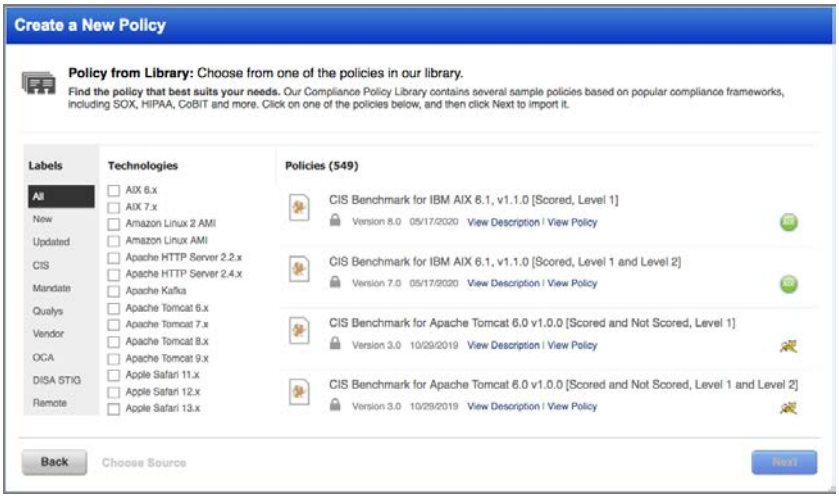
Required Policy Components

The following components are required for all Policies you create:

1. All policies must have one or more technologies:
   - Operating System
   - Service/Application
2. Add SDCs and/or UDCs to a policy, from the Control Library or other policies.
3. Add hosts to a policy to define its scope:
   - Asset Groups
   - Asset Tags

Import Policy from Library

The Policy Library contains hundreds of compliance policies, designed to meet the objectives of popular mandates, frameworks, regulations, standards, and benchmarks.



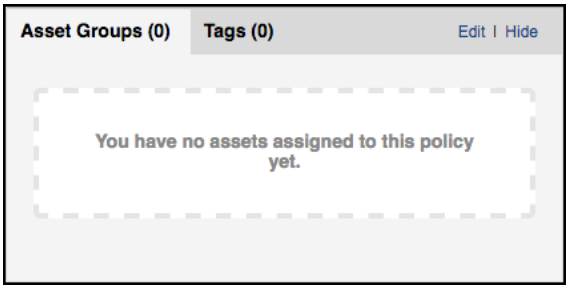
Navigate to the following URL to view the "Import Policy From Library" tutorial:

PLAY LAB 9 - https://ior.ad/7SgD

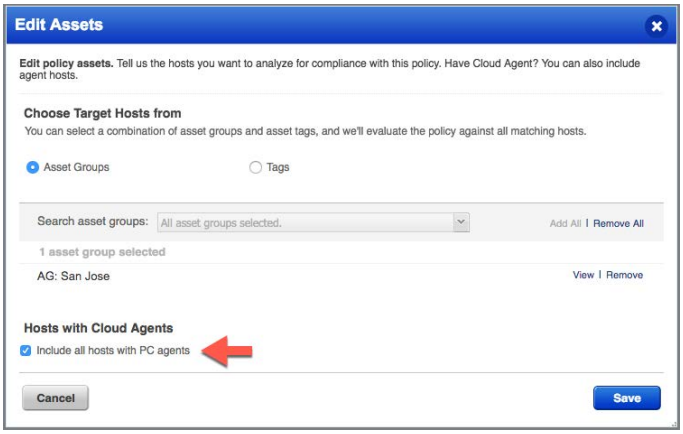
Add Assets

After importing a policy from the library, the policy technologies and controls are automatically added. Before saving an imported policy, you will need to add host assets.

The "scope" of a policy, defines the host assets that will be audited by the policy.

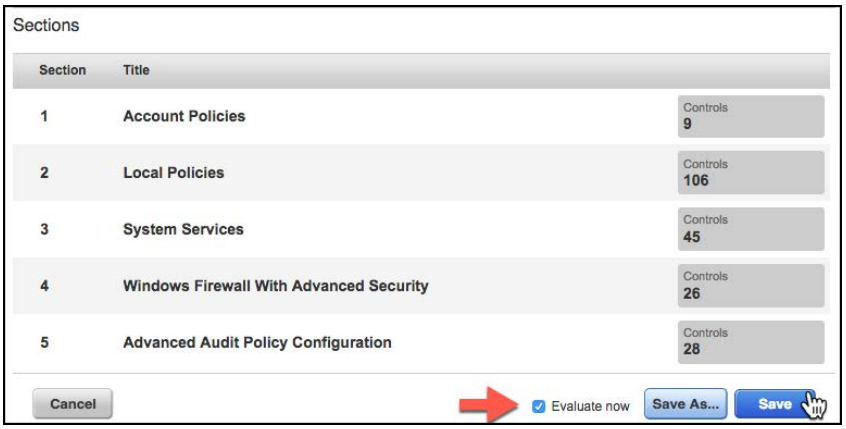


You can add assets to a policy using Asset Groups or Asset Tags.



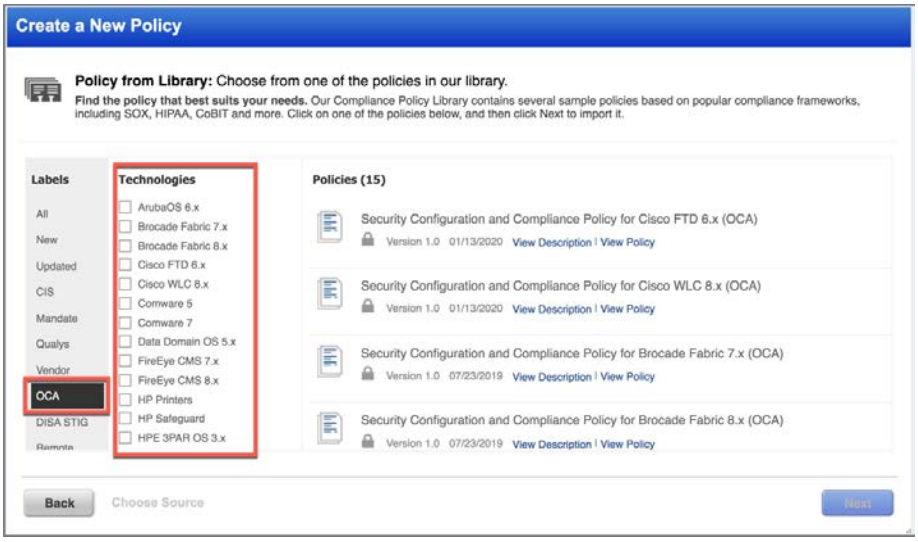
By default, Asset Groups do not include Cloud Agent hosts. The check box to “Include all hosts with PC agents,” allows you to include agent hosts, when Asset Groups are used to define the scope.

Asset Tags; on the other hand, support both "scannable" as well as "agent" host assets, by default.



The "Evaluate now" option, will evaluate all controls in a policy (against current scan results) when the policy is saved.

The Policy Compliance application has many out-of-box policies (below) for OCA asset technologies.



TIP: Use the OCA Asset Tag to define the “scope” of an OCA policy.

Create Empty Policy

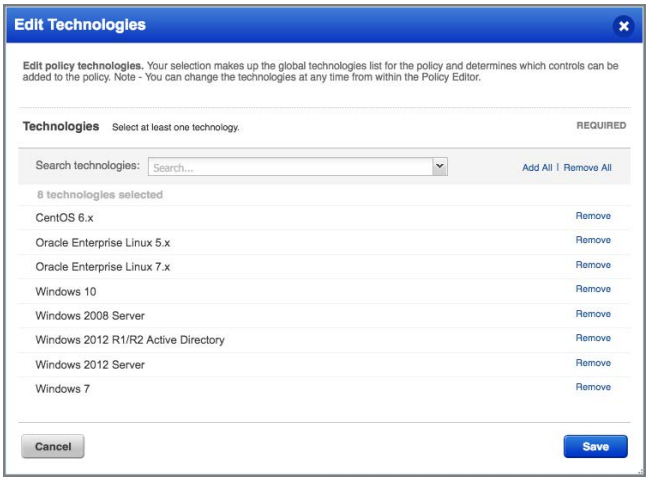
In this exercise, you will create a 'blank' policy, and manually add all policy components (i.e., technologies, assets, and controls).

Navigate to the following URL to view the "Create Empty Policy" tutorial:

PLAY LAB 10 - https://ior.ad/7Shz

Add Technologies

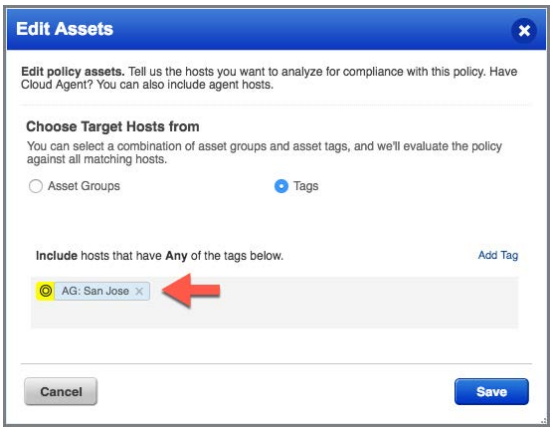
Before you can create an empty policy, you must first select one or more technologies.



