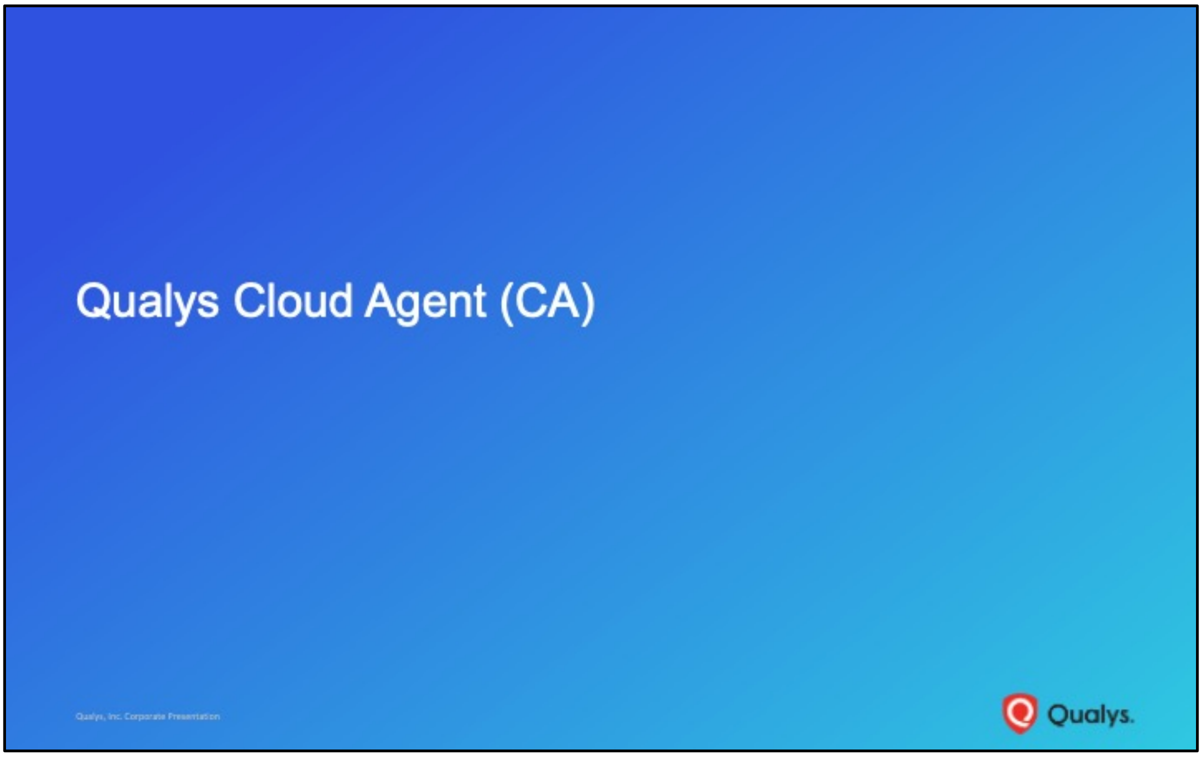
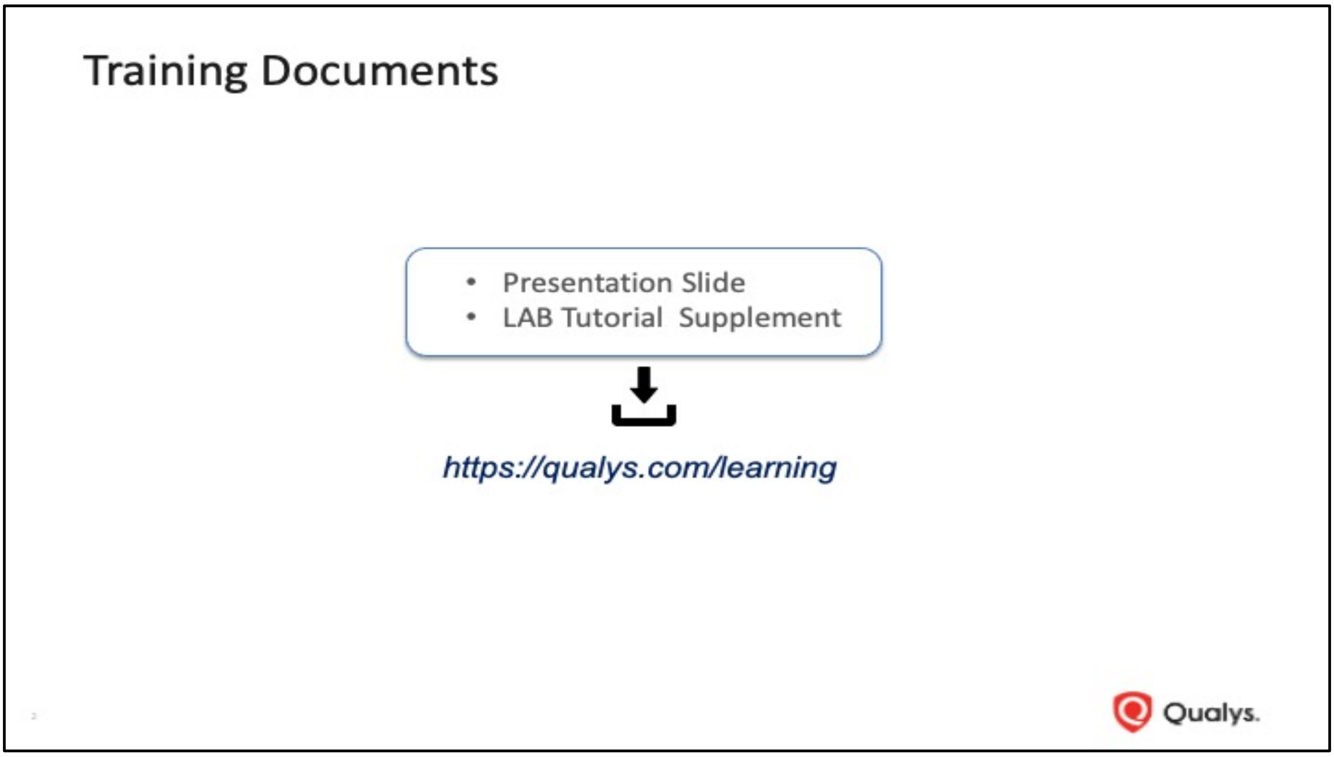


Qualys Cloud Agent (CA)

Qualys, Inc. Corporate Presentation

Welcome to Qualys Cloud Agent training.



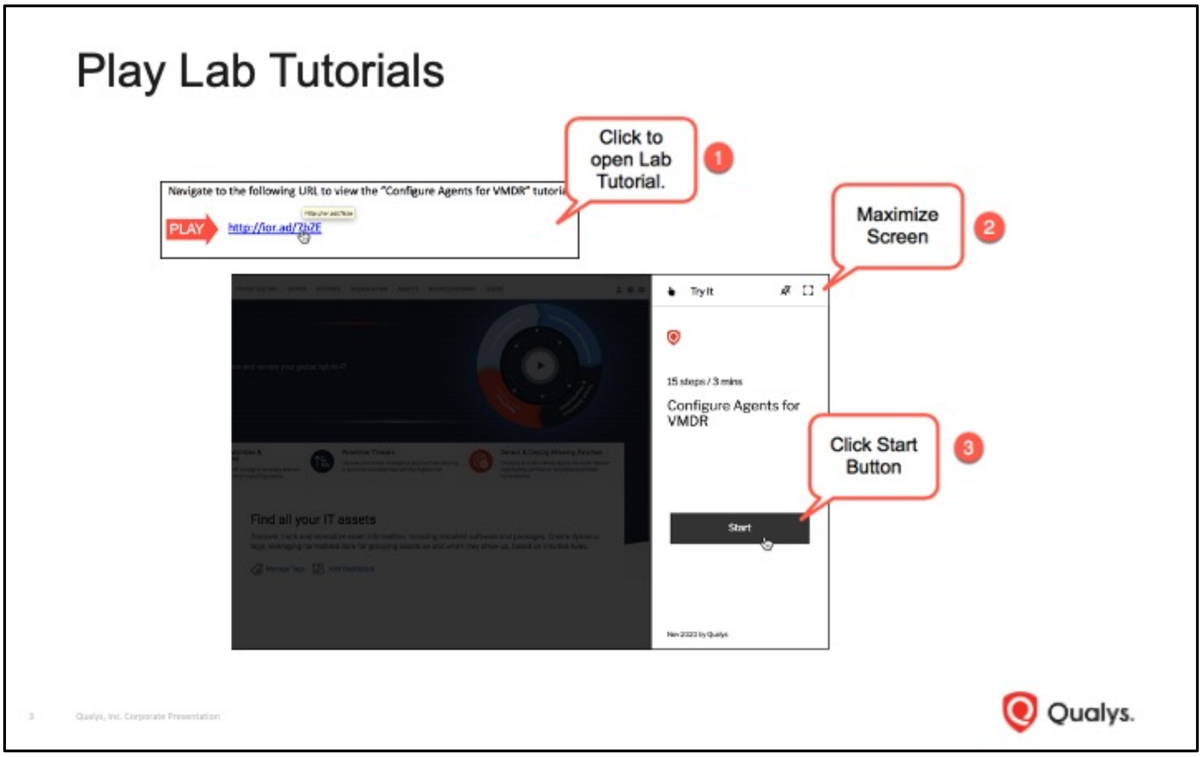
Training Documents

- Presentation Slide
- LAB Tutorial Supplement

https://qualys.com/learning

You will need to download the training documents needed to complete the Container Security course from the Qualys learning portal qualys.com/learning.

Note that you will need a PDF reader like Adobe Acrobat to view these files.



Play Lab Tutorials

Navigate to the following URL to view the "Configure Agents for VMDR" tutori

PLAY http://ior.ad/7h7F

Click to open Lab Tutorial. 1

Maximize Screen 2

Click Start Button 3

Try It

15 steps / 3 mins

Configure Agents for VMDR

Start

Find all your IT assets

3 Qualys, Inc. Corporate Presentation

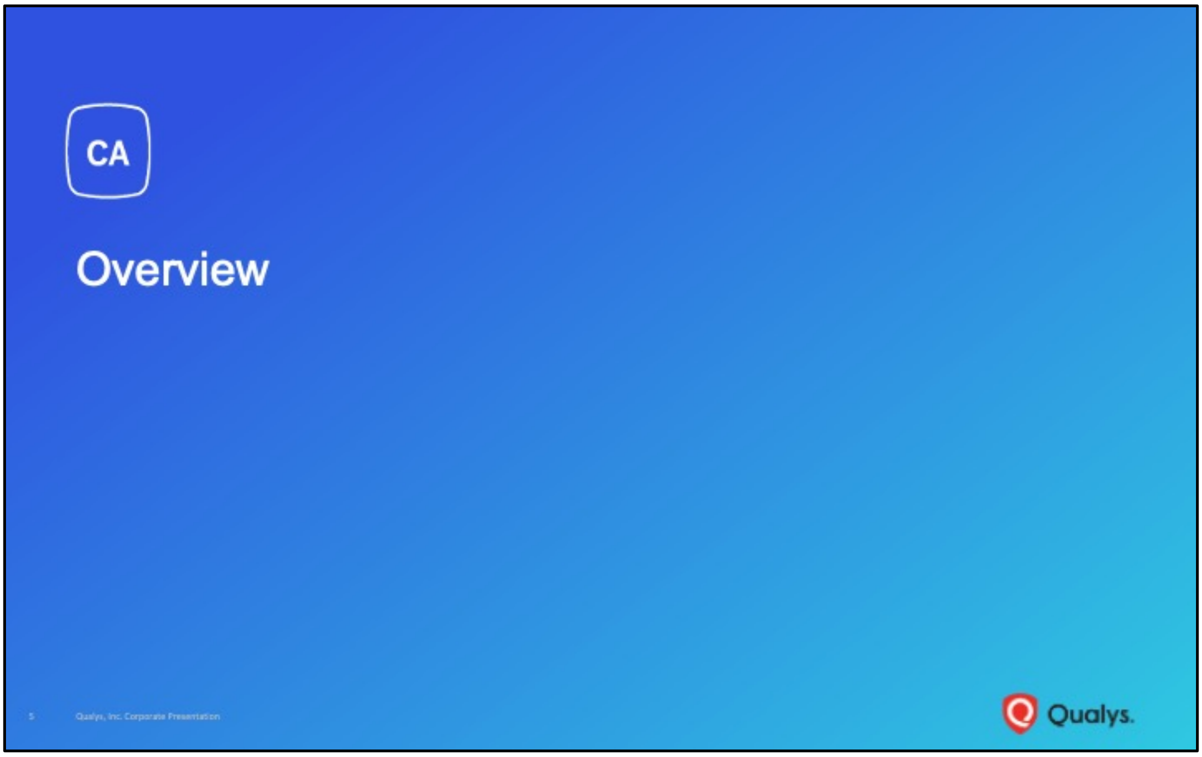
1. When you click the link to open a lab tutorial, it will open-up in your default Web browser. If you would like to play the tutorial in a different browser, you can copy this link and paste it into the address field of another browser.

2. When the lab tutorial opens, click the icon in the upper-right corner, to maximize your screen size.

3. When your ready to play the tutorial, click the start button.

Agenda

- Cloud Agent Overview
- Cloud Agent Installation & Deployment
  - Agent Activation Key
  - Installation Components
  - Agent Installation Options
- Agent Asset Details
- Cloud Agent Lifecycle and Configuration



CA

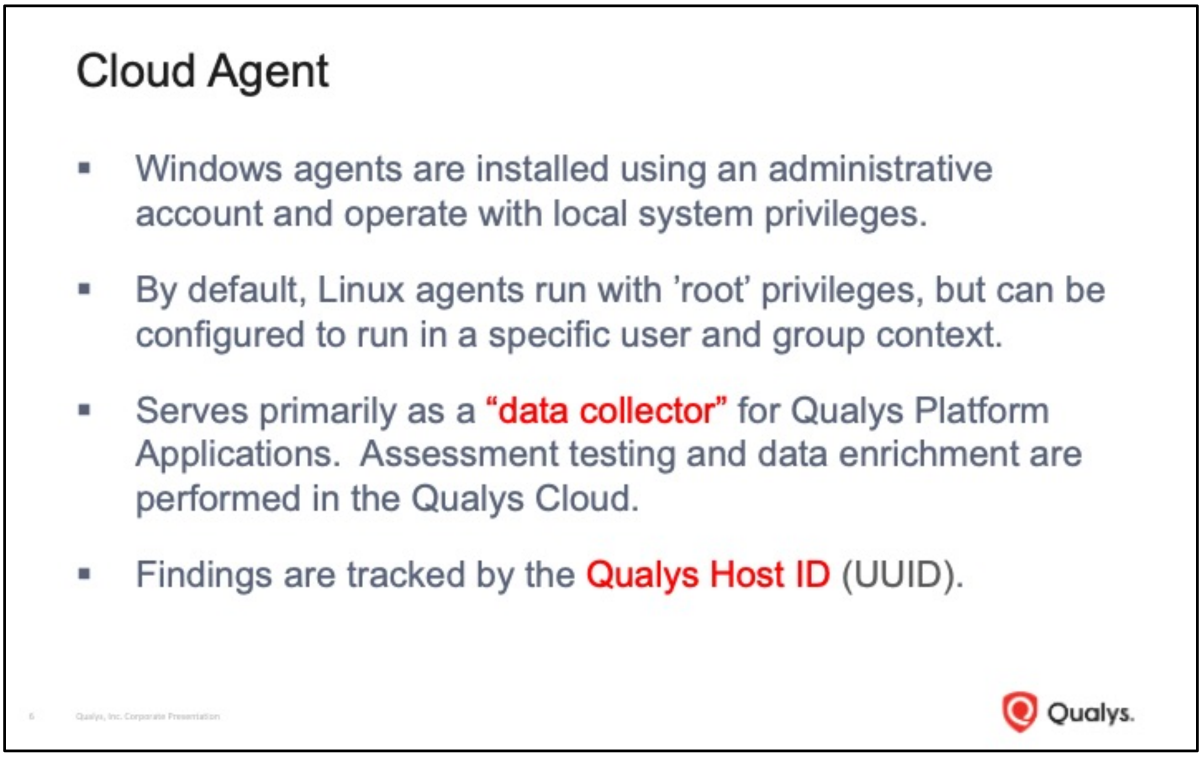
Overview

5 Qualys, Inc. Corporate Presentation

Qualys.

The objectives for this section are:

1. Provide a high-level overview of CA behaviors and characteristics.
2. Identify operating systems and Qualys applications supported by CA.
3. New RedHat CoreOS feature



Cloud Agent

- Windows agents are installed using an administrative account and operate with local system privileges.
- By default, Linux agents run with ’root’ privileges, but can be configured to run in a specific user and group context.
- Serves primarily as a “data collector” for Qualys Platform Applications. Assessment testing and data enrichment are performed in the Qualys Cloud.
- Findings are tracked by the Qualys Host ID (UUID).

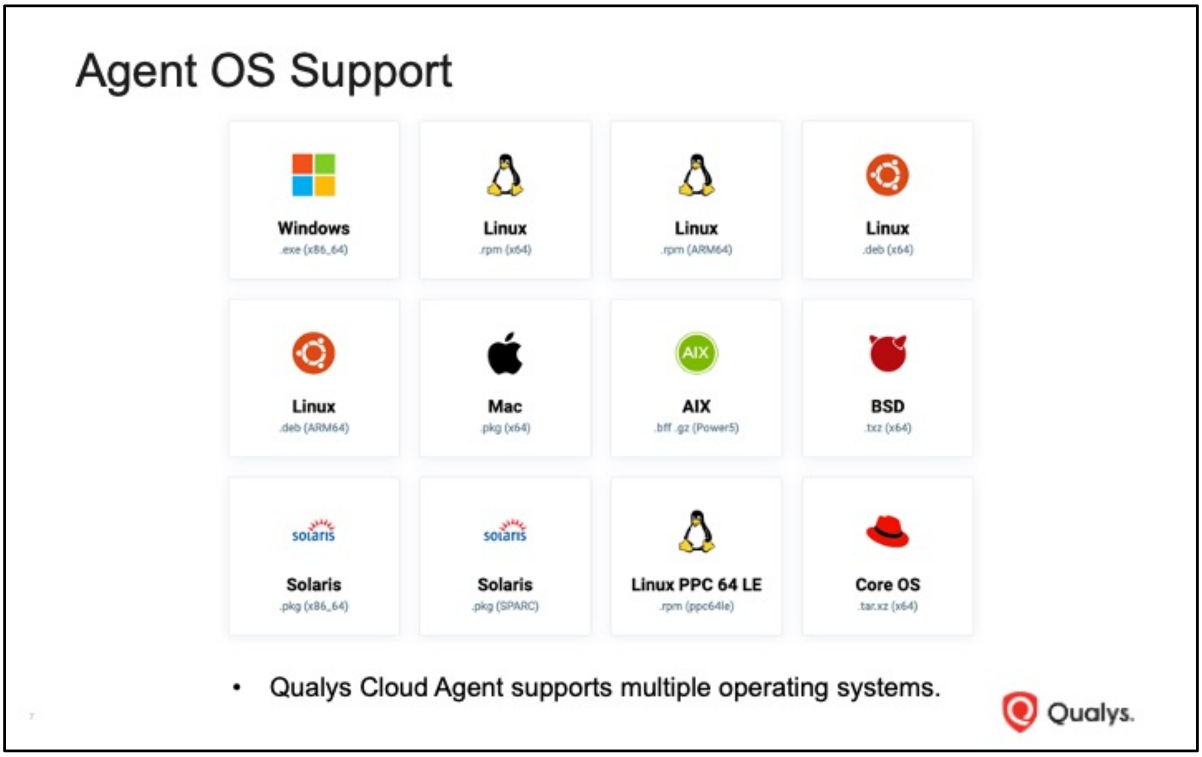
6 Qualys, Inc. Corporate Presentation

Windows agents must be installed using an administrative account and will operate with system level privileges.