Although our lab tutorial combines both Unix and Windows technologies together in the same policy, some prefer (for simplicity) to keep them separate.

Add Assets

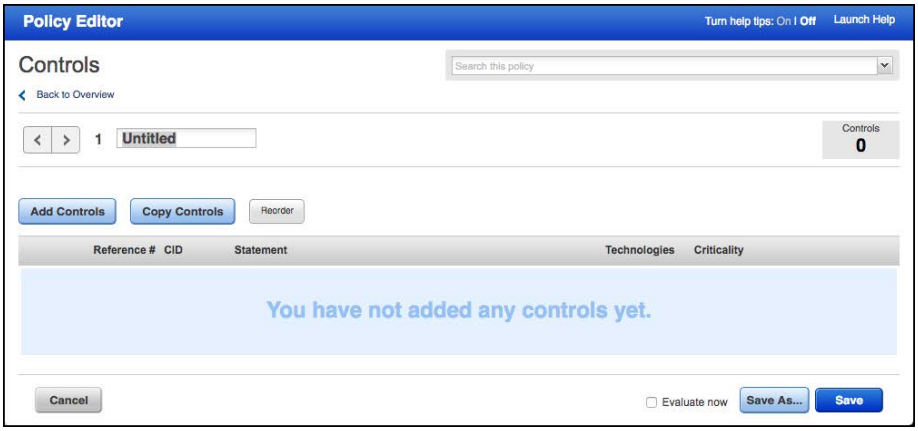
The "AG: San Jose" asset group (created in the second lab tutorial) spans all of the Unix and Windows technologies in this policy.



The "AG: San Jose" Asset Tag was automatically created, when the "AG: San Jose" Asset Group was added to your account.

Add Controls

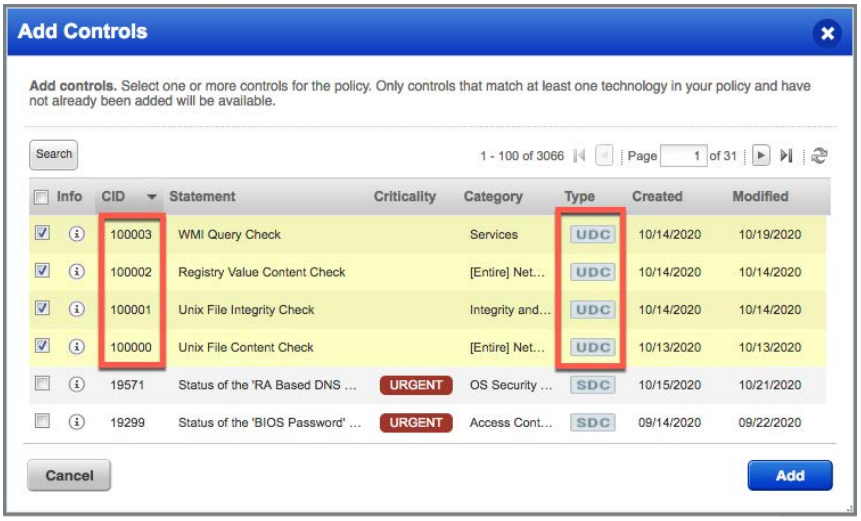
Initially the Policy Editor displays a blank policy. Controls have yet to be added.



Controls are added to one or more sections, using either the “Add Controls” or “Copy Controls” buttons.

- Add Controls – add controls from the control library.
- Copy Controls – copy controls from another policy.

Controls added from the Control Library, often need adjustments or tuning. Copying controls from another policy, has the advantage of any previous adjustments or tuning you have already made.



When attempting to add User Defined Controls (UDCs) to a policy, look for CID numbers starting at 100,000.

Cardinality

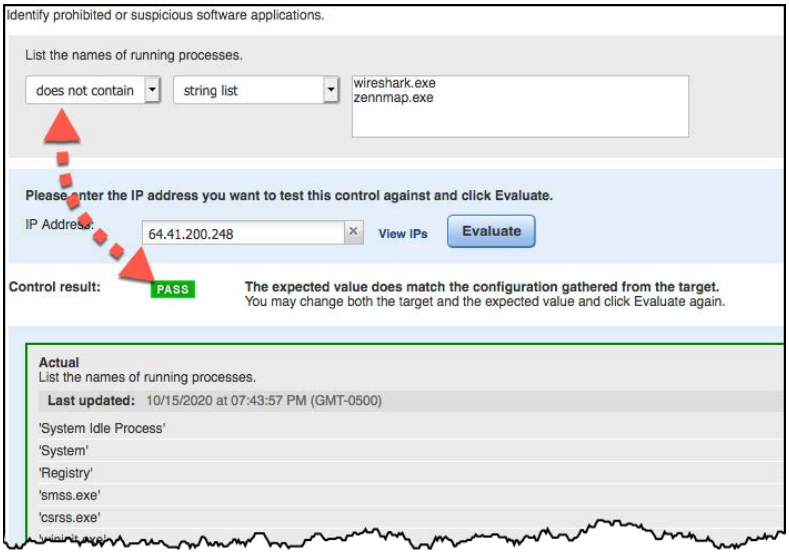
Many of the User Defined Control types in the Qualys Policy Compliance application use the ”String List” or “Regular Expression List” data types, creating a scenario where, a list of values (Y) specified in the control, are compared to another list of values (X) collected from a target host.

The cardinality setting determines how list “X” is compared to List “Y,” to reach the appropriate PASS/FAIL outcome.

CARDINALITY	YOU ARE COMPLIANT WHEN
contains	X contains all of Y
does not contain	X does not contain any of Y
matches	All strings in X match all strings in Y (any order)
intersect	Any string in X matches any strings in Y
is contained in	All strings in X are contained in Y

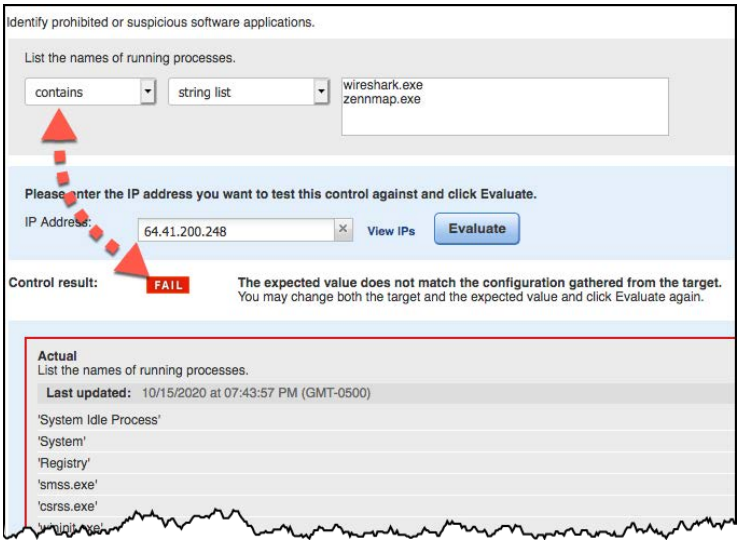
- X (Actual) = List of values returned by a scan or agent.
- Y (Expected) = List of values defined by a control.

The WMI Query Check UDC (created in an earlier lab tutorial) is designed to identify host assets running prohibited software, by comparing a list of “prohibited” software applications, to the list of running processes collected from a targeted host.



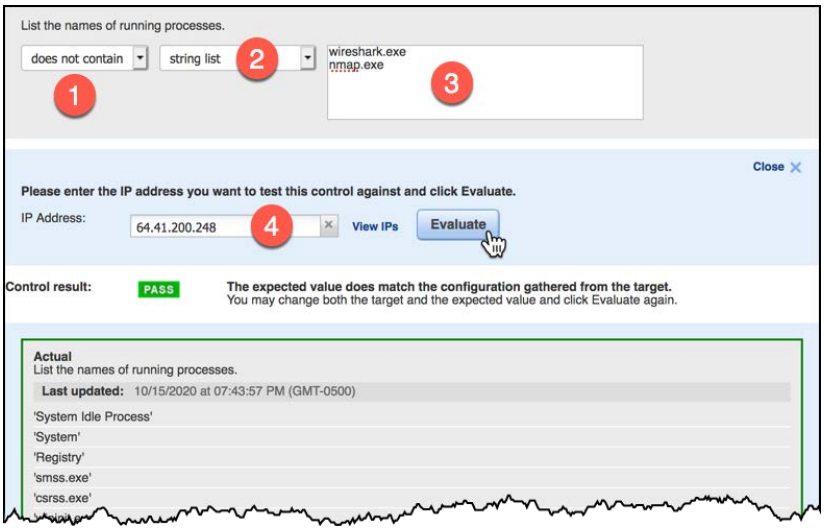
In the lab tutorial example, the “does not contain” cardinality produces the intended outcome; hosts will PASS, only if they are NOT running “prohibited” software applications.