The agent installation requires root level access on Unix and Linux systems (for example in order to access the RPM database). After the Cloud Agent has been installed it can be configured to run in a specific user and group context using our configuration tool. Caution: this limits the level of access of the Cloud Agent.

To optimize agent performance and keep its resource consumption low, agents focus primarily on data collection tasks (i.e., collecting host data and telemetry and then sending it to the Qualys Cloud). Assessment testing, data categorization, normalization, and enrichment are performed in the Qualys Cloud.

Agent findings are tracked by the Qualys Host ID, which uniquely identifies it agent host (UUID).



Agent OS Support

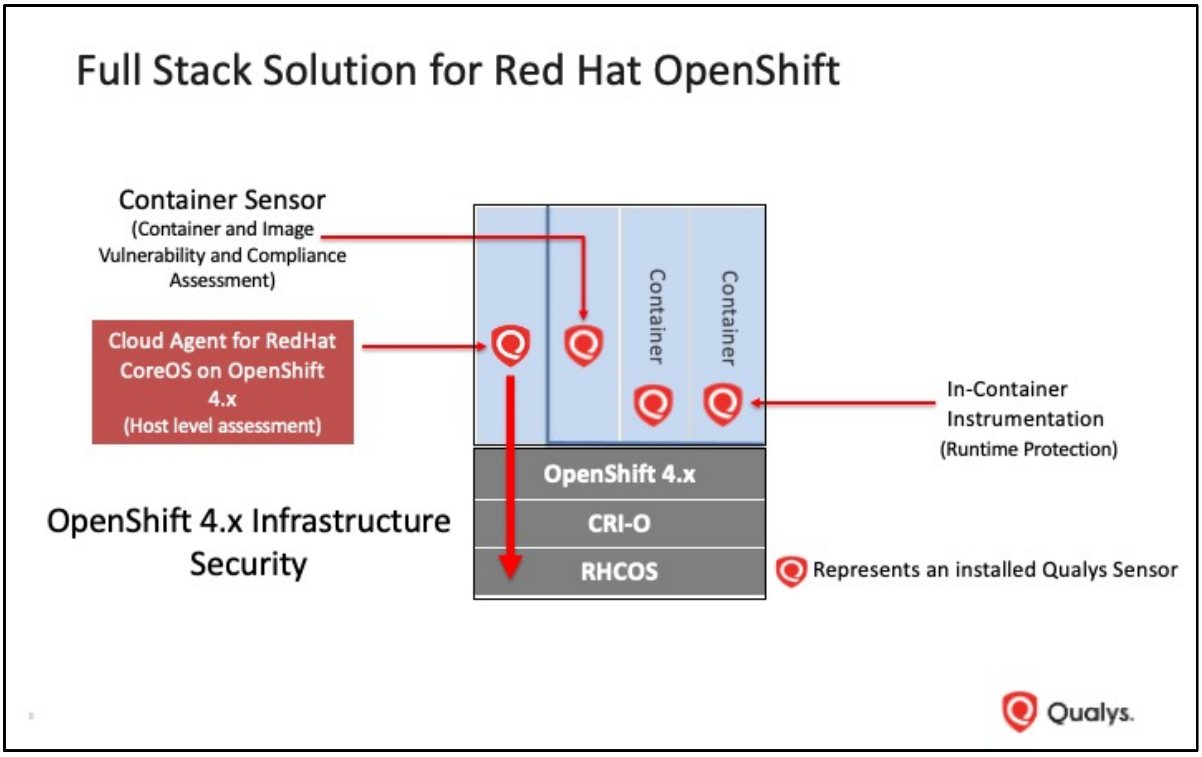
Windows .exe (x86_64)	**Linux** .rpm (x64)	**Linux** .rpm (ARM64)	**Linux** .deb (x64)
Linux .deb (ARM64)	**Mac** .pkg (x64)	**AIX** .bff .gz (Power5)	**BSD** .txz (x64)
Solaris .pkg (x86_64)	**Solaris** .pkg (SPARC)	**Linux PPC 64 LE** .rpm (ppc64le)	**Core OS** .tar.xz (x64)

- Qualys Cloud Agent supports multiple operating systems.

Cloud Agents can be installed on host assets running Cloud Agent supported operating systems, including:

- Windows XP SP3 or greater
- Apple Mac OS X
- Red Hat Enterprise Linux
- Oracle Enterprise Linux
- Amazon Linux
- SuSE Linux
- CentOS
- Fedora
- Debian
- Ubuntu
- FreeBSD
- IBM AIX
- Solaris
- Core OS

For a complete list of supported operating systems and version numbers, see the Cloud Agent Getting Started Guide: https://www.qualys.com/docs/qualys-cloud-agent-getting-started-guide.pdf



Full Stack Solution for Red Hat OpenShift

Container Sensor
(Container and Image Vulnerability and Compliance Assessment)

Cloud Agent for RedHat CoreOS on OpenShift 4.x
(Host level assessment)

OpenShift 4.x Infrastructure Security

In-Container Instrumentation
(Runtime Protection)

Represents an installed Qualys Sensor

At Qualys, we have focused on delivering a full stack solution for Red Hat OpenShift. To do this, we utilize both Container Sensors and Cloud Agents.

As you can see in the diagram, our container sensor solution is deployed as its own container. It assesses images and running containers in your runtime environment.

This solution is technically independent from the Cloud Agent container and provides inventory, vulnerability, and compliance assessments; with data merging and sharing between modules on the Qualys Cloud Platform.

Our Container Security Solution has been in the market for a while now and supports Docker, Container-D, and Crio runtimes.

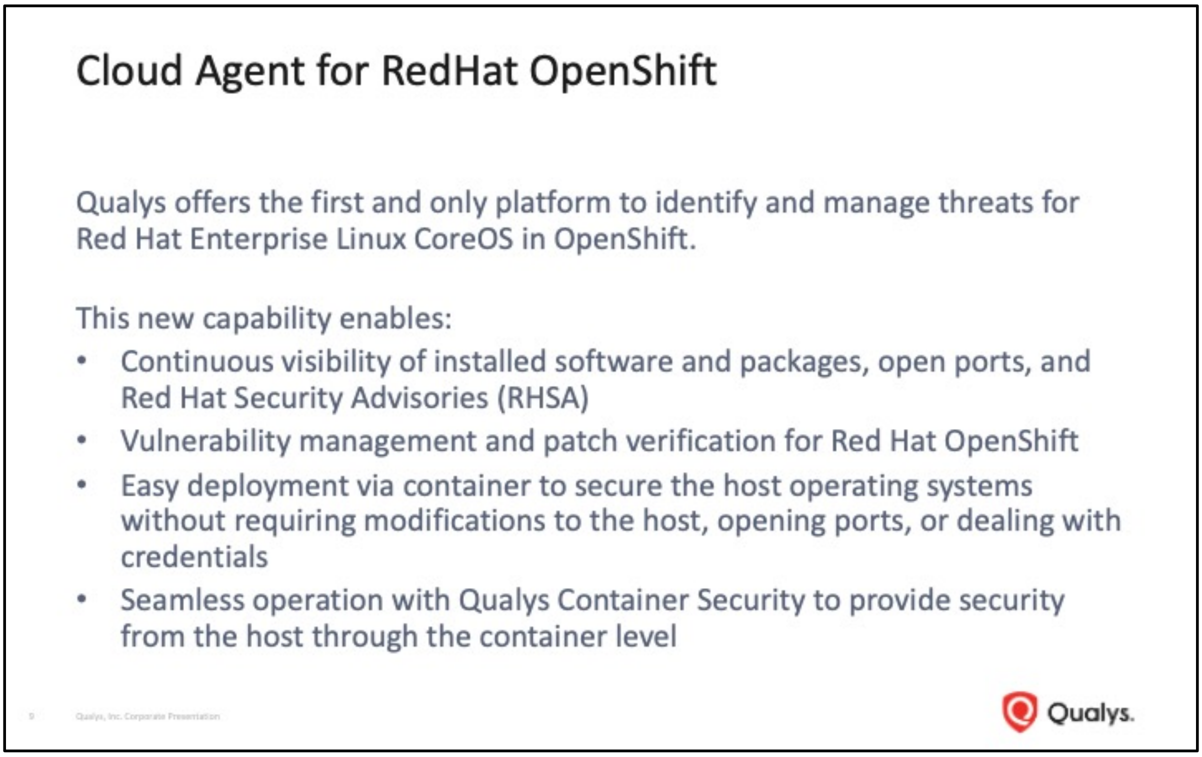
But what about the Host OS? RHCOS does not permit modification of the host. This is a powerful security measure.

That does not mean it is impervious to attack, but it does provide a strong base for building excellent layered security solutions.

Our unique first to market solution, uses an agent-as-container approach.

Easily deployed, our containerized agent scans the Host OS to provide visibility, actionable intelligence, and auditing.

Qualys full-stack security for Red Hat OpenShift adds visibility, actionable intelligence, and security auditing for Red Hat Enterprise Linux CoreOS, the operating system that underpins OpenShift deployments for running containers securely. With this new offering, Qualys is now the first and only solution with the ability to scan directly into Red Hat Enterprise Linux CoreOS in Red Hat OpenShift, so you can manage and reduce risk at both the host OS and container levels. Built on the Qualys Cloud Platform, Qualys' solution seamlessly integrates with customers' vulnerability management workflows, reporting and metrics to help reduce risk.



Cloud Agent for RedHat OpenShift

Qualys offers the first and only platform to identify and manage threats for Red Hat Enterprise Linux CoreOS in OpenShift.

This new capability enables:

- Continuous visibility of installed software and packages, open ports, and Red Hat Security Advisories (RHSA)
- Vulnerability management and patch verification for Red Hat OpenShift
- Easy deployment via container to secure the host operating systems without requiring modifications to the host, opening ports, or dealing with credentials
- Seamless operation with Qualys Container Security to provide security from the host through the container level

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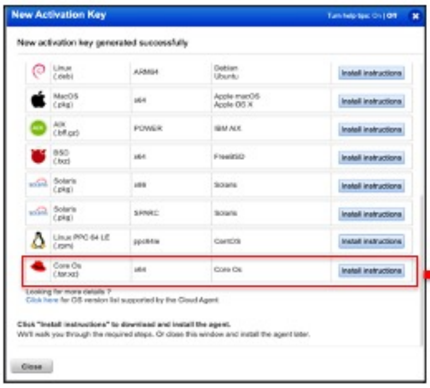
Cloud Agent for RedHat OpenShift Installation

Within the activation key, select install instructions for CoreOS from the list and follow the steps for installation.



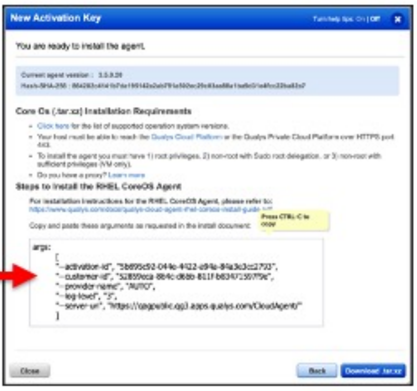
New Activation Key

New activation key generated successfully

Linux (.deb)	ARM64	Debian Ubuntu	Install instructions
MacOS (.pkg)	x64	Apple macOS Apple OS X	Install instructions
AIX (.bff.gz)	POWER	IBM AIX	Install instructions
BSD (.txz)	x64	FreeBSD	Install instructions
Solaris (.pkg)	x86	Solaris	Install instructions
Solaris (.pkg)	SPARC	Solaris	Install instructions
Linux PPC 64 LE (.rpm)	ppc64le	CentOS	Install instructions
Core Os (.tar.xz)	x64	Core Os	Install instructions

Looking for more details ?
Click here for OS version list supported by the Cloud Agent

Click "Install instructions" to download and install the agent.
We'll walk you through the required steps. Or close this window and install the agent later.



New Activation Key

You are ready to install the agent.

Current agent version : 3.5.9.20
Hash-SHA-256 : [illegible]

Core Os (.tar.xz) Installation Requirements

- Click here for the list of supported operation system versions.
- Your host must be able to reach the Qualys Cloud Platform or the Qualys Private Cloud Platform over HTTPS port 443.
- To install the agent you must have 1) root privileges, 2) non-root with Sudo root delegation, or 3) non-root with sufficient privileges (VM only).
- Do you have a proxy? Learn more

Steps to install the RHEL CoreOS Agent

For installation instructions for the RHEL CoreOS Agent, please refer to:
https://www.qualys.com/docs/qualys-cloud-agent-rhel-coreos-install-guide.pdf

Copy and paste these arguments as requested in the install document:

```
args:
        [
        "--activation-id", "5b695c92-044e-4422-a94e-84a3c3cc2793",
        "--customer-id", "52859eca-884c-d686-811f-b83471597f9e",
        "--provider-name", "AUTO",
        "--log-level", "5",
        "--server-url", "https://qagpublic.qg3.apps.qualys.com/CloudAgent/"
        ]
```

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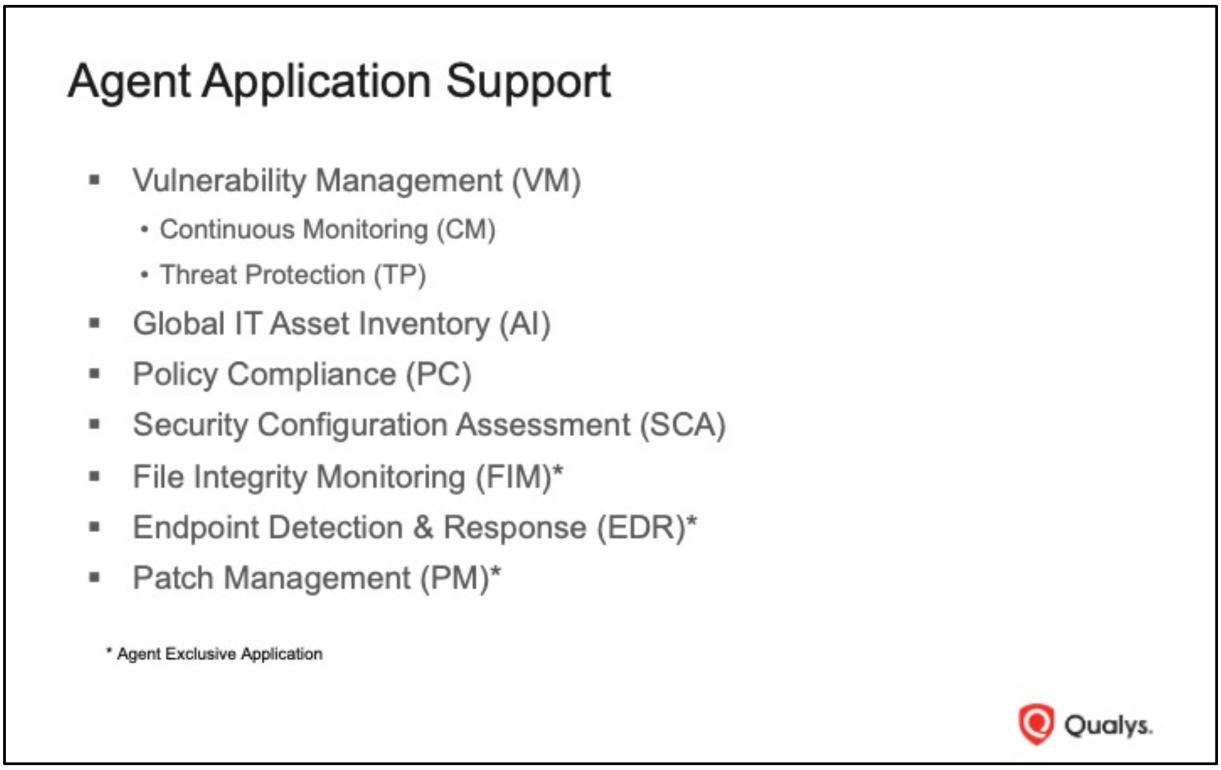
- Download the Qualys Cloud Agent for Red Hat Enterprise Linux CoreOS in Red Hat OpenShift Container image tar file from Qualys Cloud Platform.

Follow the steps in the below guide.

https://www.qualys.com/docs/qualys-cloud-agent-redhat-openshift-coreos-install-guide.pdf



Agent Application Support

- Vulnerability Management (VM)
  - Continuous Monitoring (CM)
  - Threat Protection (TP)
- Global IT Asset Inventory (AI)
- Policy Compliance (PC)
- Security Configuration Assessment (SCA)
- File Integrity Monitoring (FIM)*
- Endpoint Detection & Response (EDR)*
- Patch Management (PM)*

* Agent Exclusive Application

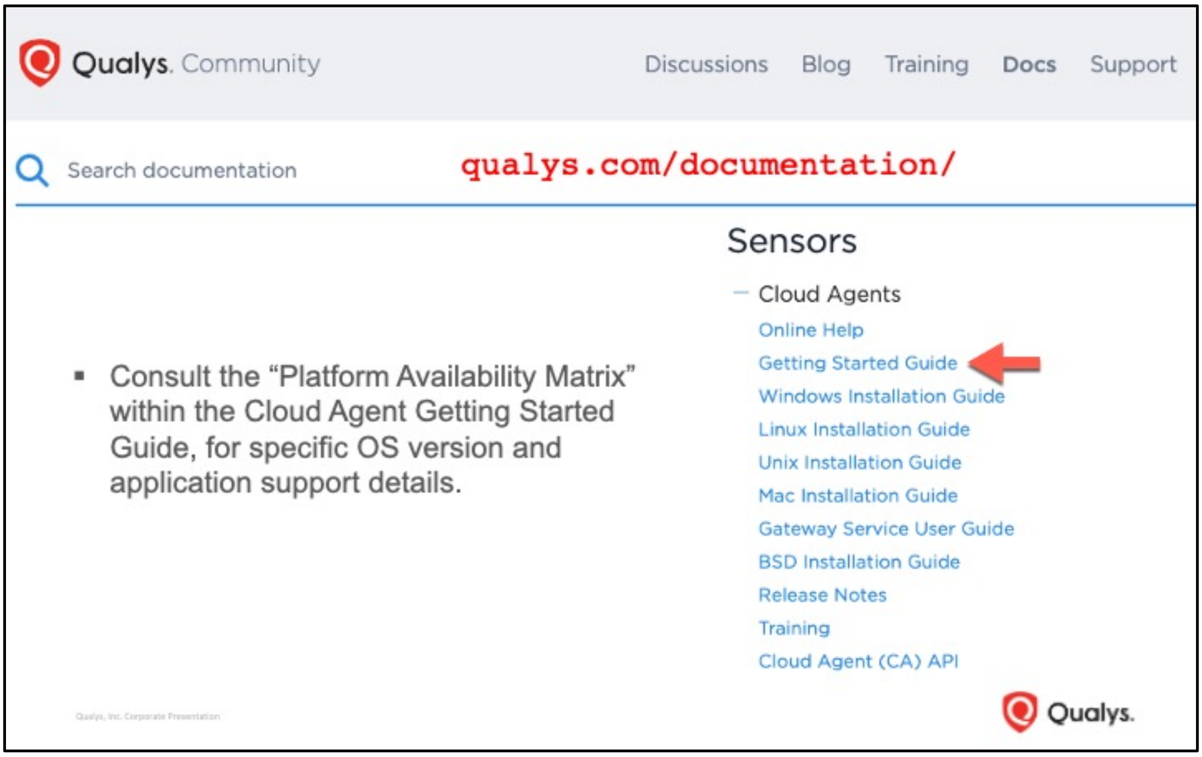
Qualys Cloud Agent supports multiple Qualys application modules.

Qualys Global IT Asset Inventory (AI) is automatically activated for all agents. When the VM module is activated for an agent, Continuous Monitoring (CM) and Threat Protection (TP) are included. You can activate Policy Compliance (PC) or Security Configuration Assessment (SCA) for an agent, but not at the same time.

Qualys File Integrity Monitoring (FIM), Endpoint Detection & Response (EDR), and Patch Management are agent exclusive applications (i.e., they are not supported by other Qualys sensors).

Three options are provided for activating application modules:

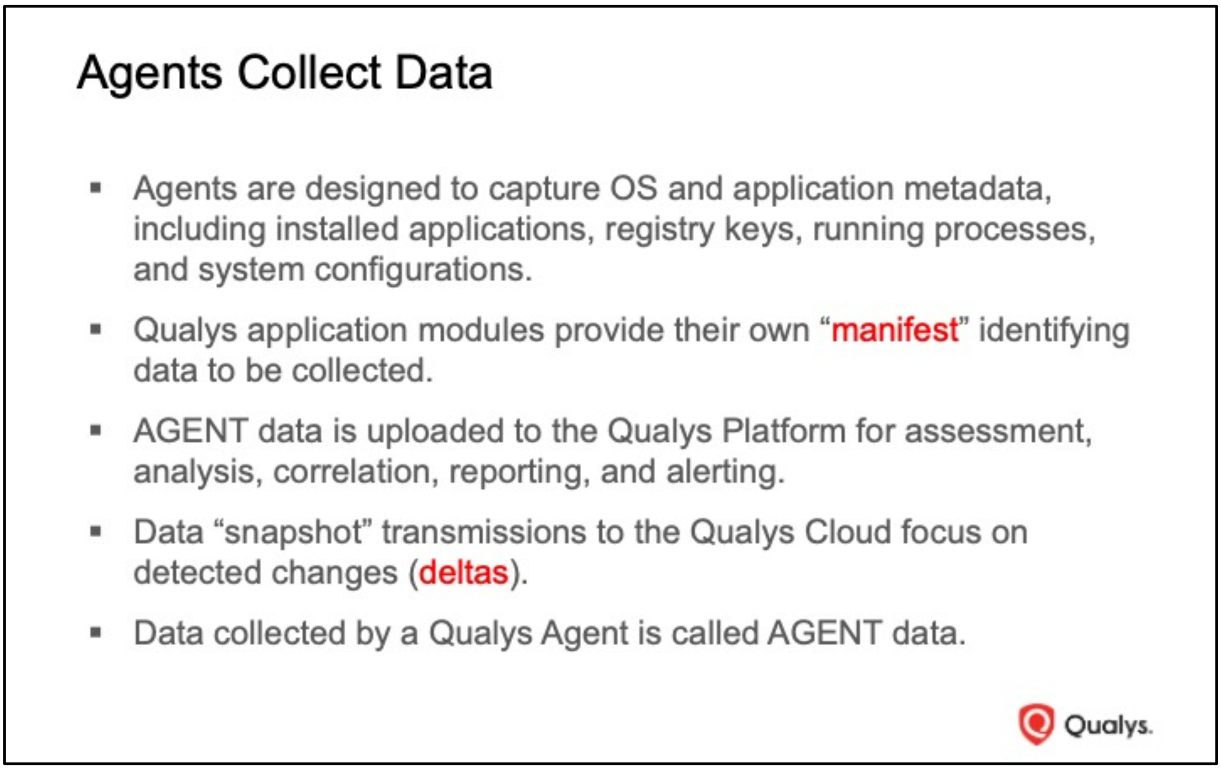
1. Agent Activation Key
2. Host “Quick Actions” Menu
3. CA Application Program Interface (API)



qualys.com/documentation/

- Consult the “Platform Availability Matrix” within the Cloud Agent Getting Started Guide, for specific OS version and application support details.

For a complete list of supported operating systems and version numbers, see the Cloud Agent Getting Started Guide: qualys.com/documenttion



Agents Collect Data

- Agents are designed to capture OS and application metadata, including installed applications, registry keys, running processes, and system configurations.
- Qualys application modules provide their own “**manifest**” identifying data to be collected.
- AGENT data is uploaded to the Qualys Platform for assessment, analysis, correlation, reporting, and alerting.
- Data “snapshot” transmissions to the Qualys Cloud focus on detected changes (**deltas**).
- Data collected by a Qualys Agent is called AGENT data.

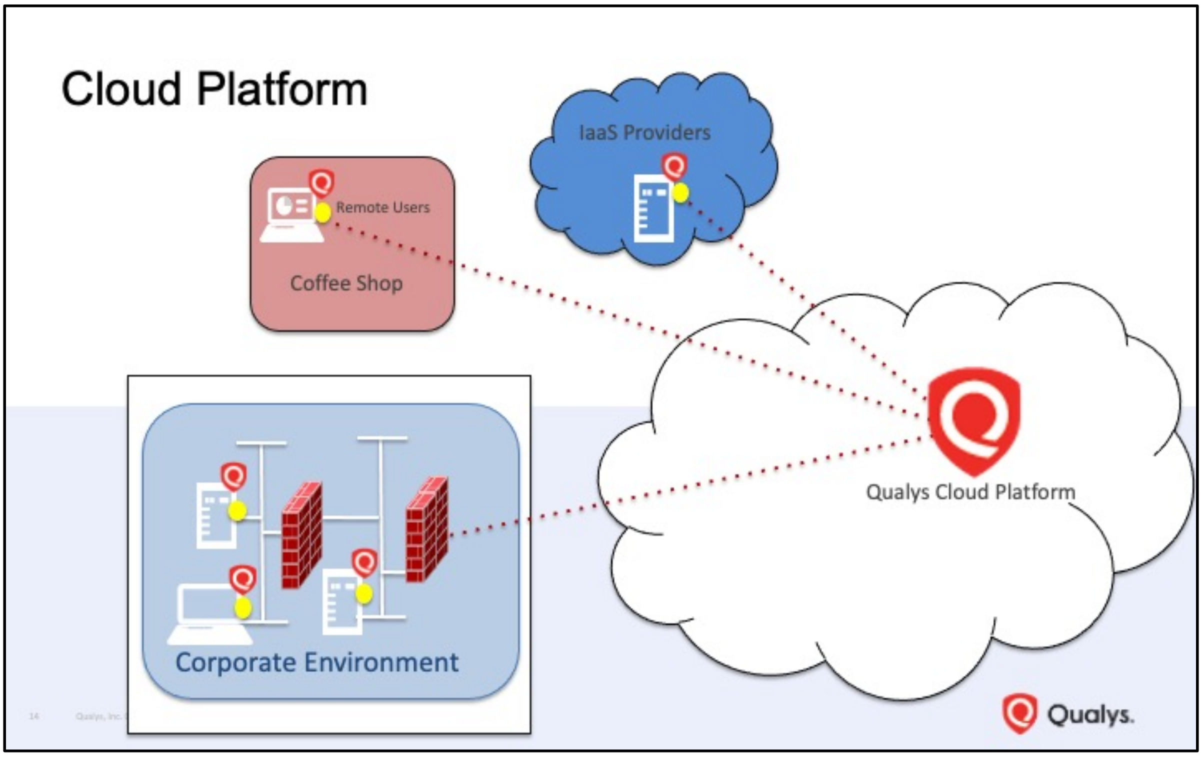
Qualys.

Functioning in the “data collector” role, agents collect everything needed by its activated Qualys application modules. Each agent supported application module identifies tasks to be performed and data to be collected, in a manifest. There are different manifests for each Qualys application module.

By design, the processing of agent data begins only after it is successfully transferred to the Qualys Platform. This helps to minimize the number of resources need by the agent.

Once the initial data “snapshot” has been successfully transferred to the Qualys Platform, all successive data transfers focus exclusively on the things that have changed (deltas).

Data collected by a Qualys Agent is referred to as AGENT data. This contrasts with the data collected by a Qualys Scanner Appliance, which is referred to as SCAN data.



Cloud Platform

IaaS Providers

Remote Users

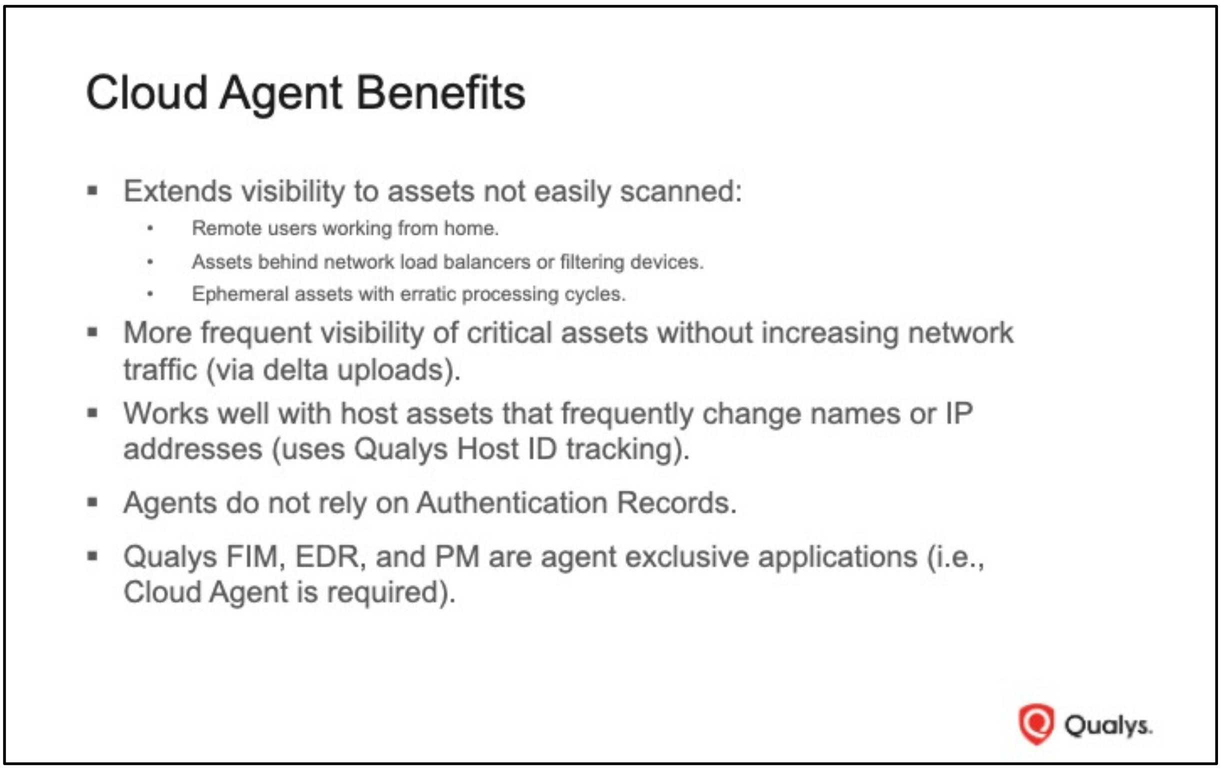
Coffee Shop

Corporate Environment

Qualys Cloud Platform

Qualys.

1. To begin data collection an agent must be installed/deployed to a host.
2. Once the agent has successfully downloaded its application manifest(s), data will be collected to produce a host snapshot.
3. This “snapshot” is then sent to the Qualys Cloud for processing.



Cloud Agent Benefits

- Extends visibility to assets not easily scanned:
  - Remote users working from home.
  - Assets behind network load balancers or filtering devices.
  - Ephemeral assets with erratic processing cycles.
- More frequent visibility of critical assets without increasing network traffic (via delta uploads).
- Works well with host assets that frequently change names or IP addresses (uses Qualys Host ID tracking).
- Agents do not rely on Authentication Records.
- Qualys FIM, EDR, and PM are agent exclusive applications (i.e., Cloud Agent is required).

Qualys.

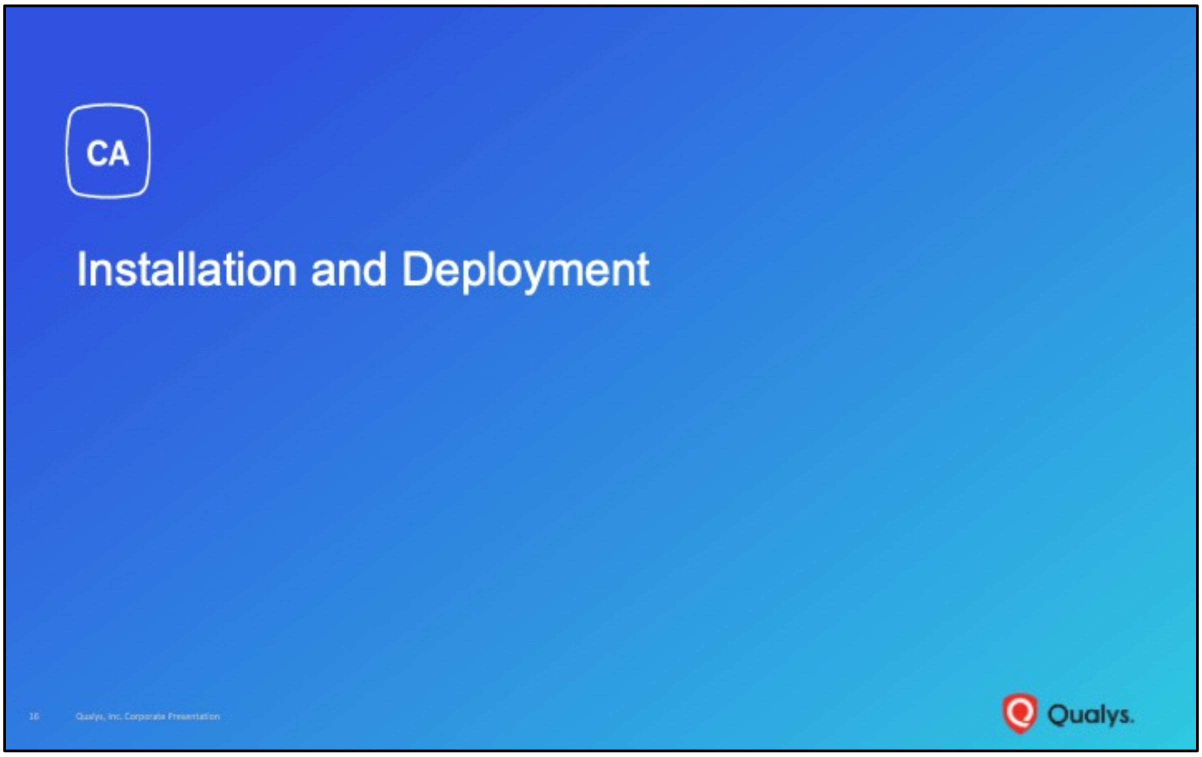
Cloud Agent extends visibility to assets not easily scanned, including roaming devices such as laptops, remote users working from home, ephemeral cloud instances that are not always online, and assets behind network filtering devices or load balancers.

Once the initial data “snapshot” has been successfully transferred to the Qualys Platform, all successive data transfers focus exclusively on the things that have changed (deltas). This can significantly reduce the amount of bandwidth typically consumed by traditional scanner appliances, allowing you to monitor critical hosts more frequently.

By default, agents track findings by the Qualys Host ID, making it ideal for hosts that frequently change names or IP addresses.

Cloud Agent installs as a local service with SYSTEM level privileges and does not require authentication records to access local system data and artifacts.

Cloud Agents are required by the Quays FIM, EDR, and PM applications.



CA

Installation and Deployment

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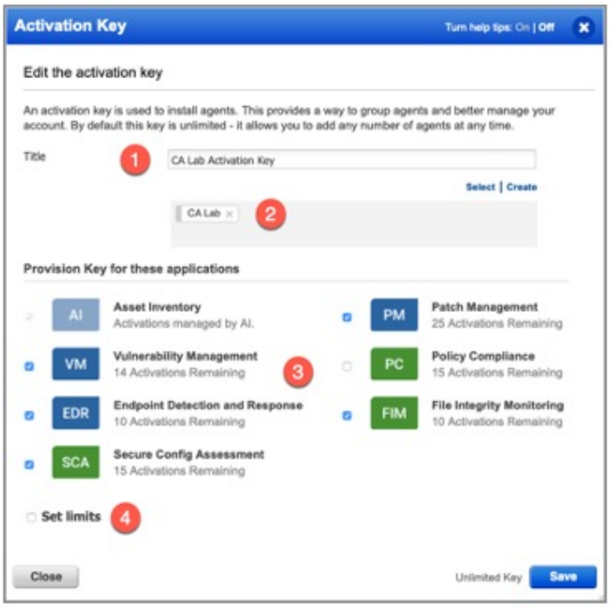
The objectives for this section are:

1. Identify and understand the steps to complete an agent installation.
2. Learn to build an Agent Activation Key and identify its components.
3. Understand the different agent deployment options.
4. Identify the signs of a successful agent installation
5. New MSI Extract Feature

Agent Activation Key

1. Activation Keys allow you to manage and control the distribution of Cloud Agents.
2. Add a ”static” tag to each key to label and track agent hosts deployed.
3. Application modules selected will be activated at agent deployment.
4. Create keys without limits or set limits by maximum number of agents or expiration date.


Activation Key

Turn help tips: On | Off

Edit the activation key

An activation key is used to install agents. This provides a way to group agents and better manage your account. By default this key is unlimited - it allows you to add any number of agents at any time.