Changing the cardinality setting from “does not contain” to “contains,” produces a FAIL outcome (as expected). The “contains” cardinality would be more appropriate in a “required” software control.



You can experiment with different cardinality settings, expected values, and even IP addresses, while adjusting and tuning a control. Just continue to click the “Evaluate” button to see how your changes impact the PASS/FAIL results.

The test and evaluate capabilities built into the Policy Editor, help to demonstrate one advantage of having compliance scan data available, prior to building any policy.



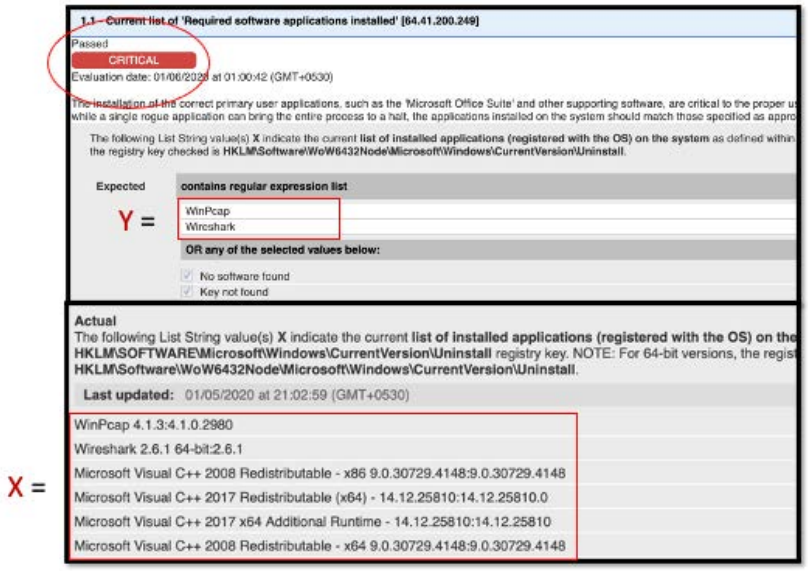
You can adjust a controls cardinality, data type, expected list of values, and IP address when testing and evaluating controls against real host assets (in your account). This part of the tuning process commonly performed when adding controls to any policy.

Any adjustment you make in the Policy Editor will not impact the Default Values (within the Control Library); what happens in the policy stays in the policy.

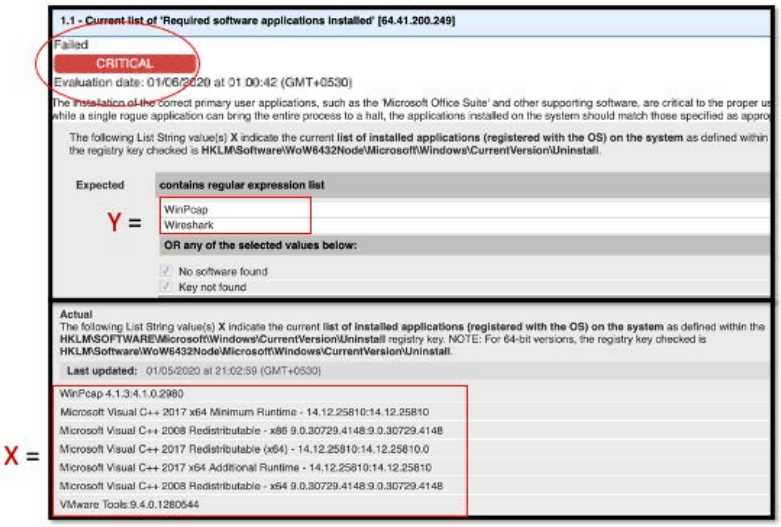
The testing and evaluation tools in the policy editor require scan data to function properly.

contains

The “contains” cardinality operator is ideal for defining a “Required Software List”.



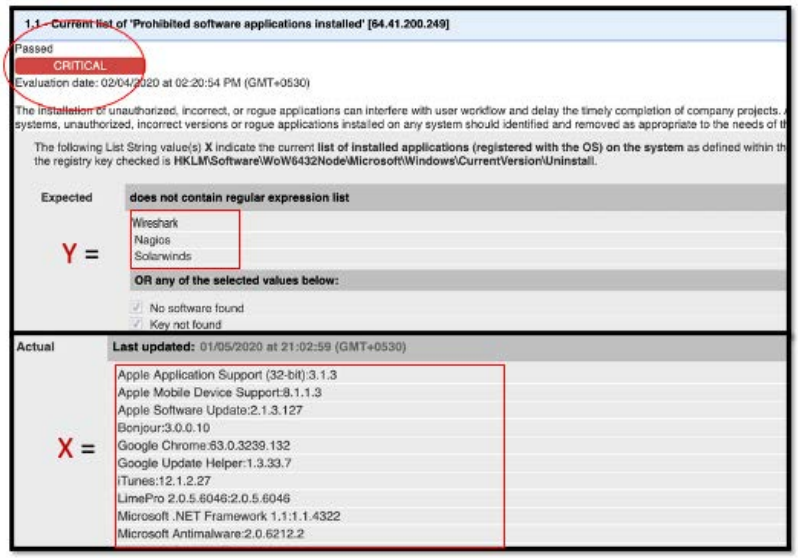
As long as a host has **ALL** required software applications installed, it will pass.



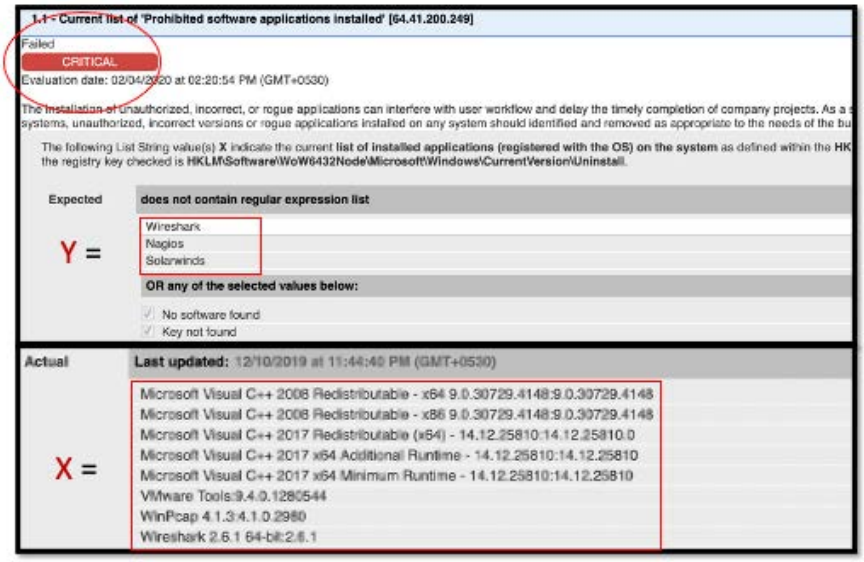
If any required software element is missing, the host will fail.

does not contain

The “does not contain” cardinality operator is useful if you want to identify the presence of prohibited software or services.



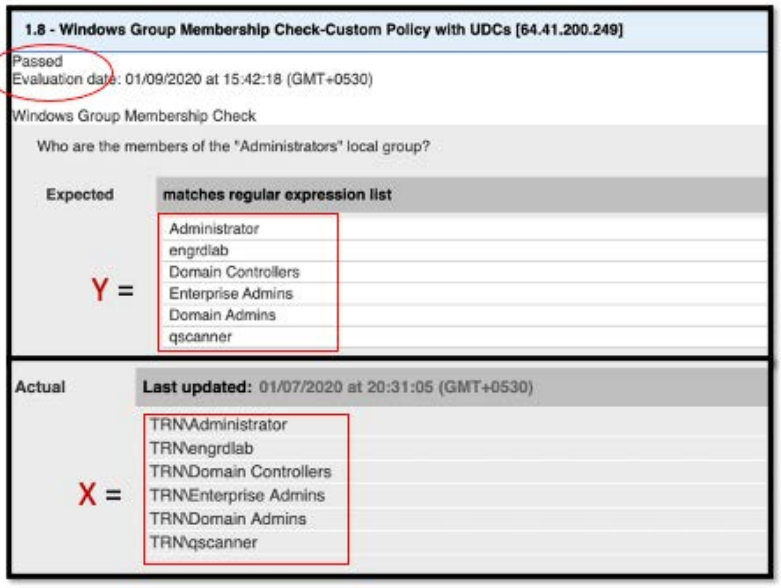
As long as a host does not contain any of the listed software applications, it will produce a PASS.



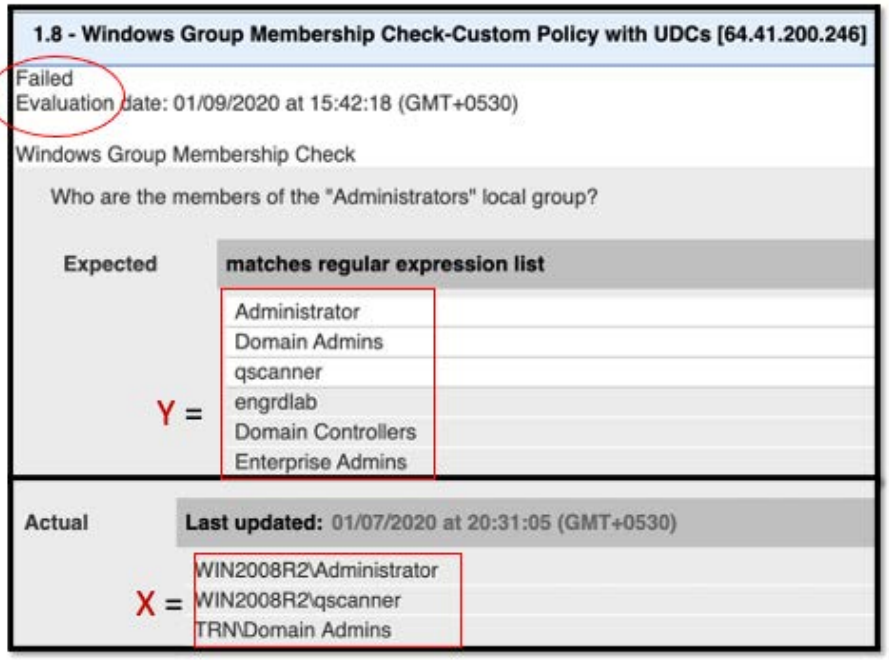
If any prohibited item is found, the host will FAIL.

matches

The “matches” cardinality operator determines if one list matches another.



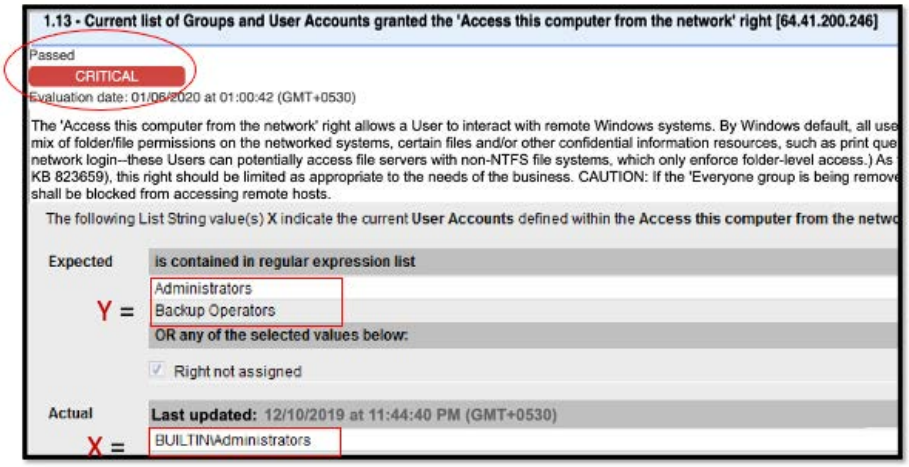
The list of actual values must match the list of expected values (independent of their order), to receive a PASS.



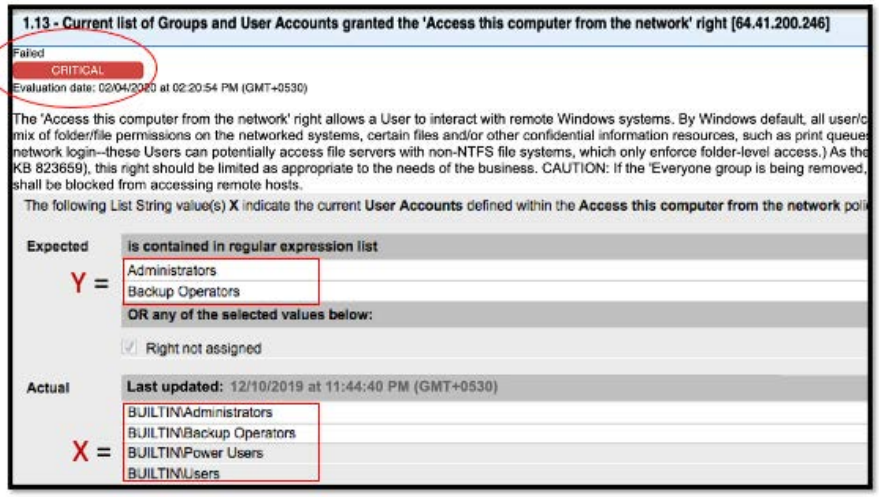
If the number of items in the list of actual values is greater than or less than the number of items in the list of expected values, a FAIL condition occurs.

is contained in

The “is contained in” cardinality operator determines if all items in the list of actual values are contained in the list of expected values. All items in the list of actual values must also be in the list of expected values, to produce a PASS.



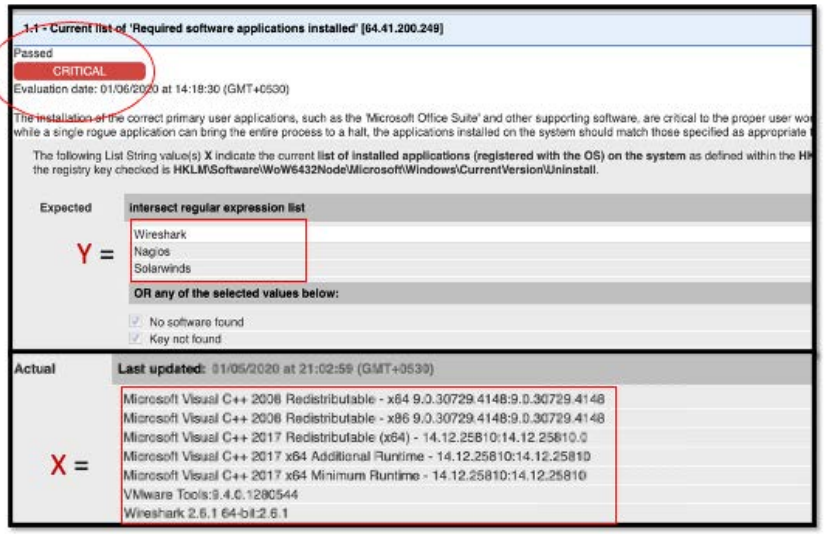
Notice that a PASS is still produced, if the number of items in the list of actual values is less than the number of items in the list of expected values.



If any item in the list of actual values is not within the list of expected values, a FAIL result is produced.

intersect

If you wanted to identify a list of “Optional Software” the “intersects” cardinality operator can be used.



If **any** of the required software element is present, the host will pass.

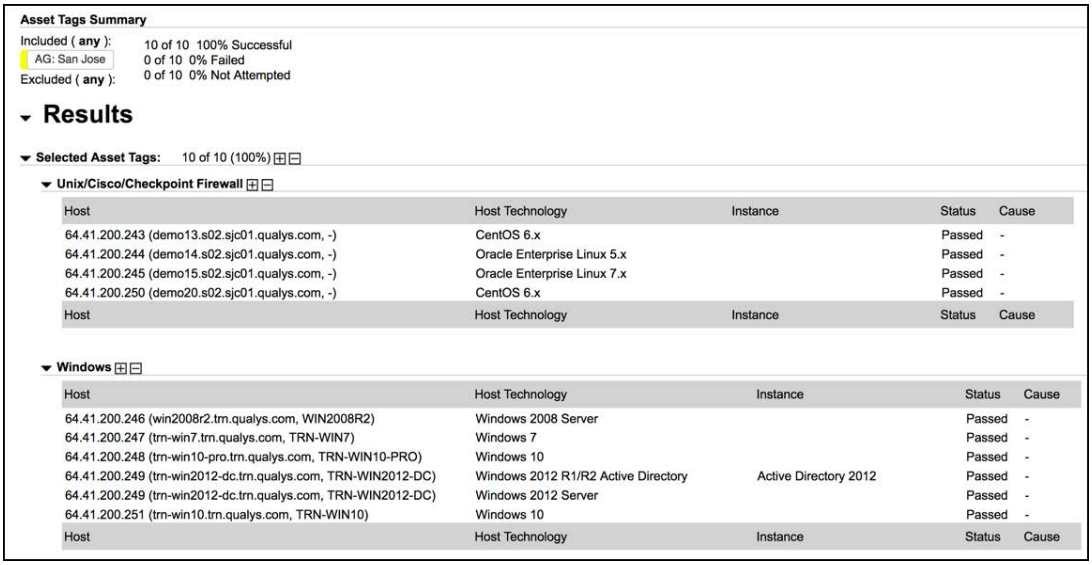
Compliance Reports

Authentication Report

Authentication is a requirement for performing compliance scans; therefore, it is important to monitor the success and failure of authentication attempts made by your Qualys Scanner Appliance.