Title: CA Lab Activation Key

Select | Create

CA Lab ×

Provision Key for these applications

- ✓ AI Asset Inventory – Activations managed by AI.
- ☑ PM Patch Management – 25 Activations Remaining
- ☑ VM Vulnerability Management – 14 Activations Remaining
- □ PC Policy Compliance – 15 Activations Remaining
- ☑ EDR Endpoint Detection and Response – 10 Activations Remaining
- ☑ FIM File Integrity Monitoring – 10 Activations Remaining
- ☑ SCA Secure Config Assessment – 15 Activations Remaining

□ Set limits

Unlimited Key

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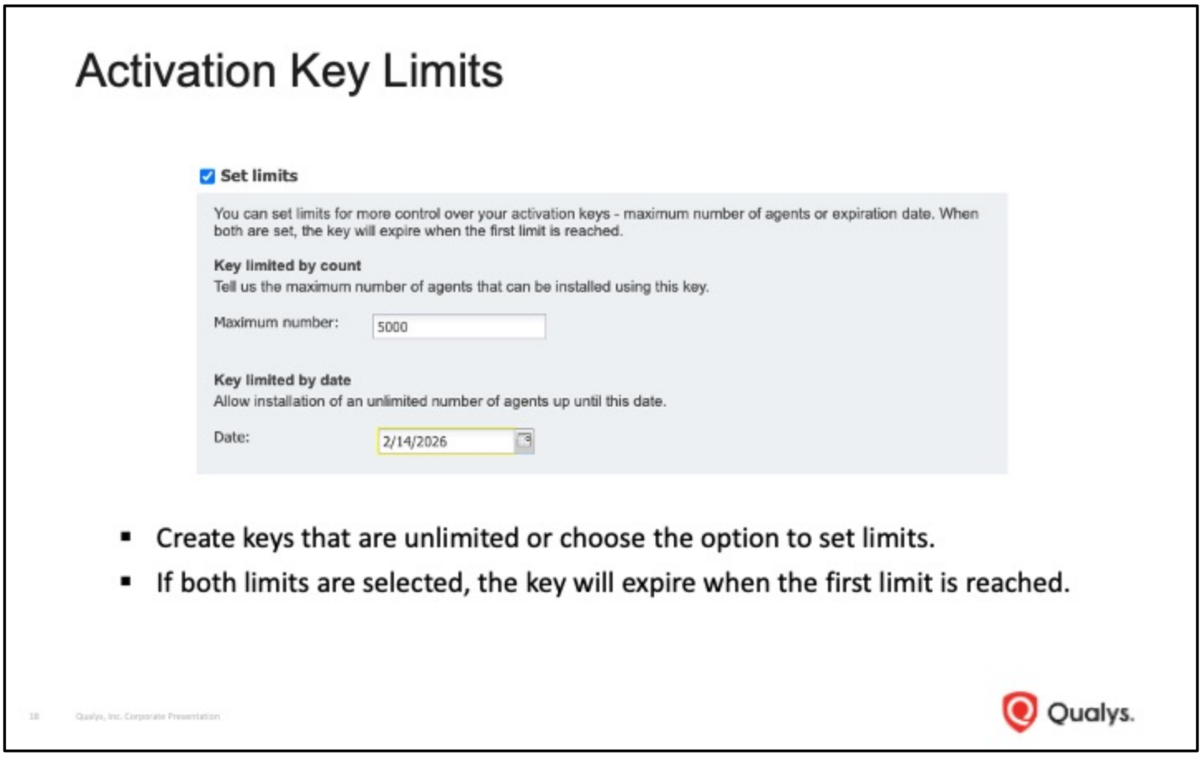
Activations Keys contain the components to successfully deploy agents. You must first create one or more Activation Keys, before installing an agent.

Qualys recommends adding a ”static” tag to an Activation Key, to easily identify the assets it deploys.

Any application module selected in the key will be activated at the time of deployment. Application modules not selected can always be activated later (after deployment).

Options are available to limit the number of agents deployed with any key.



Activation Key Limits

☑ **Set limits**

You can set limits for more control over your activation keys - maximum number of agents or expiration date. When both are set, the key will expire when the first limit is reached.

Key limited by count

Tell us the maximum number of agents that can be installed using this key.

Maximum number: 5000

Key limited by date

Allow installation of an unlimited number of agents up until this date.

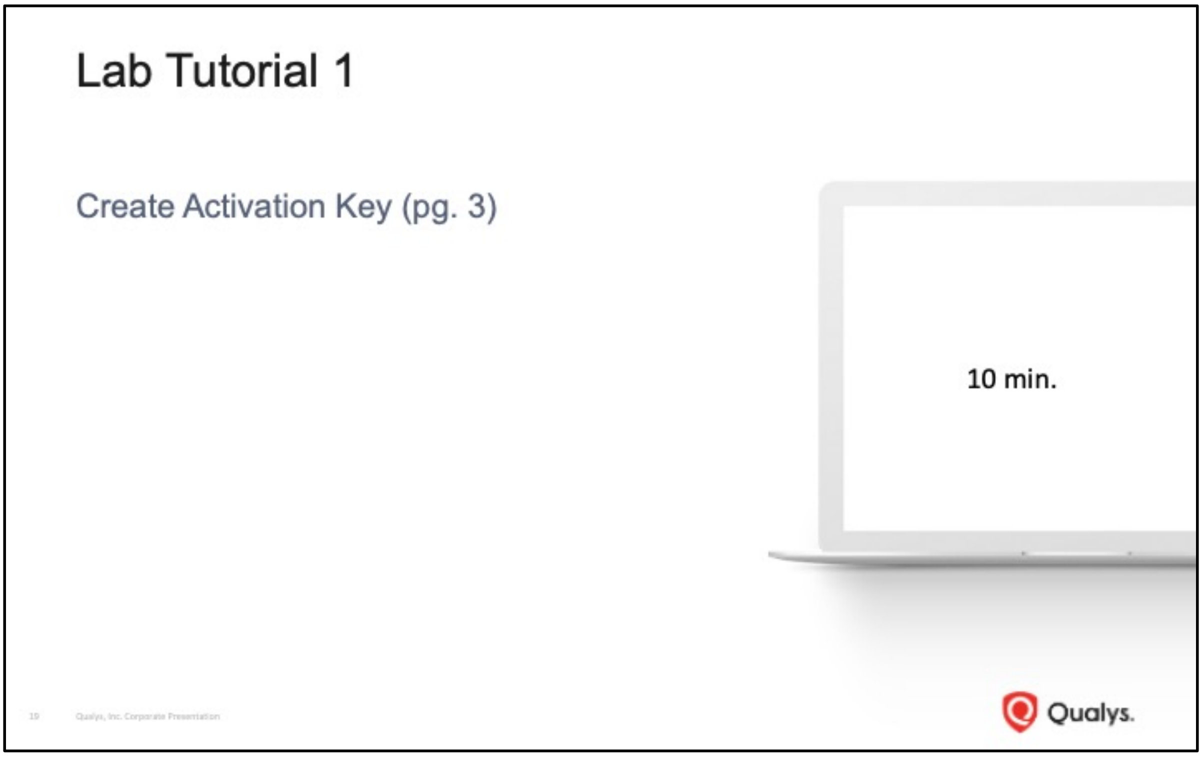
Date: 2/14/2026

- Create keys that are unlimited or choose the option to set limits.
- If both limits are selected, the key will expire when the first limit is reached.

An Activation Key can deploy an unlimited number of agents, or you can set limits.

1. Specify the maximum number of agents deployed with a key.
2. Specify an expiration date for the key

If both limits are selected, the key will expire when the first limit is reached.



Lab Tutorial 1

Create Activation Key (pg. 3)

10 min.

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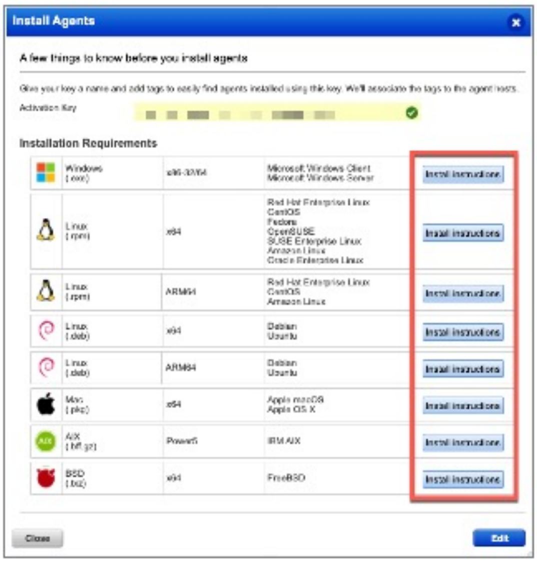
1. Create CA Lab Activation Key
2. Create and add a static tag (CA Lab) to key
3. Add application modules to key
4. No restrictions or limits
5. Generate key

Install Agents



A few things to know before you install agents

Give your key a name and add tags to easily find agents installed using this key. We'll associate the tags to the agent hosts.

Activation Key [redacted]

Installation Requirements

	Windows (.exe)	x86-32/64	Microsoft Windows Client Microsoft Windows Server	Install instructions
	Linux (.rpm)	x64	Red Hat Enterprise Linux CentOS Fedora OpenSUSE SUSE Enterprise Linux Amazon Linux Oracle Enterprise Linux	Install instructions
	Linux (.rpm)	ARM64	Red Hat Enterprise Linux CentOS Amazon Linux	Install instructions
	Linux (.deb)	x64	Debian Ubuntu	Install instructions
	Linux (.deb)	ARM64	Debian Ubuntu	Install instructions
	Mac (.pkg)	x64	Apple macOS Apple OS X	Install instructions
AIX	AIX (.bff.gz)	Power5	IBM AIX	Install instructions
	BSD (.txz)	x64	FreeBSD	Install instructions

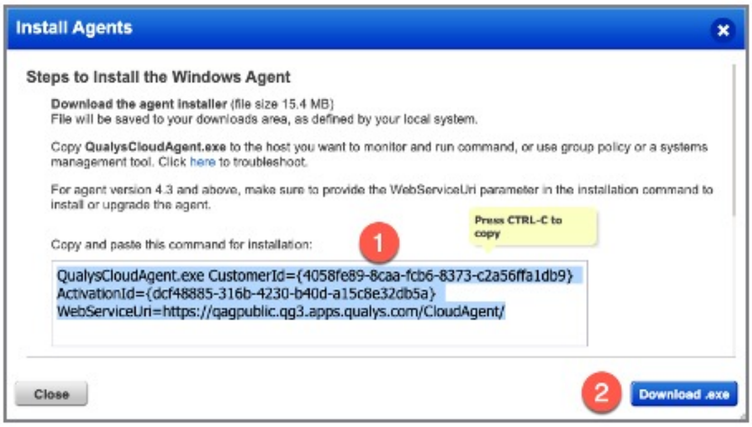
- Select the "Install Agent" option from the Quick Actions menu of any Activation Key.
- Each Activation Key contains installation instructions for agent supported operating systems.
- Click "Install Instructions" for any OS, to view its instructions and download the agent installation components.

Qualys.

To acquire the installation instructions and artifacts for an Activation Key, open its "Quick Actions" menu and select Install Agent.

Click "Install Instructions" for any OS, to view its instructions and download its agent installation components.

Installation Components



Install Agents

Steps to Install the Windows Agent

Download the agent installer (file size 15.4 MB)
File will be saved to your downloads area, as defined by your local system.

Copy **QualysCloudAgent.exe** to the host you want to monitor and run command, or use group policy or a systems management tool. Click here to troubleshoot.

For agent version 4.3 and above, make sure to provide the WebServiceUri parameter in the installation command to install or upgrade the agent.

Copy and paste this command for installation:

```
QualysCloudAgent.exe CustomerId={4058fe89-8caa-fcb6-8373-c2a56ffa1db9}
ActivationId={dcf48885-316b-4230-b40d-a15c8e32db5a}
WebServiceUri=https://qagpublic.qg3.apps.qualys.com/CloudAgent/
```

- Run the agent installer on a target host, using the provided installation command.

1. Agent installation command
2. Agent installer (.exe, .rpm, .deb, .pkg)

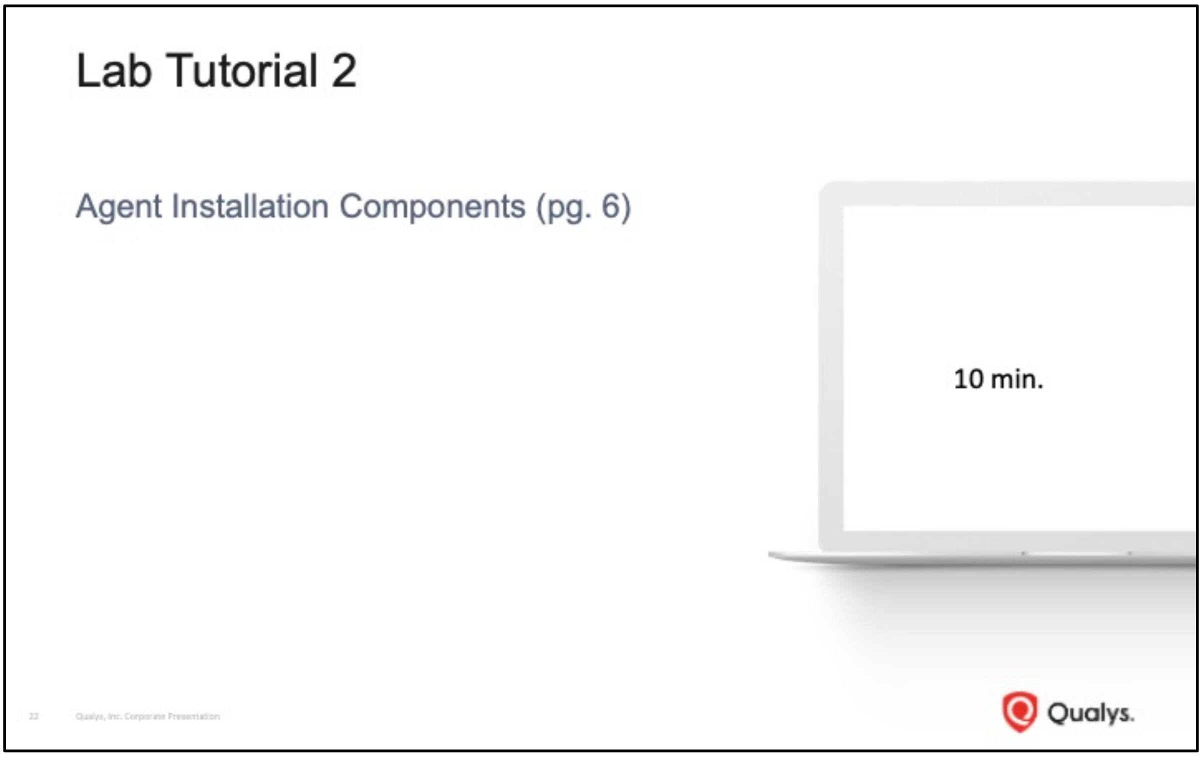
- When using third-party applications to build custom deployment packages, these two components should be included.

Qualys.

The primary agent installation components include:

1. Agent installation command
2. Agent installer

These two components must be included in your installation packages



Lab Tutorial 2

Agent Installation Components (pg. 6)

10 min.

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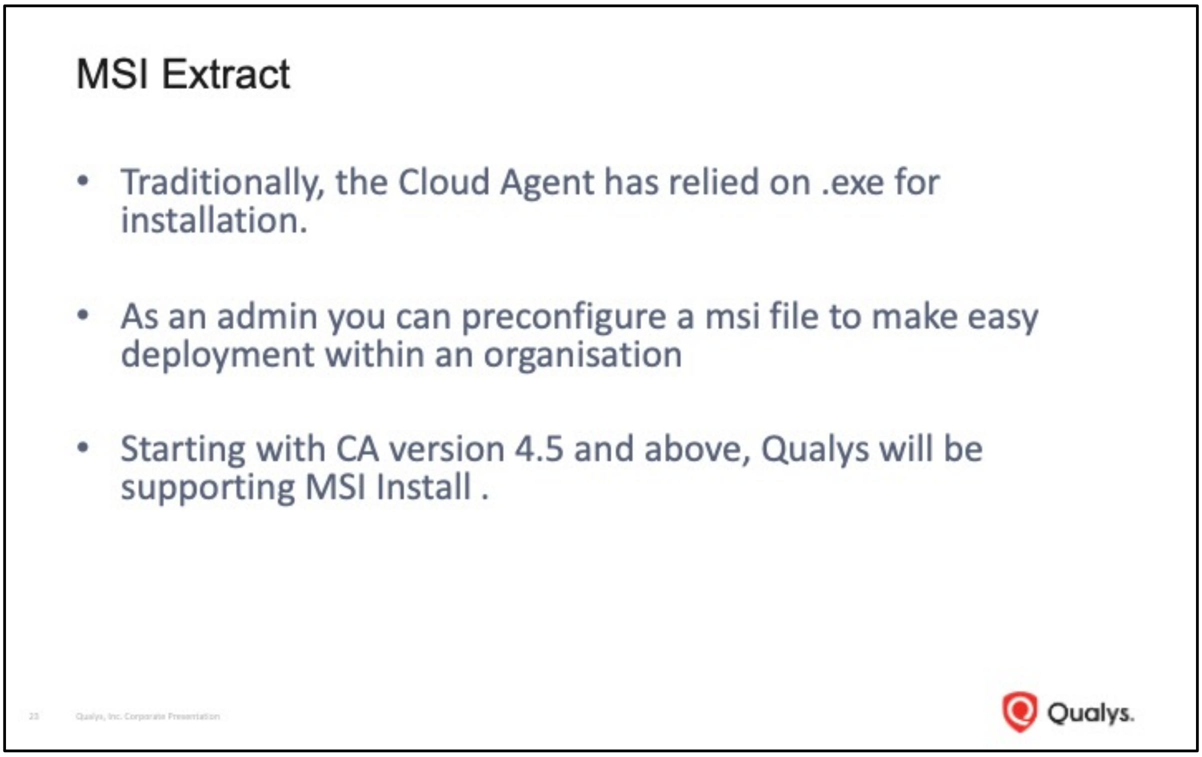
1. Download installation components for Windows agent
2. Use CA Lab Activation Key to install agent
3. Download agent installer
4. Copy installation command



MSI Extract

- Traditionally, the Cloud Agent has relied on .exe for installation.
- As an admin you can preconfigure a msi file to make easy deployment within an organisation
- Starting with CA version 4.5 and above, Qualys will be supporting MSI Install .