An Authentication Report will help you identify failed authentication attempts and other conditions that could result in the failure to collect compliance data.

The illustration below, depicts an Authentication Report taken from our Training Lab environment.



Asset Tags Summary

Included (**any**): AG: San Jose
Excluded (**any**):

10 of 10 100% Successful
0 of 10 0% Failed
0 of 10 0% Not Attempted

Results

Selected Asset Tags: 10 of 10 (100%)

Unix/Cisco/Checkpoint Firewall

Host	Host Technology	Instance	Status	Cause
64.41.200.243 (demo13.s02.sjc01.qualys.com, -)	CentOS 6.x		Passed	-
64.41.200.244 (demo14.s02.sjc01.qualys.com, -)	Oracle Enterprise Linux 5.x		Passed	-
64.41.200.245 (demo15.s02.sjc01.qualys.com, -)	Oracle Enterprise Linux 7.x		Passed	-
64.41.200.250 (demo20.s02.sjc01.qualys.com, -)	CentOS 6.x		Passed	-
Host	Host Technology	Instance	Status	Cause

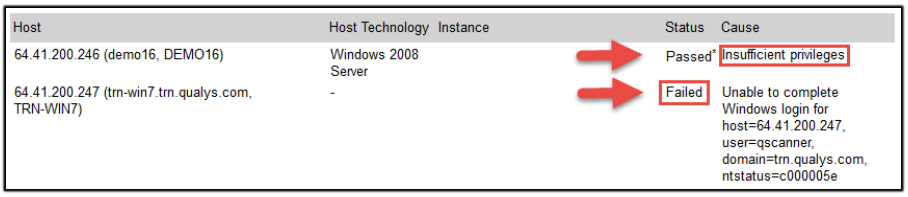
Windows

Host	Host Technology	Instance	Status	Cause
64.41.200.246 (win2008r2.trn.qualys.com, WIN2008R2)	Windows 2008 Server		Passed	-
64.41.200.247 (trn-win7.trn.qualys.com, TRN-WIN7)	Windows 7		Passed	-
64.41.200.248 (trn-win10-pro.trn.qualys.com, TRN-WIN10-PRO)	Windows 10		Passed	-
64.41.200.249 (trn-win2012-dc.trn.qualys.com, TRN-WIN2012-DC)	Windows 2012 R1/R2 Active Directory	Active Directory 2012	Passed	-
64.41.200.249 (trn-win2012-dc.trn.qualys.com, TRN-WIN2012-DC)	Windows 2012 Server		Passed	-
64.41.200.251 (trn-win10.trn.qualys.com, TRN-WIN10)	Windows 10		Passed	-
Host	Host Technology	Instance	Status	Cause

Authentication attempts by the Qualys Scanner Appliance, have been successful for all lab targets. The following is a list of all possible authentication outcomes:

Passed – Authentication was successful.

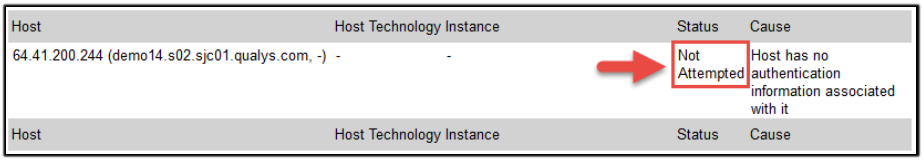
Insufficient Privileges – Authentication was successful, but the Qualys scanning account was not able to access data needed to perform one or more compliance assessment tests.



Host	Host Technology	Instance	Status	Cause
64.41.200.246 (demo16, DEMO16)	Windows 2008 Server		Passed*	Insufficient privileges
64.41.200.247 (trn-win7.trn.qualys.com, TRN-WIN7)	-		Failed	Unable to complete Windows login for host=64.41.200.247, user=qscanner, domain=trn.qualys.com, ntstatus=c000005e

Failed – Authentication was not successful.

Not Attempted – An authentication record was not found for a targeted host, and therefore authentication was not attempted.



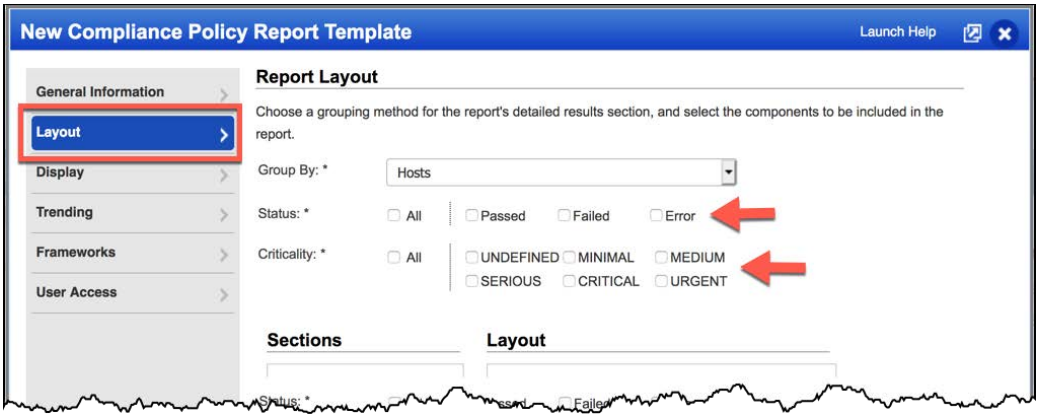
Host	Host Technology	Instance	Status	Cause
64.41.200.244 (demo14.s02.sjc01.qualys.com, -)	-	-	Not Attempted	Host has no authentication information associated with it
Host	Host Technology	Instance	Status	Cause

A status of “Not Attempted” typically identifies host IPs that do not have a corresponding authentication record.

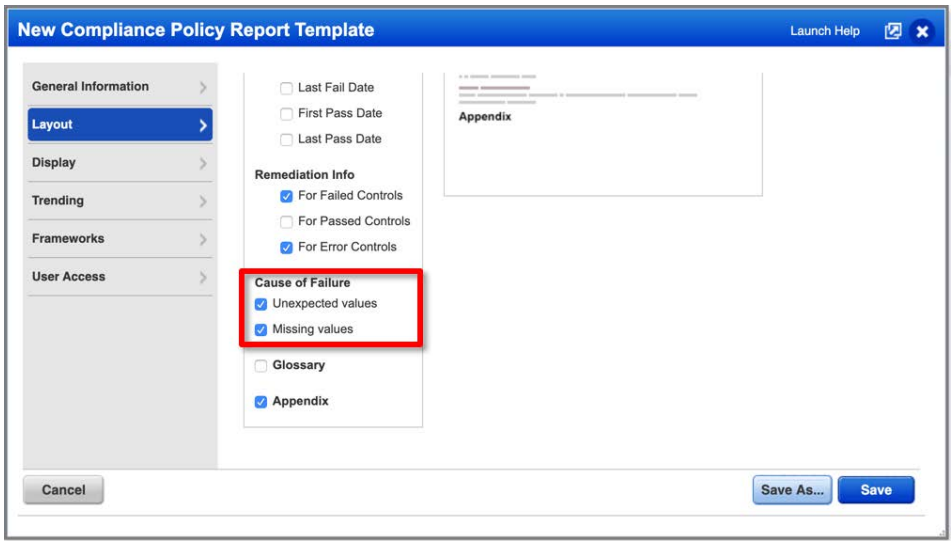
Qualys recommends using root and Administrator equivalent accounts for all compliance scans.

Policy Report

The “Layout” section of a Policy Report Template provides some useful report filtering options.



You can create reports that only display “Failed” controls and focus the report on the most critical controls.



The “Cause of Failure” options will help to highlight required values that are missing or unexpected.

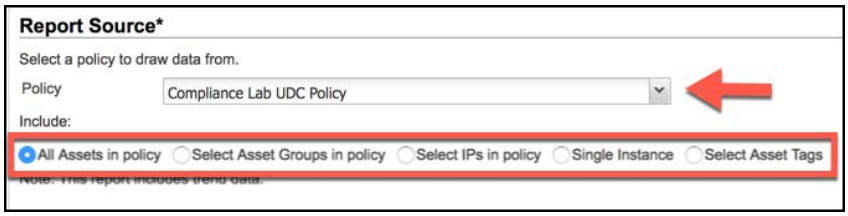
Create Policy Report

A Policy Report focuses on the controls of a single policy and may contain one or more hosts or technologies, within the policy scope. The evidence included for each control, helps one to understand the reason for any PASS or FAIL outcome.

Navigate to the following URL to view the "Create Policy Report" tutorial:

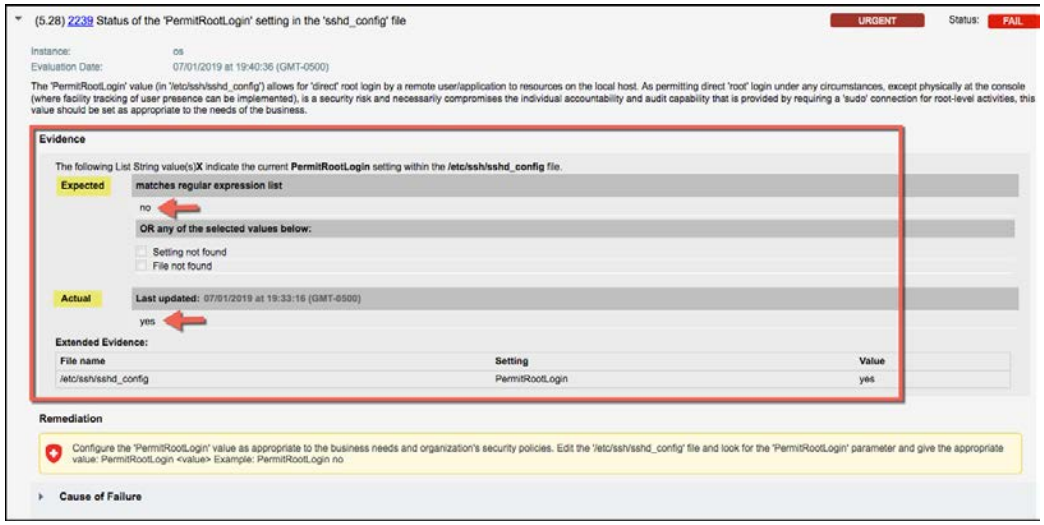
PLAY LAB 11 - https://ior.ad/7Sj9

Once a specific policy has been selected, only host assets defined within the Policy Scope will be included in a Policy Report. Additional filtering options include:



- **All Assets in policy** - Include all assets defined within the policy scope.
- **Select Asset Groups in policy** – Include assets from one or more specific Asset Groups.
- **Select IPs in policy** – Include one or more IP addresses.
- **Single Instance** – Include one or more technology instances
- **Select Asset Tags** – Include assets labeled with one or more specific Asset Tags.

A distinguishing characteristic of the Policy Report is the evidence that impacts each PASS/FAIL result.



This is the type of information needed by systems administrators and operational teams to correct a configuration error or any other type of failed requirement.

Interactive Reports

When a host fails to meet a control requirement, one option involves correcting the condition that led to the failure. However, if a compensating control has been deployed to address the problem, another option involves requesting an exception for the failed control. The Policy Compliance Application provides Interactive Reports for requesting and managing exceptions:

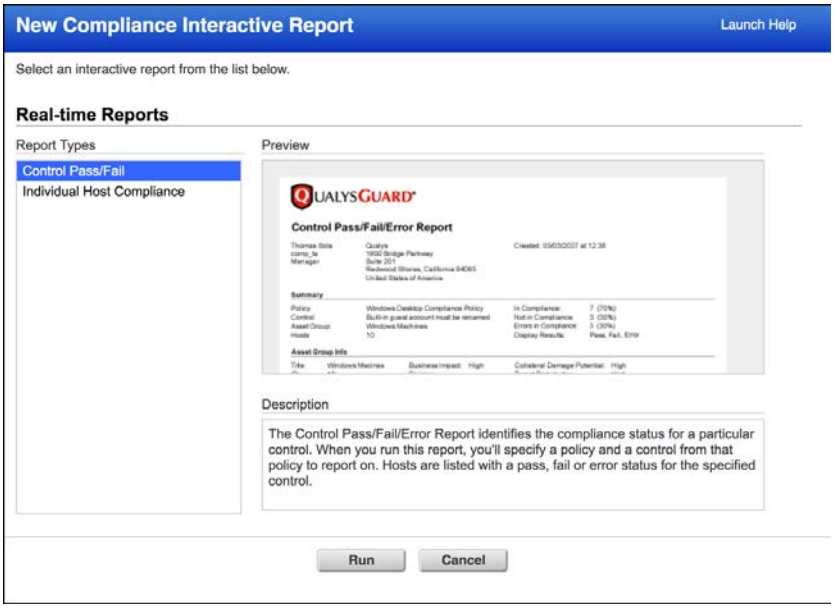
- **Control Pass/Fail Report**
- **Individual Host Compliance Report**

Requesting Exceptions

Navigate to the following URL to view the "Interactive Report" tutorial:

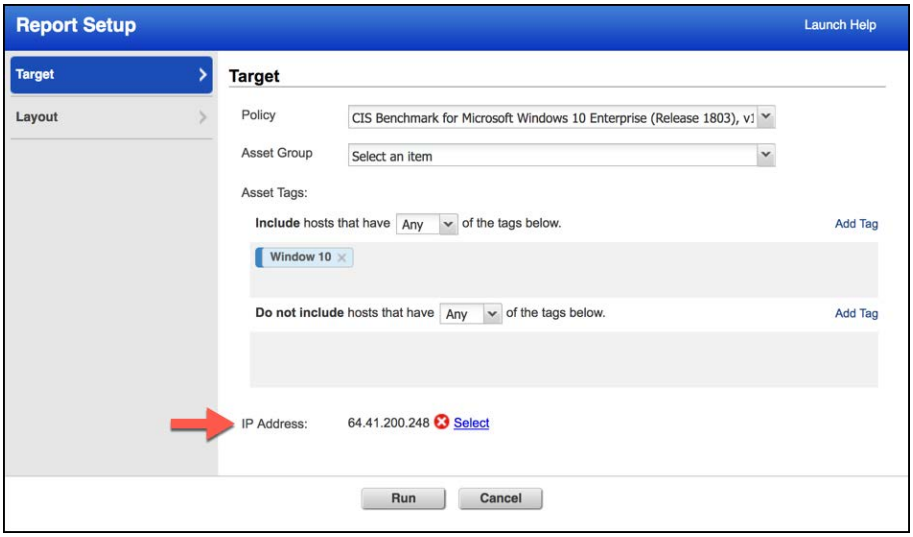
PLAY LAB 12 - https://ior.ad/7Sqv

To request an exception for a failed control, you have the option of running one of two interactive reports. Interactive reports have very short lives; they are not saved (like other reports) under the "Reports" tab.



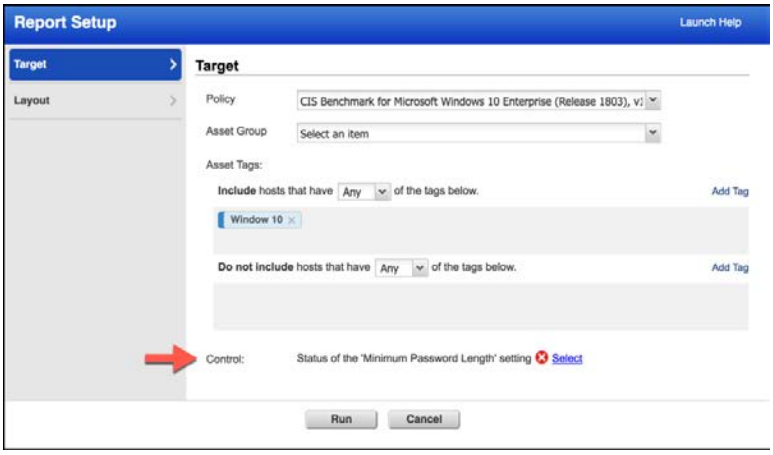
An interactive report will remain running, until you have successfully completed one or more exception requests. Interactive reports that are closed are not saved, but can easily be recreated.

The “Individual Host Compliance” report (below) displays all control test outcomes for a single host.

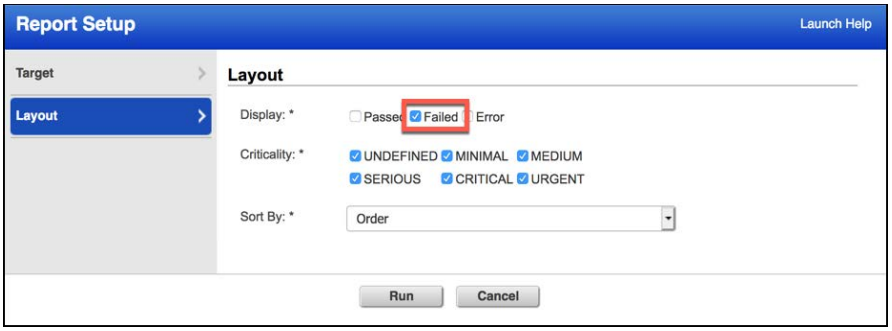


Once a policy and assets have been selected, an individual host IP address (from the policy scope) must be specified.