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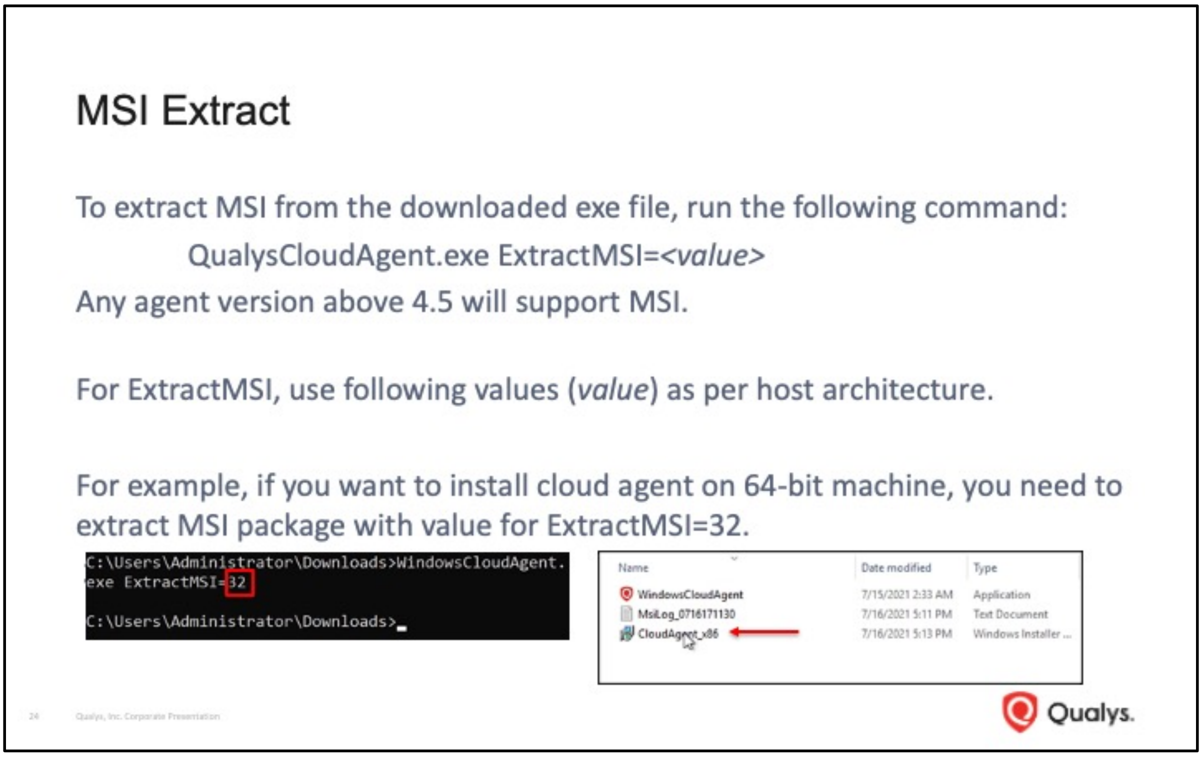
Use Case for MSI:

- It's relative easy to make a tree of msi files, and as an admin you can preconfigure a msi file to make easy deployment within an organisation
- You might want more precise control over how the installation is managed. An MSI has very specific rules about how it manages the installations, including installing, upgrading, and uninstalling.

From the high-level user's perspective, the new setup is an exe containing the setup components to install Qualys agent on the target machine. The exe contains two MSIs – one for 32-bit machines, and another one for 64-bit machines. The exe would extract the correct MSI and invoke the MSI engine to begin the installation process. The exe can also be instructed to only extract the MSI/MSI(s).



MSI Extract

To extract MSI from the downloaded exe file, run the following command:

QualysCloudAgent.exe ExtractMSI=<*value*>

Any agent version above 4.5 will support MSI.

For ExtractMSI, use following values (*value*) as per host architecture.

For example, if you want to install cloud agent on 64-bit machine, you need to extract MSI package with value for ExtractMSI=32.

```
C:\Users\Administrator\Downloads>WindowsCloudAgent.
exe ExtractMSI=32

C:\Users\Administrator\Downloads>_
```

Name	Date modified	Type
WindowsCloudAgent	7/15/2021 2:33 AM	Application
MsiLog_0716171130	7/16/2021 5:11 PM	Text Document
CloudAgent_x86	7/16/2021 5:13 PM	Windows Installer ...

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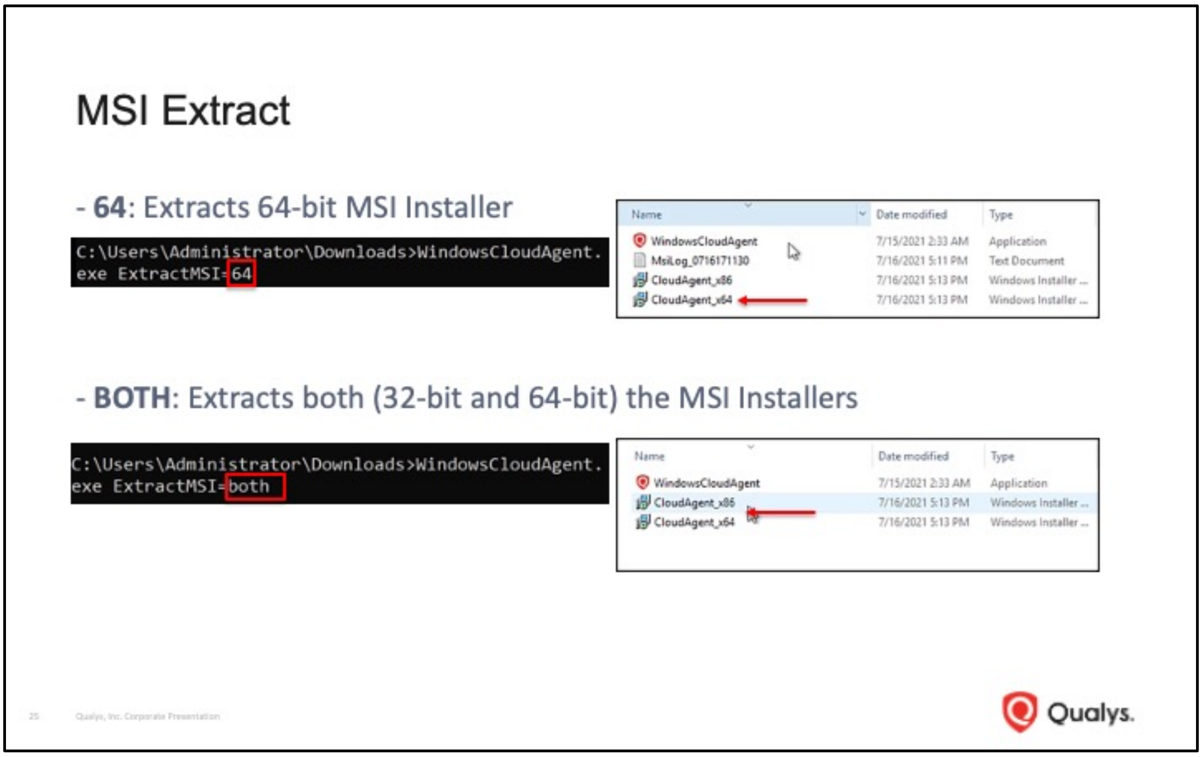
Qualys.

To extract MSI from the downloaded exe file, run the following command:
QualysCloudAgent.exe ExtractMSI=<*value*>
For ExtractMSI, use following values (*value*) as per host architecture.
For example, if you want to install cloud agent on 64-bit machine, you need to extract MSI package with value for ExtractMSI=64.

- **32**: Extracts 32-bit MSI Installer
- **64**: Extracts 64-bit MSI Installer
- **BOTH**: Extracts both (32-bit and 64-bit) the MSI Installers
- **AUTO**: Extracts the appropriate MSI based on the OS architecture. It extracts 32-bit MSI on a 32-bit machine and 64-bit MSI on a 64-bit machine



MSI Extract

- **64**: Extracts 64-bit MSI Installer

```
C:\Users\Administrator\Downloads>WindowsCloudAgent.
exe ExtractMSI=64
```

```
Name                     Date modified          Type
WindowsCloudAgent        7/15/2021 2:33 AM      Application
MsiLog_0716171130        7/16/2021 5:11 PM      Text Document
CloudAgent_x86           7/16/2021 5:13 PM      Windows Installer ...
CloudAgent_x64           7/16/2021 5:13 PM      Windows Installer ...
```

- **BOTH**: Extracts both (32-bit and 64-bit) the MSI Installers

```
C:\Users\Administrator\Downloads>WindowsCloudAgent.
exe ExtractMSI=both
```

```
Name                     Date modified          Type
WindowsCloudAgent        7/15/2021 2:33 AM      Application
CloudAgent_x86           7/16/2021 5:13 PM      Windows Installer ...
CloudAgent_x64           7/16/2021 5:13 PM      Windows Installer ...
```

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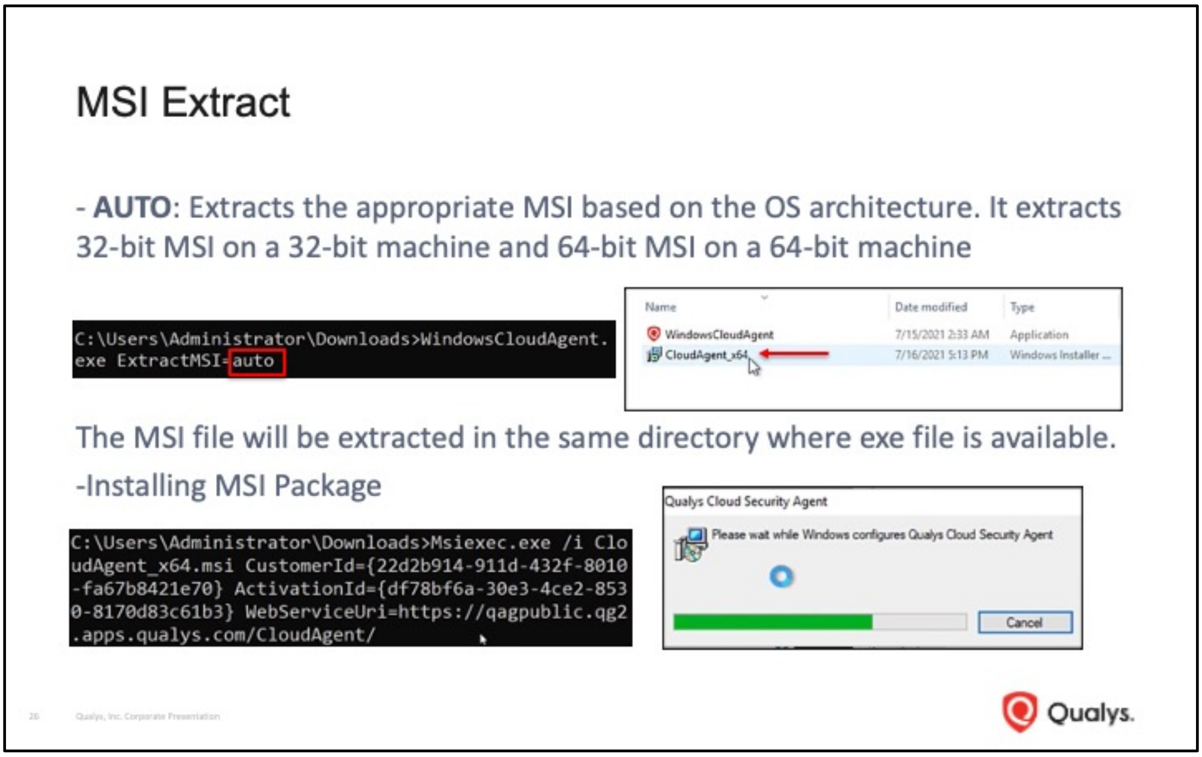
To extract MSI from the downloaded exe file, run the following command:
QualysCloudAgent.exe ExtractMSI=<*value*>
For ExtractMSI, use following values (*value*) as per host architecture.
For example, if you want to install cloud agent on 64-bit machine, you need to extract MSI package with value for ExtractMSI=64.

- **32**: Extracts 32-bit MSI Installer
- **64**: Extracts 64-bit MSI Installer
- **BOTH**: Extracts both (32-bit and 64-bit) the MSI Installers
- **AUTO**: Extracts the appropriate MSI based on the OS architecture. It extracts 32-bit MSI on a 32-bit machine and 64-bit MSI on a 64-bit machine



MSI Extract

- **AUTO**: Extracts the appropriate MSI based on the OS architecture. It extracts 32-bit MSI on a 32-bit machine and 64-bit MSI on a 64-bit machine

```
C:\Users\Administrator\Downloads>WindowsCloudAgent.
exe ExtractMSI=auto
```

Name	Date modified	Type
WindowsCloudAgent	7/15/2021 2:33 AM	Application
CloudAgent_x64	7/16/2021 5:13 PM	Windows Installer ...

The MSI file will be extracted in the same directory where exe file is available.

-Installing MSI Package

```
C:\Users\Administrator\Downloads>Msiexec.exe /i Clo
udAgent_x64.msi CustomerId={22d2b914-911d-432f-8010
-fa67b8421e70} ActivationId={df78bf6a-30e3-4ce2-853
0-8170d83c61b3} WebServiceUri=https://qagpublic.qg2
.apps.qualys.com/CloudAgent/
```

Qualys Cloud Security Agent

Please wait while Windows configures Qualys Cloud Security Agent

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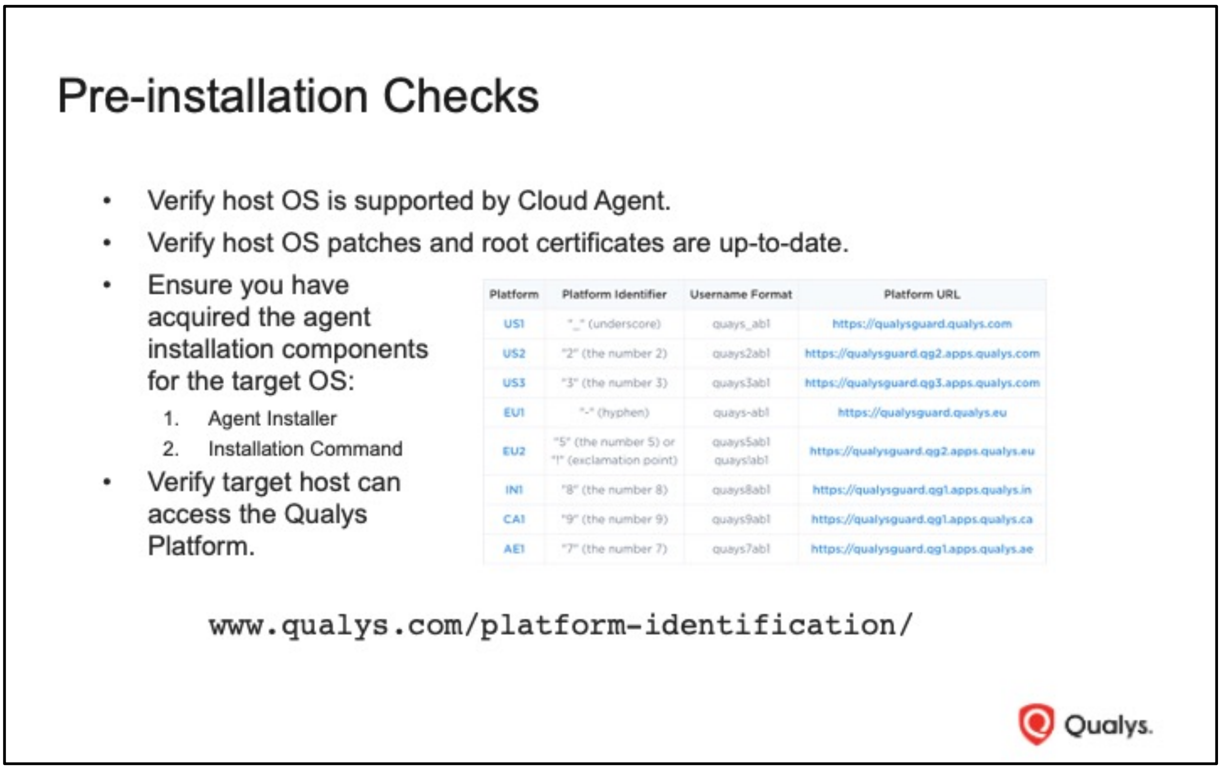
Copy the Qualys Cloud Agent installer onto the host where you want to install the agent, and run the command or use a systems management tool to install the agent as per your organization's standard process to install software. Following is the sample command for installing MSI package for 32-bit installer:
Msiexec.exe /i CloudAgent_x86.msi CustomerId={12345678-1234-1234- 1234-123456789012} ActivationId={12345678-1234-1234-1234- 123456789012}
Here CloudAgent_x86.msi is extracted MSI file for 32-bit installer.



Pre-installation Checks

- Verify host OS is supported by Cloud Agent.
- Verify host OS patches and root certificates are up-to-date.
- Ensure you have acquired the agent installation components for the target OS:
  1. Agent Installer
  2. Installation Command
- Verify target host can access the Qualys Platform.

Platform	Platform Identifier	Username Format	Platform URL
US1	"_" (underscore)	quays_ab1	https://qualysguard.qualys.com
US2	"2" (the number 2)	quays2ab1	https://qualysguard.qg2.apps.qualys.com
US3	"3" (the number 3)	quays3ab1	https://qualysguard.qg3.apps.qualys.com
EU1	"-" (hyphen)	quays-ab1	https://qualysguard.qualys.eu
EU2	"5" (the number 5) or "!" (exclamation point)	quays5ab1 quays!ab1	https://qualysguard.qg2.apps.qualys.eu
IN1	"8" (the number 8)	quays8ab1	https://qualysguard.qg1.apps.qualys.in
CA1	"9" (the number 9)	quays9ab1	https://qualysguard.qg1.apps.qualys.ca
AE1	"7" (the number 7)	quays7ab1	https://qualysguard.qg1.apps.qualys.ae

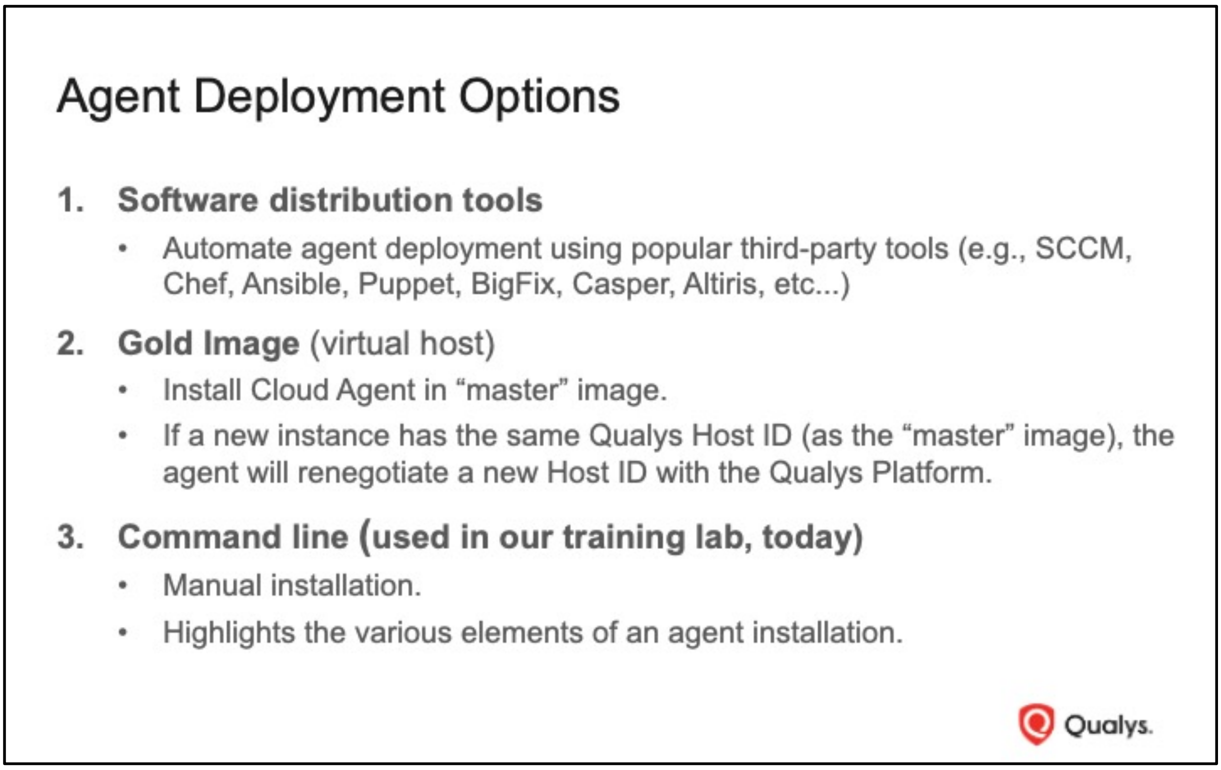
`www.qualys.com/platform-identification/`

Before attempting to install or deploy agents, ensure the target OS is supported by Cloud Agent and that you have acquired the correct installation components.

Next, you want to verify you have connectivity between each target host and the Qualys Cloud Platform. There are test URLs for each public platform. Add these URLs to agent deployment packages (SCCM, BigFix, etc.) to test for successful connectivity, before installing the Cloud Agent.

Its a good idea to update OS patches and root certificates (on target hosts) before installing Cloud Agent.

Starting with the Windows 1.6.0 agent version, the agent and installers are signed with an Extended Validation (EV) code-signing certificate. This requires the OS to validate the signed executables using certificates from the trusted root CA. You will encounter errors in the agent log file, if the appropriate root certificates are not installed.



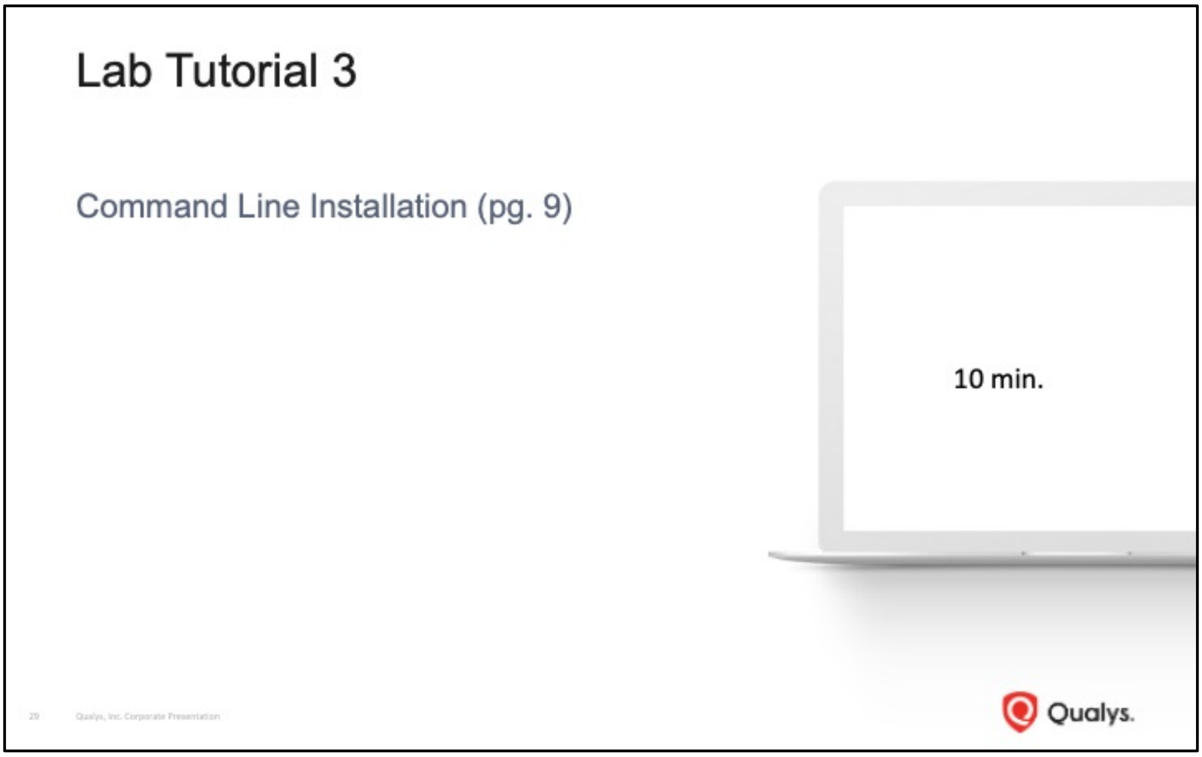
Agent Deployment Options

1. **Software distribution tools**
   - Automate agent deployment using popular third-party tools (e.g., SCCM, Chef, Ansible, Puppet, BigFix, Casper, Altiris, etc...)
2. **Gold Image** (virtual host)
   - Install Cloud Agent in “master” image.
   - If a new instance has the same Qualys Host ID (as the “master” image), the agent will renegotiate a new Host ID with the Qualys Platform.
3. **Command line (used in our training lab, today)**
   - Manual installation.
   - Highlights the various elements of an agent installation.

Use third-party software management and distribution applications to perform large scale agent deployments.

You can also install the agent in a master or gold image. Each new instance created from the master image may potentially have the same Qualys Host ID as the “master” image. In this case, the agent will renegotiate its UUID with the Qualys Cloud Platform.

In this course you will manually install an agent from the command line. This will help to highlight the different components required for an agent installation.



Lab Tutorial 3

Command Line Installation (pg. 9)

10 min.

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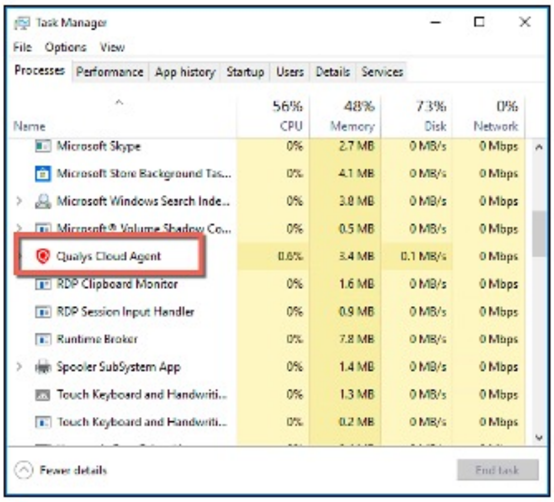
1. Agent installer and installation command have been downloaded to Windows host
2. Verify the presence of the agent installer and execute the installation command
3. Open Task Manager and verify Qualys Cloud Agent process is running
4. Navigate to \ProgramData\Qualys\QualysAgent and display the contents of Log.txt

Verify Agent Installation

Qualys Cloud Agent Process



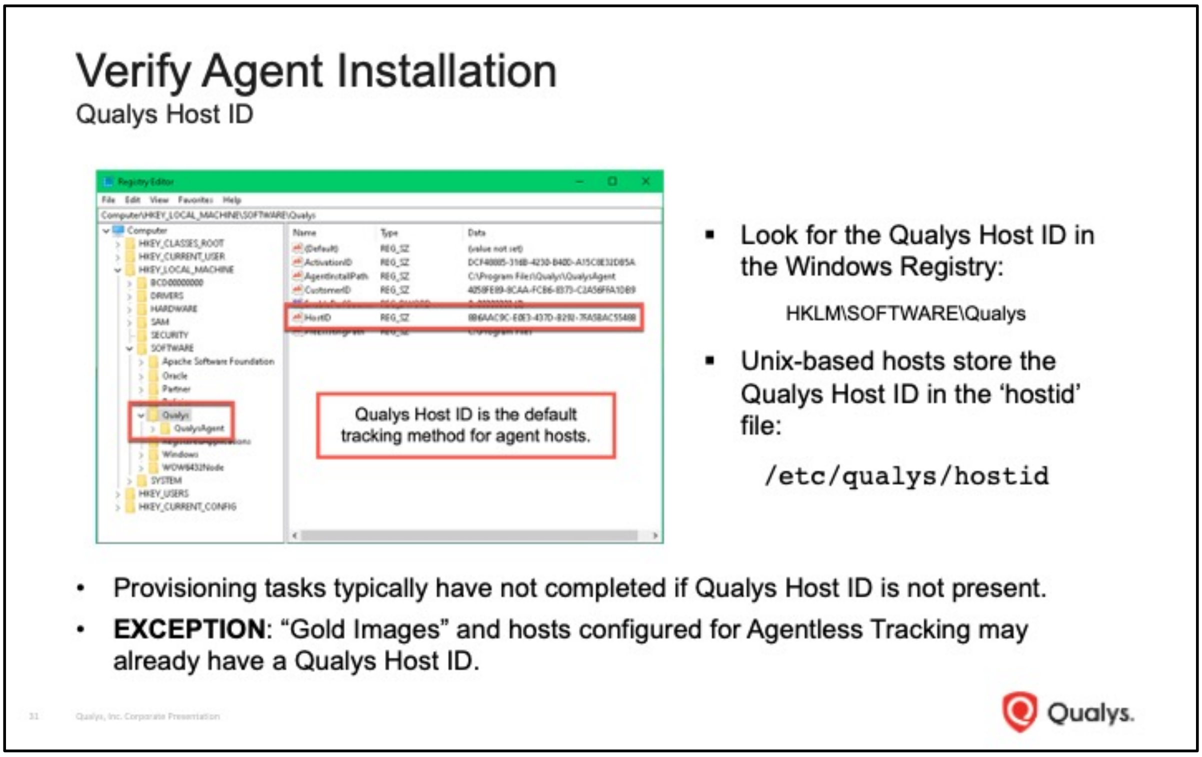
Task Manager
File Options View
Processes Performance App history Startup Users Details Services

Name	56% CPU	48% Memory	73% Disk	0% Network
Microsoft Skype	0%	2.7 MB	0 MB/s	0 Mbps
Microsoft Store Background Tas...	0%	4.1 MB	0 MB/s	0 Mbps
Microsoft Windows Search Inde...	0%	3.8 MB	0 MB/s	0 Mbps
Microsoft® Volume Shadow Co...	0%	0.5 MB	0 MB/s	0 Mbps
Qualys Cloud Agent	0.6%	3.4 MB	0.1 MB/s	0 Mbps
RDP Clipboard Monitor	0%	1.6 MB	0 MB/s	0 Mbps
RDP Session Input Handler	0%	0.9 MB	0 MB/s	0 Mbps
Runtime Broker	0%	7.8 MB	0 MB/s	0 Mbps
Spooler SubSystem App	0%	1.4 MB	0 MB/s	0 Mbps
Touch Keyboard and Handwriti...	0%	1.3 MB	0 MB/s	0 Mbps
Touch Keyboard and Handwriti...	0%	0.2 MB	0 MB/s	0 Mbps

- Look for the Qualys Cloud Agent process in Windows Task Manager.
- List running processes on a Unix-based host:

```
ps –e | grep qualys
```

Following a successful agent installation, the Qualys Cloud Agent process will appear in Windows Task Manager. View a list of running processes on a Unix or Linux host to view the Cloud Agent process (i.e., qualys-cloud-ag).



Verify Agent Installation

Qualys Host ID

Name	Type	Data
(Default)	REG_SZ	(value not set)
ActivationID	REG_SZ	DCF40885-316B-4230-B40D-A15C0E32D85A
AgentInstallPath	REG_SZ	C:\Program Files\Qualys\QualysAgent
CustomerID	REG_SZ	4058FE89-8CAA-FCB6-8373-C2A56FFA10B9
HostID	REG_SZ	0B6AAC9C-E0E3-437D-8292-7FA5BAC5548B

Qualys Host ID is the default tracking method for agent hosts.

- Look for the Qualys Host ID in the Windows Registry:

  HKLM\SOFTWARE\Qualys

- Unix-based hosts store the Qualys Host ID in the 'hostid' file:

  `/etc/qualys/hostid`

- Provisioning tasks typically have not completed if Qualys Host ID is not present.
- **EXCEPTION**: "Gold Images" and hosts configured for Agentless Tracking may already have a Qualys Host ID.

The presence of a Qualys Host ID is a good indicator that the agent has successfully contacted the Qualys Cloud Platform. On Windows hosts the Host ID can be found under the Qualys registry key. On a Unix or Linux host the Host ID is stored in a plain text file (/etc/qualys/hostid).

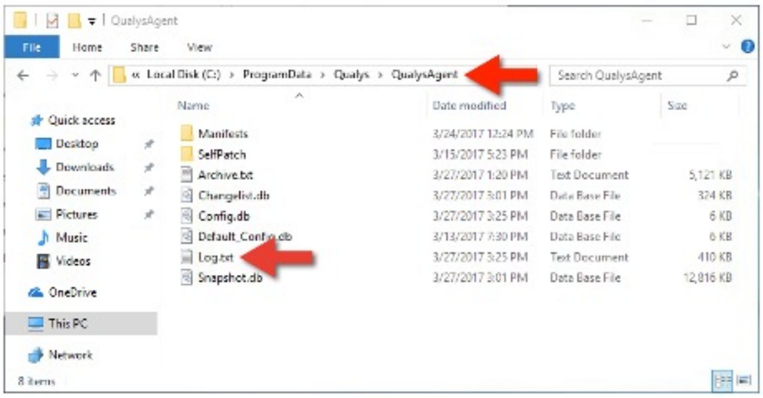
If an agent host has not acquired its Host ID, provisioning may still be in-progress or the agent was unsuccessful in contacting the Qualys Cloud Platform.

NOTE: Virtual hosts (created from a gold or master) image may potentially already have a Qualys Host ID. We'll examine a couple of solutions to this challenge, in the "Provisioning" discussion, later.

If the "Agentless Tracking" feature is enabled in Qualys VM, VMDR, or PC, a host may have already received Its Qualys Host ID, before an agent is installed. In this case, the agent will simply use the Qualys Host ID provisioned by the Agentless Tracking feature. For more information on the "Agentless Tracking" feature, please see the Qualys "Scanning Strategies & Best Practices" and "Reporting Strategies & Best Practices" training courses.

Verify Agent Installation

Cloud Agent Log File



Name	Date modified	Type	Size
Manifests	3/24/2017 12:24 PM	File folder	
SelfPatch	3/15/2017 5:23 PM	File folder	
Archive.txt	3/27/2017 1:20 PM	Text Document	5,121 KB
Changelist.db	3/27/2017 3:01 PM	Data Base File	324 KB
Config.db	3/27/2017 3:25 PM	Data Base File	6 KB
Default_Config.db	3/13/2017 7:30 PM	Data Base File	6 KB
Log.txt	3/27/2017 3:25 PM	Text Document	410 KB
Snapshot.db	3/27/2017 3:01 PM	Data Base File	12,816 KB

- **Windows**: `\ProgramData\Qualys\QualysAgent\Log.txt`
- **Unix**: `/var/log/qualys/qualys-cloud-agent.log`

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Qualys.

Searching the CA log file will reveal agent connection attempts that are successful (return code 2xx) and unsuccessful (return code 4xx, 5xx). It is best to search the end of the CA log file for the most recent connections attempts.

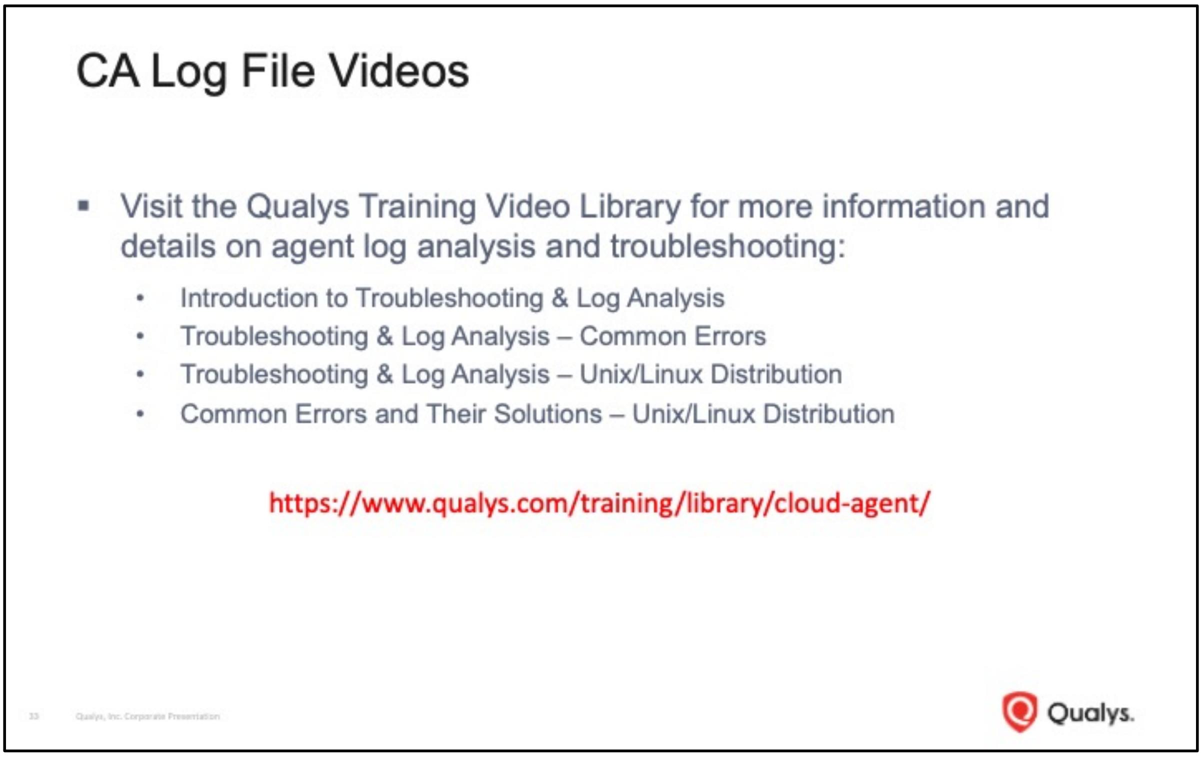
On a Linux host search for the character string “Http request.” On a Windows host search for the character string “Http status.”

HTTP Status Codes:
1xx **Informational**.
2xx Success. ...
3xx Redirection. ...
4xx **Client Error**. ...
5xx **Server Error**.

Members of the Qualys Technical Support team will typically request a copy of your agent log file, when working on agent support calls:

- Unix/Linux: var/log/qualys/qualys-cloud-agent.log
- Windows: \ProgramData\Qualys\QualysAgent\Log.txt

See Lab Appendix D, to learn about the information that is useful when working with the Qualys Technical Support Team.