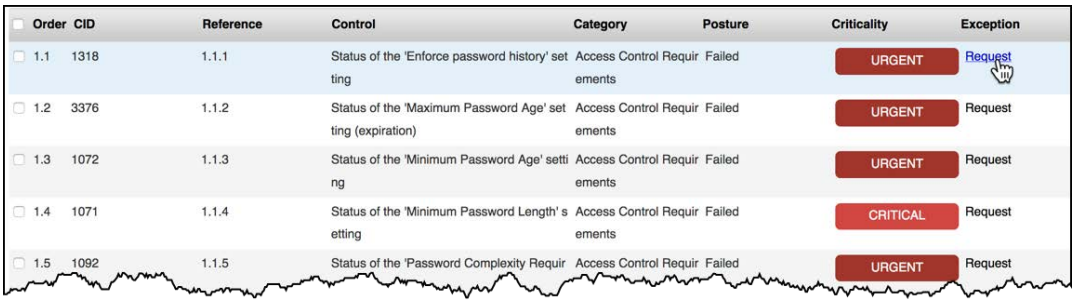
The “Control Pass/Fail” report (below) displays the results or outcomes for a single control, on one or more host assets.



Once the policy and assets have been selected, an individual Control ID (from the policies list of controls) must be specified.

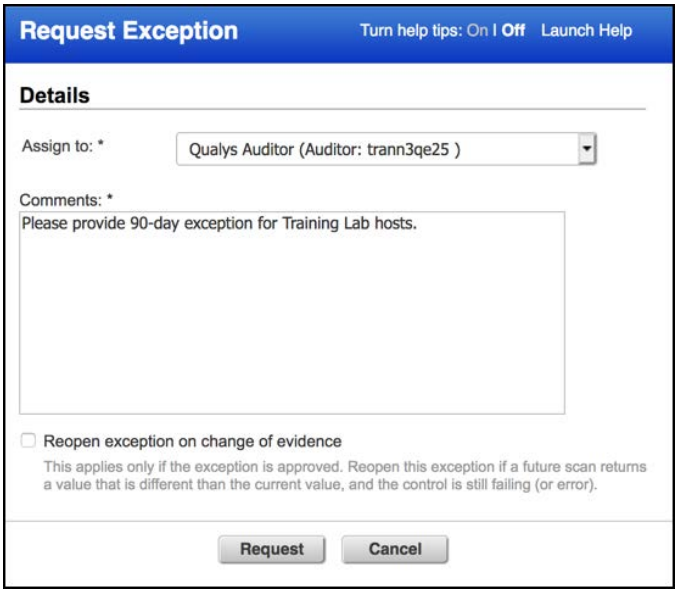


In most cases, you will request exceptions for failed controls. Alternatively, you have the option to filter controls by their "Criticality."

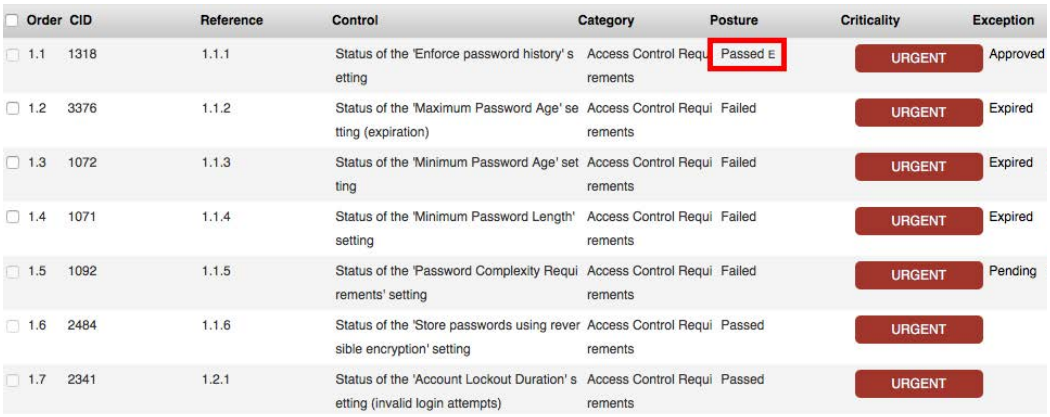


Order	CID	Reference	Control	Category	Posture	Criticality	Exception
1.1	1318	1.1.1	Status of the 'Enforce password history' setting	Access Control Requirements	Failed	URGENT	Request
1.2	3376	1.1.2	Status of the 'Maximum Password Age' setting (expiration)	Access Control Requirements	Failed	URGENT	Request
1.3	1072	1.1.3	Status of the 'Minimum Password Age' setting	Access Control Requirements	Failed	URGENT	Request
1.4	1071	1.1.4	Status of the 'Minimum Password Length' setting	Access Control Requirements	Failed	CRITICAL	Request
1.5	1092	1.1.5	Status of the 'Password Complexity Requir	Access Control Requirements	Failed	URGENT	Request

Notice the "Exception" column (on the right-side). The "Request" links allow you to request an exception, for the controls that are listed.



By default, exception requests will be assigned to an "Auditor" account. Optionally, exception requests can be assigned to a "Manager" account. The examples in this lab tutorial use the "Auditor" account. The "Comments" field is required.

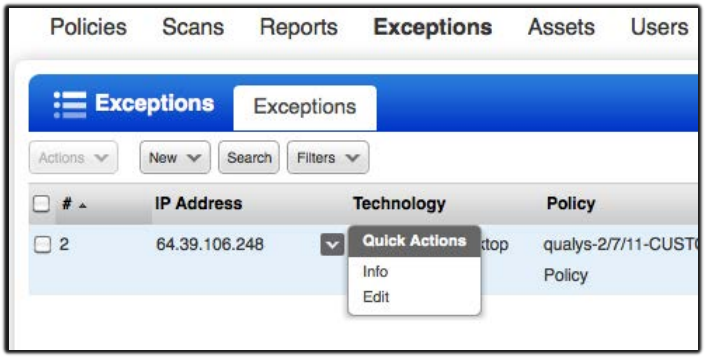


Order	CID	Reference	Control	Category	Posture	Criticality	Exception
1.1	1318	1.1.1	Status of the 'Enforce password history' setting	Access Control Requirements	Passed E	URGENT	Approved
1.2	3376	1.1.2	Status of the 'Maximum Password Age' setting (expiration)	Access Control Requirements	Failed	URGENT	Expired
1.3	1072	1.1.3	Status of the 'Minimum Password Age' setting	Access Control Requirements	Failed	URGENT	Expired
1.4	1071	1.1.4	Status of the 'Minimum Password Length' setting	Access Control Requirements	Failed	URGENT	Expired
1.5	1092	1.1.5	Status of the 'Password Complexity Requirements' setting	Access Control Requirements	Failed	URGENT	Pending
1.6	2484	1.1.6	Status of the 'Store passwords using reversible encryption' setting	Access Control Requirements	Passed	URGENT	
1.7	2341	1.2.1	Status of the 'Account Lockout Duration' setting (invalid login attempts)	Access Control Requirements	Passed	URGENT	

The values displayed in the “Exception” as well as the “Posture” columns will change, as selected controls go through the exception handling process. Auditors have the option of assigning expiration dates to approved exceptions. If the control is failing (at the time of its expiration date), “Expired” will be displayed in the “Exception” column.

Working With Exception Requests

When editing exception requests, an Auditor must determine the impact of allowing a failed control/host to be exempted from a policy. It is common for some type of compensating control to be implemented, as justification or cause for approval.



When granting any exception, Auditors should always take into account, the regulations, standards, and mandates that impact your organization or business.

Navigate to the following URL to view the "Working With Exception Requests" tutorial:

PLAY LAB 13 - https://ior.ad/7Sr0

The Auditor Role

The role of Auditor was created primarily to approve or reject exceptions requested for failing hosts. To properly fulfill this role an auditor should be familiar with your organizations security policies, governing regulations, as well as security frameworks.

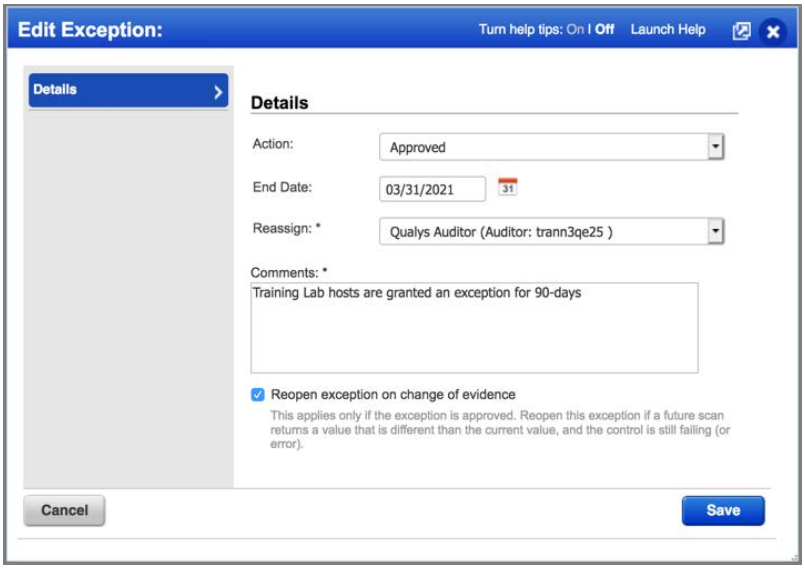
In addition to approving/rejecting exceptions, auditors can:

- Create and edit policies
- Generate reports
- Add new controls to the Control Library

Additional Auditor Characteristics:

- Auditors cannot be added to a Business Unit.
- Auditors cannot run compliance scans.
- Auditors have access to all hosts in your Policy Compliance subscription (and cannot be restricted to a single Asset Group).
- Auditors only have visibility into compliance data (not vulnerability data).
- Other user roles cannot be changed to the role of Auditor.

Although a "Manager" account can also be used to approve exception requests, the examples in this lab tutorial use the "Auditor" account.



An Exception can be reassigned, approved or rejected. An approved exception can be set to expire on a specific date. Approved exception requests will be noted in the next interactive report. If an exception request is rejected, it will keep its failed status.

The option to “Reopen exception on change of evidence,” will reopen an “approved” exception, if a future scan returns a value that is different than the current value, and the control is still failing.

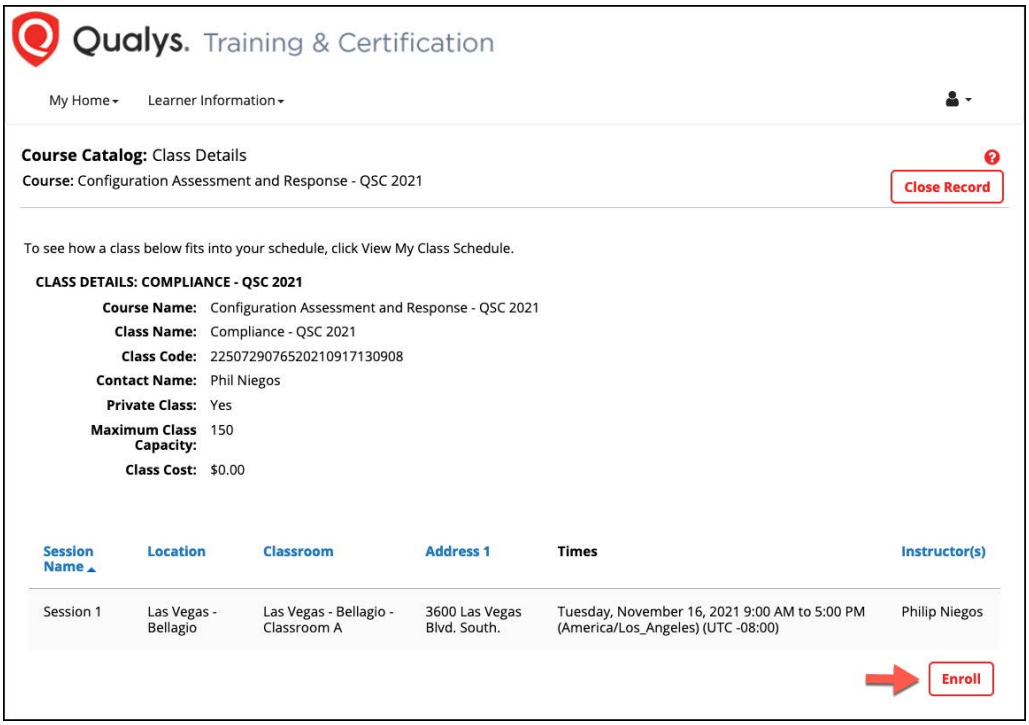
Policy Compliance Certification Exam

Participants in this training course have the option to take the Policy Compliance Certification Exam. This exam is provided through our Learning Management System (qualys.com/learning). To take the exam, candidates will need a "learner" account.

If you would like to take the exam, but do not already have a "learner" account, click the "Request a new account" link (above), from the "Qualys Training & Certification" login page (qualys.com/learning).

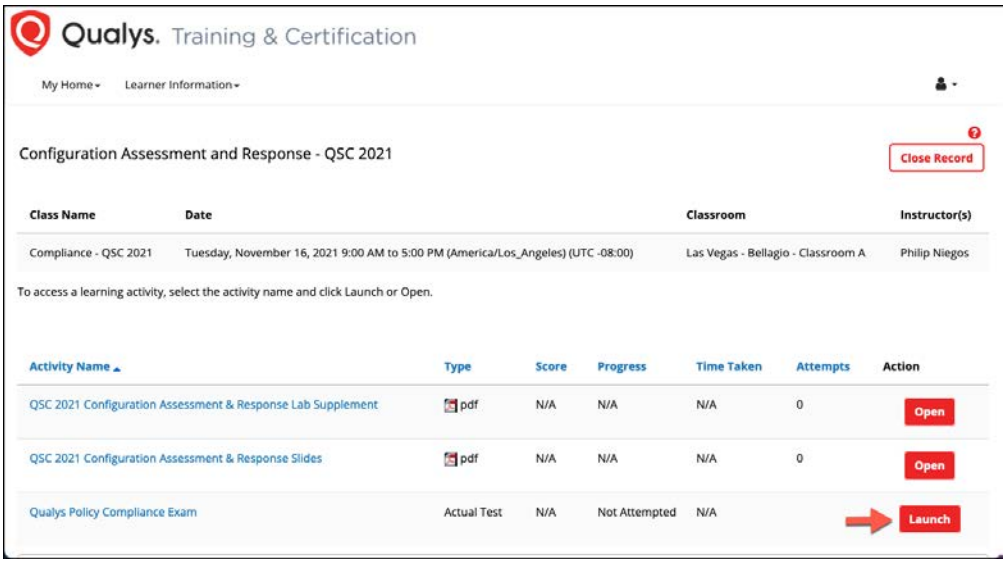
Once you have created a "learner" account (and for those who already have an account), click the following link to access the "QSC 2021 Configuration Assessment & Response" course page:

https://gm1.geolearning.com/geonext/qualys/scheduledclassdetails4enroll.geo?&id=22511237828

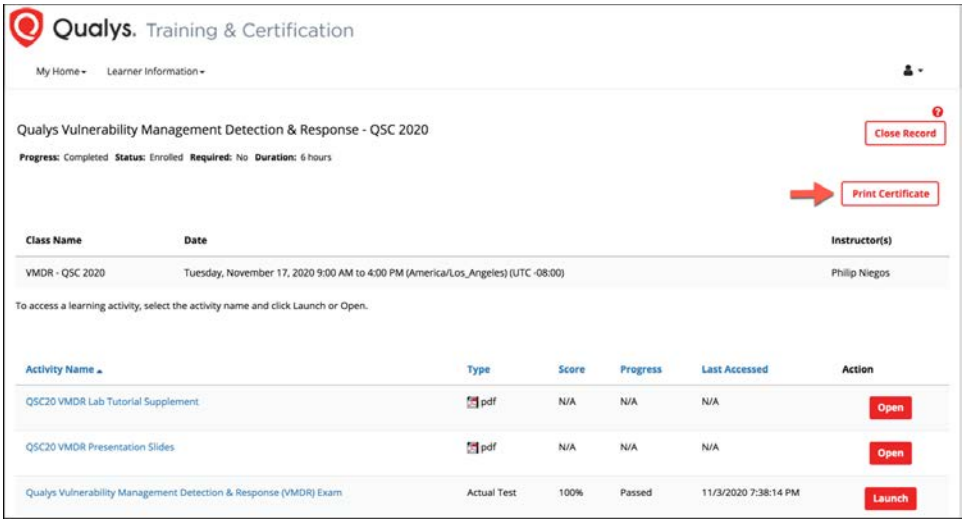


From the course page, click the "Enroll" button (lower-right corner).

After successfully completing the course enrollment, click the “Launch” button, for the Qualys Policy Compliance Exam.



Each candidate is provided five attempts to pass the exam. You may use the course presentation slides and lab tutorial supplement to help you answer the exam questions. You may also use any of the resources within the Qualys UI (such as the “Help” menu) and resources found on the Qualys Community (community.qualys.com) to answer exam questions.



With a passing score of 75% (or greater), click the “Print Certificate” button to download and print your course exam certificate.

Course Survey and Trial Account

Please lets us know what you think about the “QSC 2021 Configuration Assessment & Response” training course.
Survey - https://forms.office.com/r/rsy0Aja6Xz

Would you like a trial account to practice and experiment with the lessons and topics provided in this course?
Link to Trial - https://www.qualys.com/free-trial/