CA Log File Videos

- Visit the Qualys Training Video Library for more information and details on agent log analysis and troubleshooting:
  - Introduction to Troubleshooting & Log Analysis
  - Troubleshooting & Log Analysis – Common Errors
  - Troubleshooting & Log Analysis – Unix/Linux Distribution
  - Common Errors and Their Solutions – Unix/Linux Distribution

https://www.qualys.com/training/library/cloud-agent/

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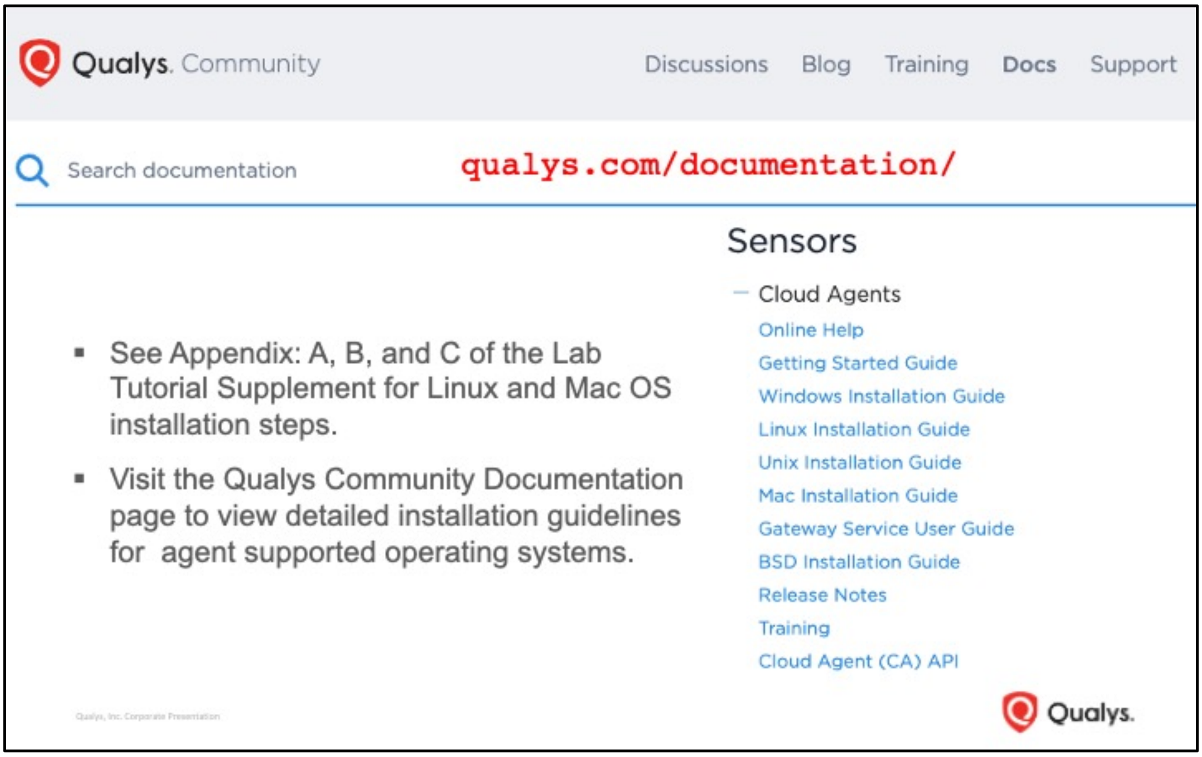
- Introduction to Cloud Agent Log Analysis - https://vimeo.com/412764672
- Cloud Agent Troubleshooting – Common Errors - https://vimeo.com/412762742
- Cloud Agent Log Analysis – Unix/Linux Distribution - https://vimeo.com/418215691
- Common Errors and Their Solutions – Unix/Linux Distribution - https://vimeo.com/418218290



qualys.com/documentation/

- See Appendix: A, B, and C of the Lab Tutorial Supplement for Linux and Mac OS installation steps.
- Visit the Qualys Community Documentation page to view detailed installation guidelines for agent supported operating systems.

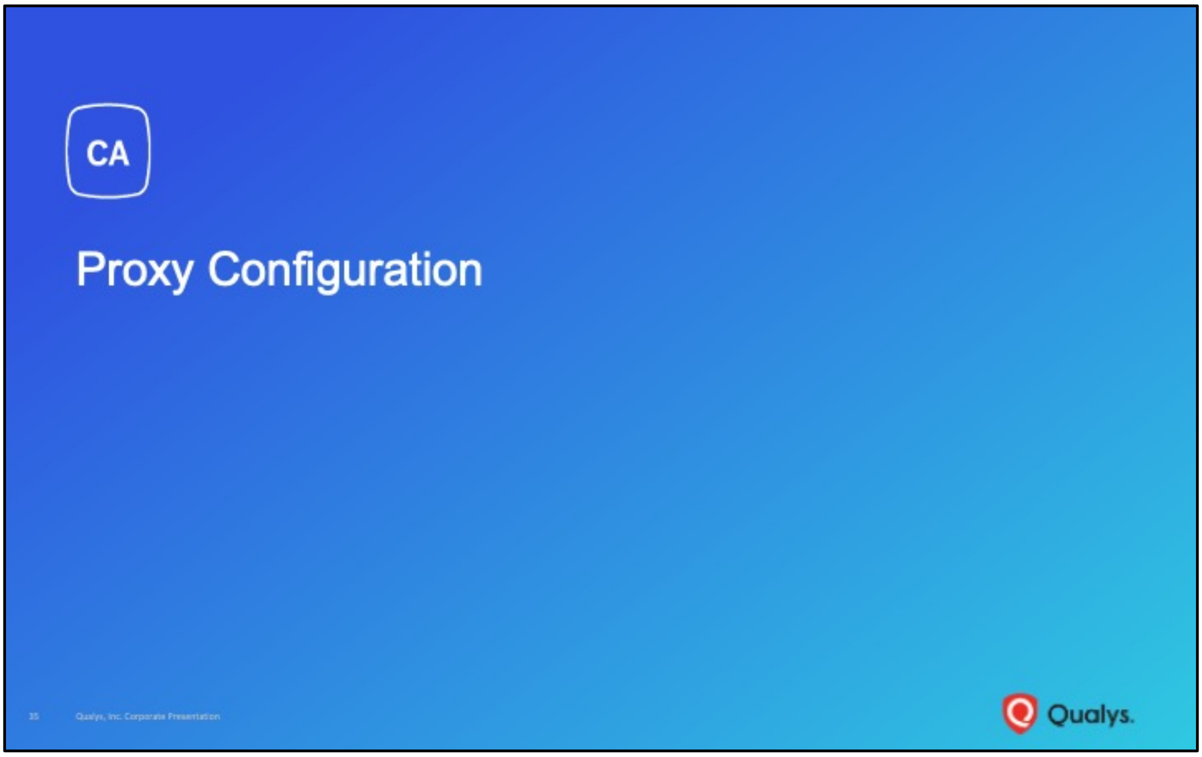
Sensors

— Cloud Agents

- Online Help
- Getting Started Guide
- Windows Installation Guide
- Linux Installation Guide
- Unix Installation Guide
- Mac Installation Guide
- Gateway Service User Guide
- BSD Installation Guide
- Release Notes
- Training
- Cloud Agent (CA) API

While the lab tutorials in this course illustrate a Windows agent installation, you'll find Linux and Mac OS examples in Appendix A, B, and C of the Cloud Agent Lab Tutorial Supplement.

For the most current agent installation information, consult the Agent OS Installation Guides found on the Qualys Community (qualys.com/documentation).



CA

Proxy Configuration

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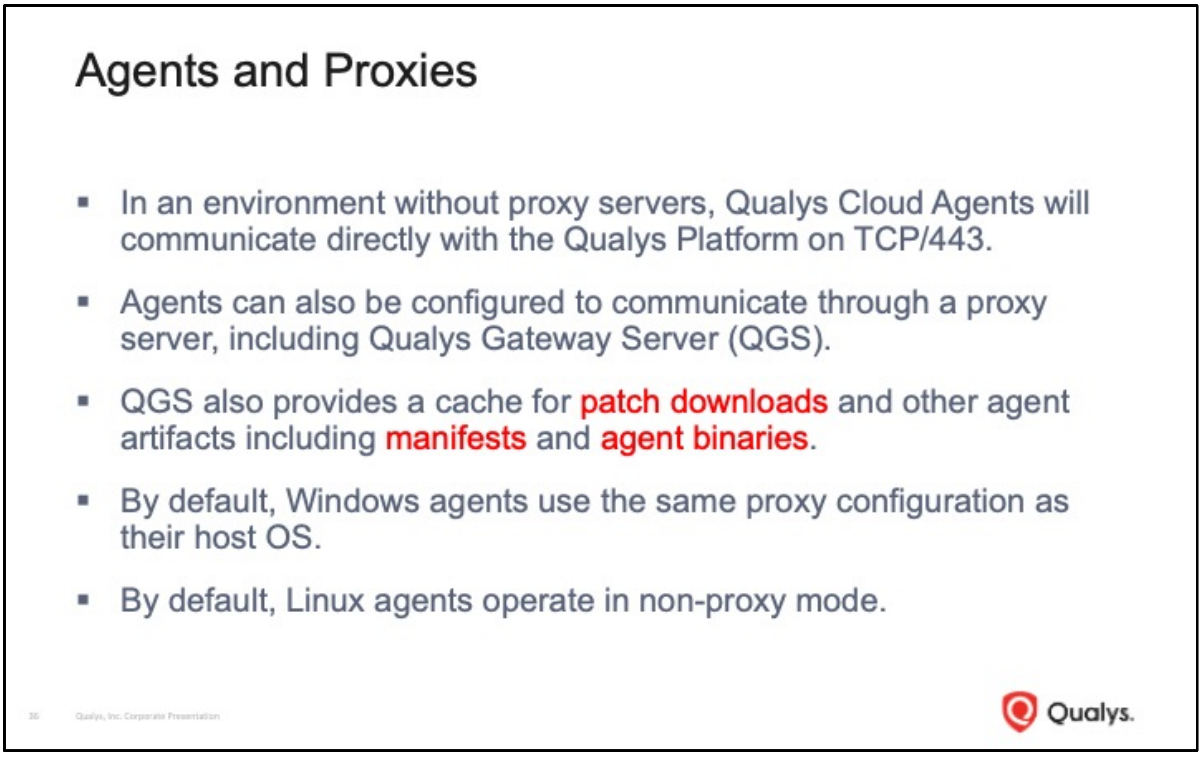
Qualys.

The objectives of this section are:

1. Outline the need for proxy servers or Qualys Gateway Servers.
2. Provide a comparison of Windows and Linux proxy options.

See “Proxy Configuration” in the lab tutorial supplement for this course for more proxy configuration details.



Agents and Proxies

- In an environment without proxy servers, Qualys Cloud Agents will communicate directly with the Qualys Platform on TCP/443.
- Agents can also be configured to communicate through a proxy server, including Qualys Gateway Server (QGS).
- QGS also provides a cache for **patch downloads** and other agent artifacts including **manifests** and **agent binaries**.
- By default, Windows agents use the same proxy configuration as their host OS.
- By default, Linux agents operate in non-proxy mode.

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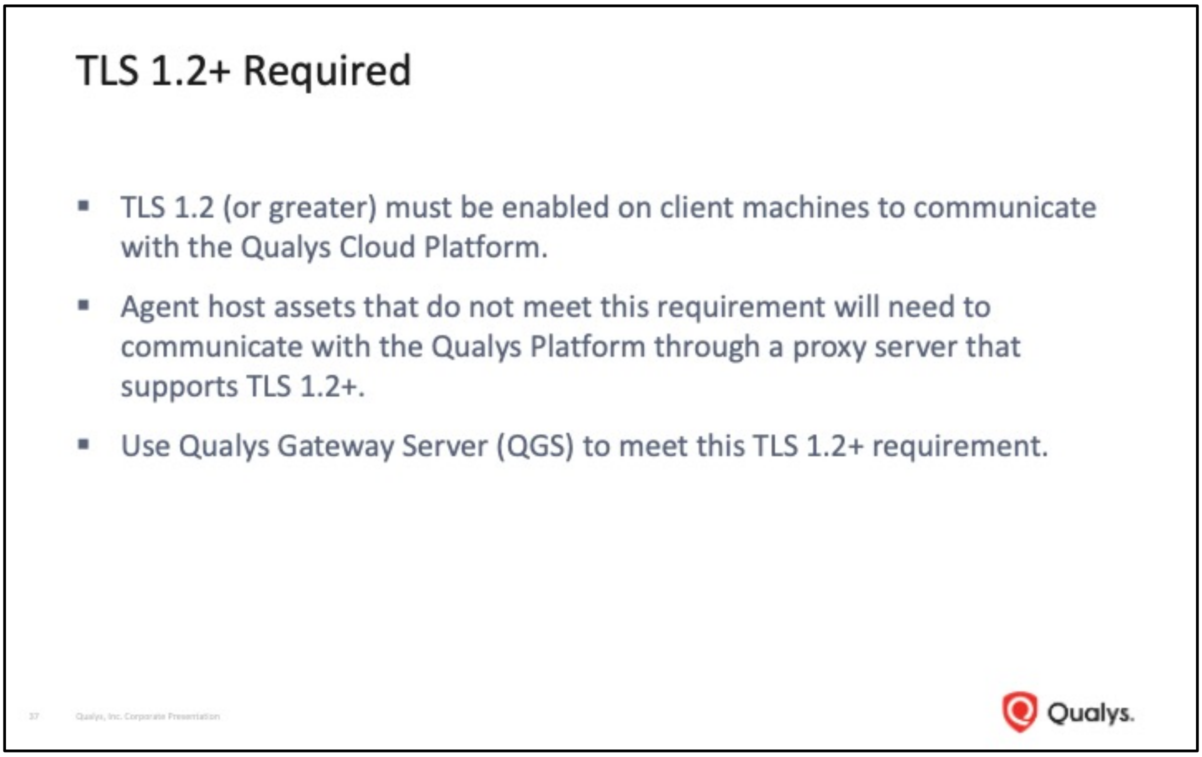
Qualys.

In an environment without proxy servers, Qualys Cloud Agents will communicate directly with the Qualys Platform on TCP/443.

Agents can also be configured to communicate through a proxy server, including Qualys Gateway Server (QGS).

QGS also provides a cache for patch downloads and other agent artifacts including manifests and agent binaries.



TLS 1.2+ Required

- TLS 1.2 (or greater) must be enabled on client machines to communicate with the Qualys Cloud Platform.
- Agent host assets that do not meet this requirement will need to communicate with the Qualys Platform through a proxy server that supports TLS 1.2+.
- Use Qualys Gateway Server (QGS) to meet this TLS 1.2+ requirement.

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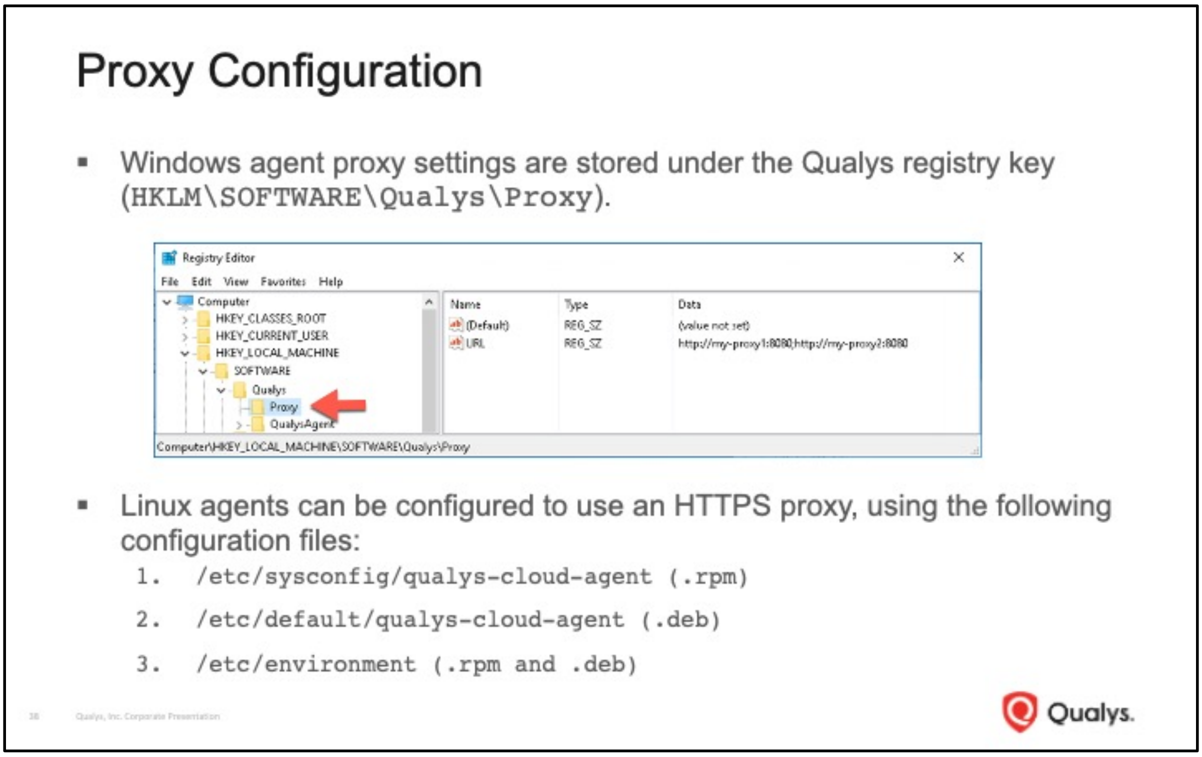
Qualys.

TLS 1.2 (or greater) is a host requirement, for communicating with the Qualys Cloud Platform.

Any agent host that does not meet this requirement (e.g., Windows XP and Windows Server 2003) will need to communicate with the Qualys Platform through a proxy server that supports TLS 1.2+. Qualys Gateway Server meets this requirement.



Proxy Configuration

- Windows agent proxy settings are stored under the Qualys registry key (`HKLM\SOFTWARE\Qualys\Proxy`).

Name	Type	Data
(Default)	REG_SZ	(value not set)
URL	REG_SZ	http://my-proxy1:8080;http://my-proxy2:8080

Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Qualys\Proxy

- Linux agents can be configured to use an HTTPS proxy, using the following configuration files:
  1. `/etc/sysconfig/qualys-cloud-agent (.rpm)`
  2. `/etc/default/qualys-cloud-agent (.deb)`
  3. `/etc/environment (.rpm and .deb)`

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Qualys.

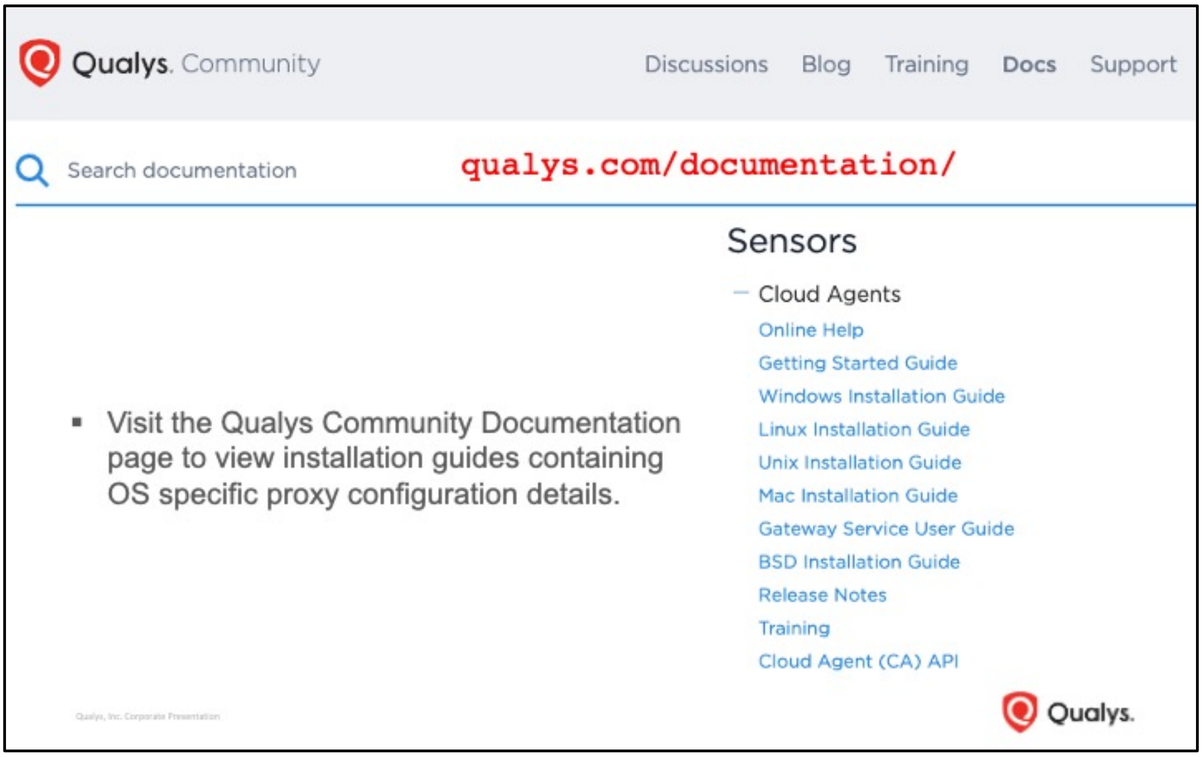
Windows agent proxy configuration can be accomplished by creating and editing the Qualys Proxy registry key (HKLM\SOFTWARE\Qualys\Proxy). The Qualys Proxy utility (QualysProxy.exe) will automatically create this key, if it is not already present.

Any application that can access the Remote Registry Service (including GPMC, Group Policy, WMI, etc...) can create or modify agent proxy configuration settings.

By default, Linux agents operate in non-proxy mode. Agents can be configured for proxy communications using the 'qualys-cloud-agent' proxy configuration file:

- `/etc/sysconfig/qualys-cloud-agent (.rpm)`
- `/etc/default/qualys-cloud-agent (.deb)`

If this file does not already exist, you must create it. `Both .rpm and .deb environments support file /etc/environment.`



qualys.com/documentation/

- Visit the Qualys Community Documentation page to view installation guides containing OS specific proxy configuration details.

Sensors

— Cloud Agents

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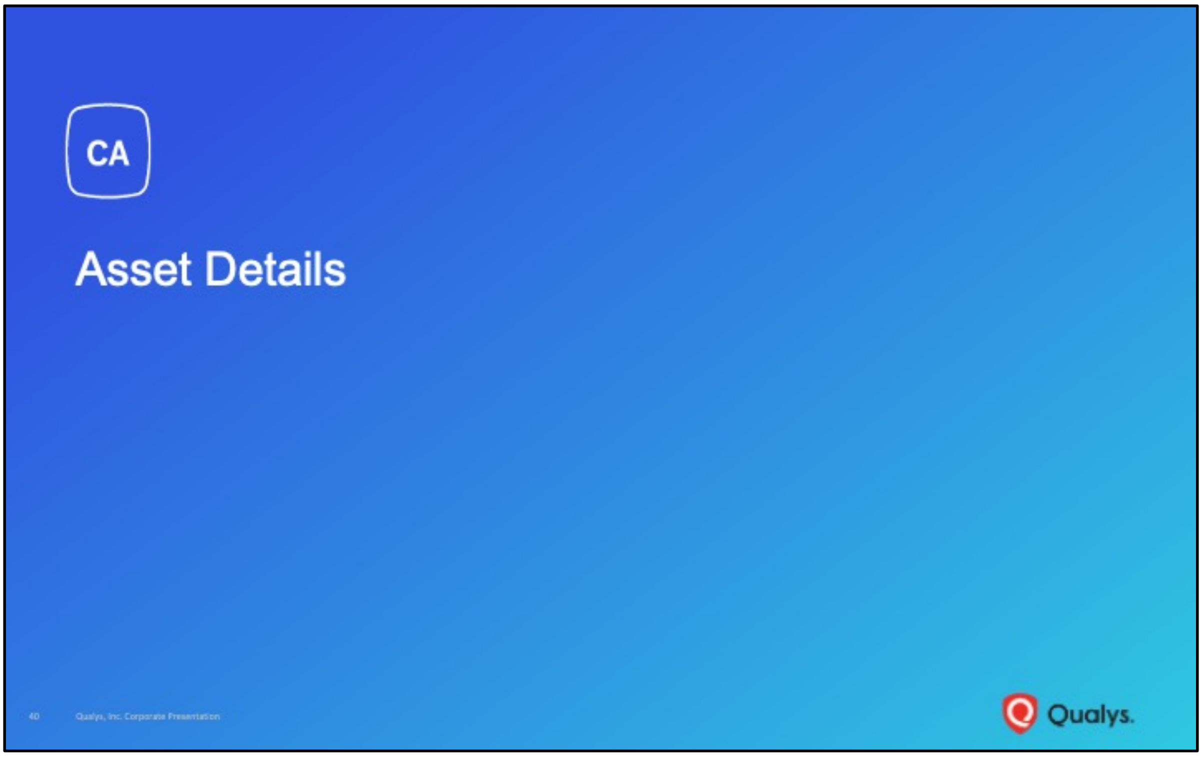
Qualys, Inc. Corporate Presentation

For the most current agent installation information, consult the Agent OS Installation Guides found on the Qualys Community (qualys.com/documentation).



CA

Asset Details

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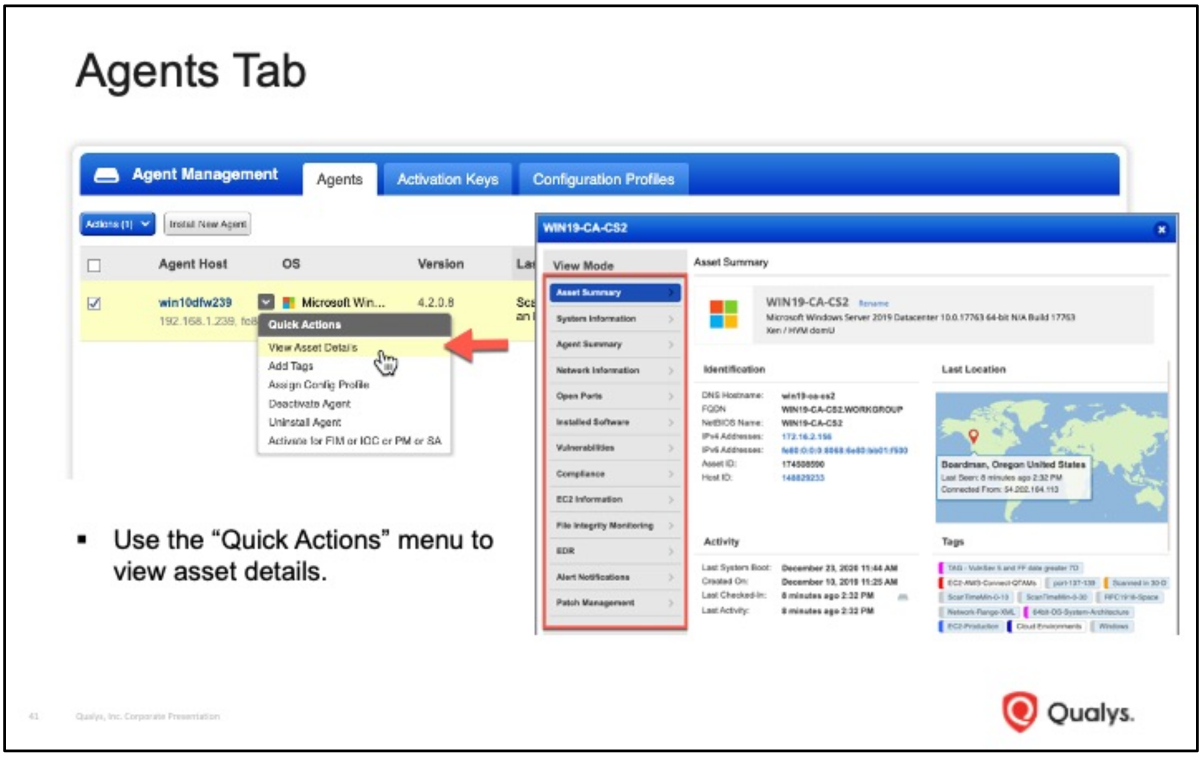
The objectives for this section are:

1. Identify the agent asset details provided by the Cloud Agent application and other Qualys applications.
2. Learn to use the Qualys Query Language (QQL) and Query Tokens, to search for agent assets.



Agents Tab

☑ win10dfw239 192.168.1.239 Microsoft Win... 4.2.0.8

WIN19-CA-CS2

Asset Summary

WIN19-CA-CS2
Microsoft Windows Server 2019 Datacenter 10.0.17763 64-bit N/A Build 17763
Xen / HVM domU

DNS Hostname: win19-ca-cs2
FQDN: WIN19-CA-CS2.WORKGROUP
NetBIOS Name: WIN19-CA-CS2
IPv4 Addresses: 172.16.2.156
IPv6 Addresses: fe80:0:0:0:8068:6e80:bb01:f530
Asset ID: 174508590
Host ID: 148829233

Boardman, Oregon United States
Last Seen: 8 minutes ago 2:32 PM
Connected From: 54.202.164.113

Last System Boot: December 23, 2020 11:44 AM
Created On: December 10, 2019 11:25 AM
Last Checked-In: 8 minutes ago 2:32 PM
Last Activity: 8 minutes ago 2:32 PM

TAG - VulnSev 5 and FF date greater 7D
EC2-AWS-Connect-QTAMs
port-137-139
Scanned in 30 D
ScanTimeMin-0-13
ScanTimeMin-0-30
RFC1918-Space
Network-Range-XML
64bit-OS-System-Architecture
EC2-Production
Cloud Environments
Windows

- Use the “Quick Actions” menu to view asset details.

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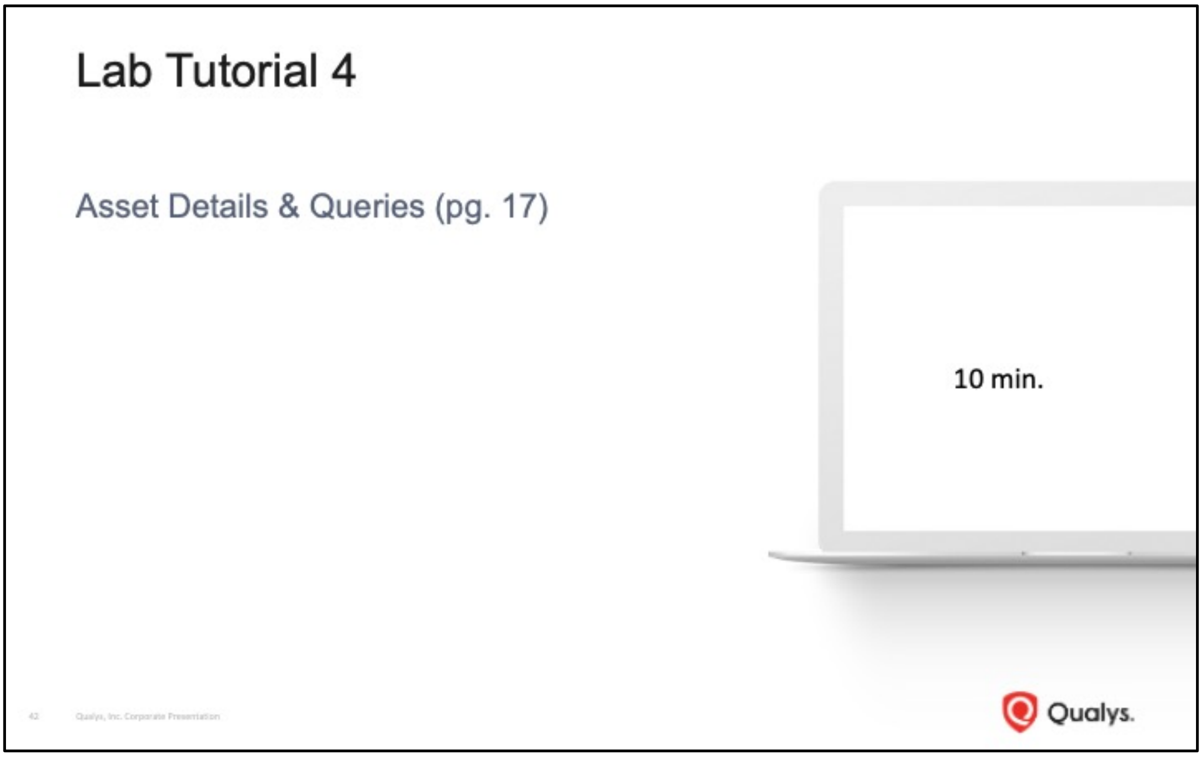
Use the “Quick Actions” menu for any agent host listed in the Cloud Agent application, to view specific asset details.

The Asset Summary displays host OS details, geolocation information, names and addresses, activity updates, and Asset Tags.

The very next lab tutorial provides a quick tour of the various asset detail components.



Lab Tutorial 4

Asset Details & Queries (pg. 17)

10 min.

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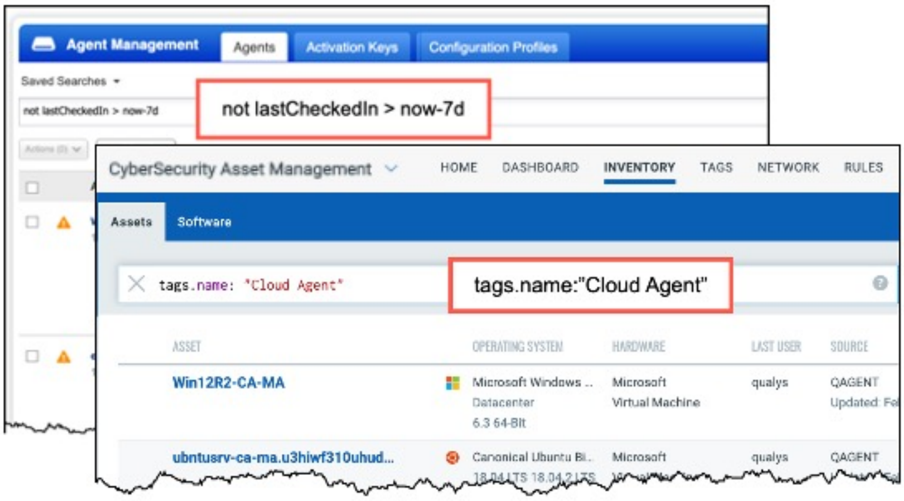
1. View asset details for host with all agent modules activated
2. Display all ”View Mode” options including GCP Instance Information
3. Use lastCheckedIn query token find agent host that have not checked-in for seven days
4. Download the result set into a spreadsheet (.csv) file.

Search for Assets



not lastCheckedIn > now-7d

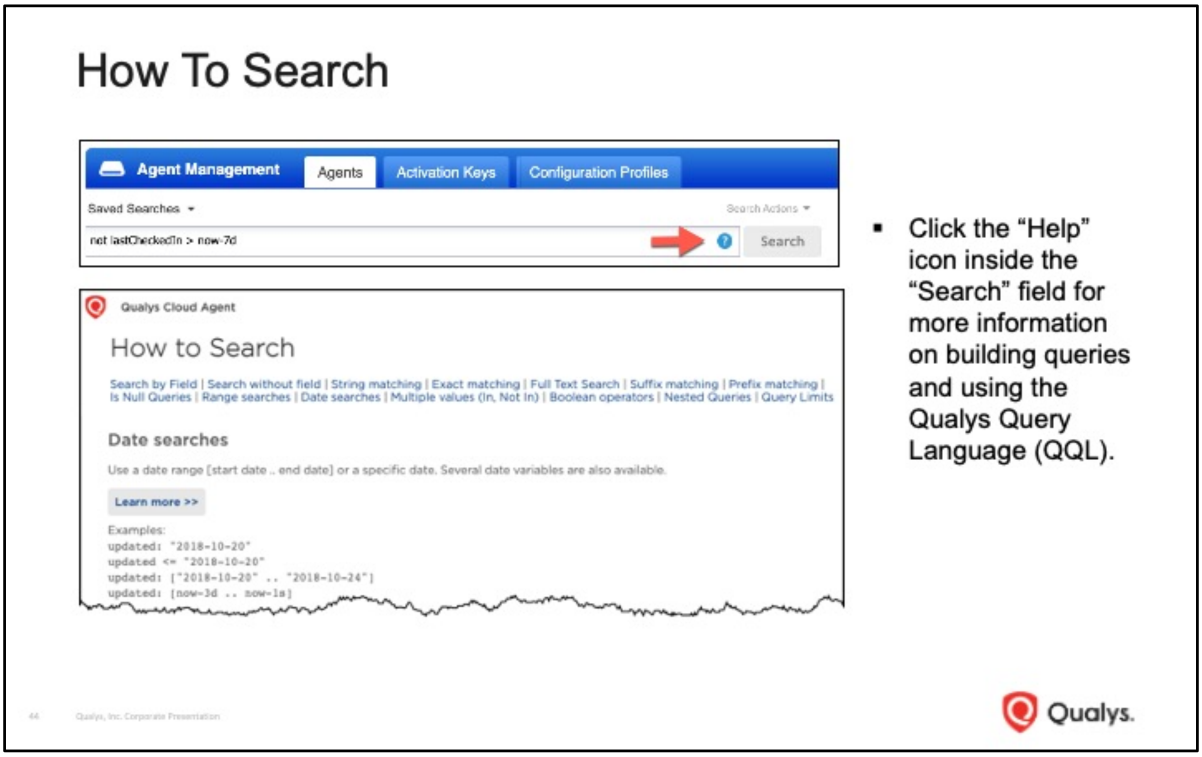
tags.name:"Cloud Agent"

ASSET	OPERATING SYSTEM	HARDWARE	LAST USER	SOURCE
Win12R2-CA-MA	Microsoft Windows .. Datacenter 6.3 64-Bit	Microsoft Virtual Machine	qualys	QAGENT Updated: Fe
ubntusrv-ca-ma.u3hiwf310uhud...	Canonical Ubuntu Bi.. 18.04 LTS 18.04.2 LTS	Microsoft	qualys	QAGENT

- All agent hosts are labeled with the “Cloud Agent” Asset Tag.

One of the more useful queries (when searching for agent hosts) uses the “lastcheckedIn” query token, which can help you to identify agents that are failing to communicate with the Qualys Platform. For example, if someone manually uninstalls an agent from its host (without using the Qualys UI or API), a stale host record will remain in your account, until you remove it. Use the “lastCheckedIn” token to help you find stale agent hosts, using a timeframe of your choice.

All agent host assets are labeled with the “Cloud Agent” tag. Using the “tags.name” token (with a value of “Cloud Agent”) will help you to find agent host assets from the search field of any Qualys application.



How To Search

```
not lastCheckedIn > now-7d
```

How to Search

Search by Field | Search without field | String matching | Exact matching | Full Text Search | Suffix matching | Prefix matching | Is Null Queries | Range searches | Date searches | Multiple values (In, Not In) | Boolean operators | Nested Queries | Query Limits

Date searches

Use a date range [start date .. end date] or a specific date. Several date variables are also available.

Examples:

```
updated: "2018-10-20"
updated <= "2018-10-20"
updated: ["2018-10-20" .. "2018-10-24"]
updated: [now-3d .. now-1s]
```

- Click the “Help” icon inside the “Search” field for more information on building queries and using the Qualys Query Language (QQL).

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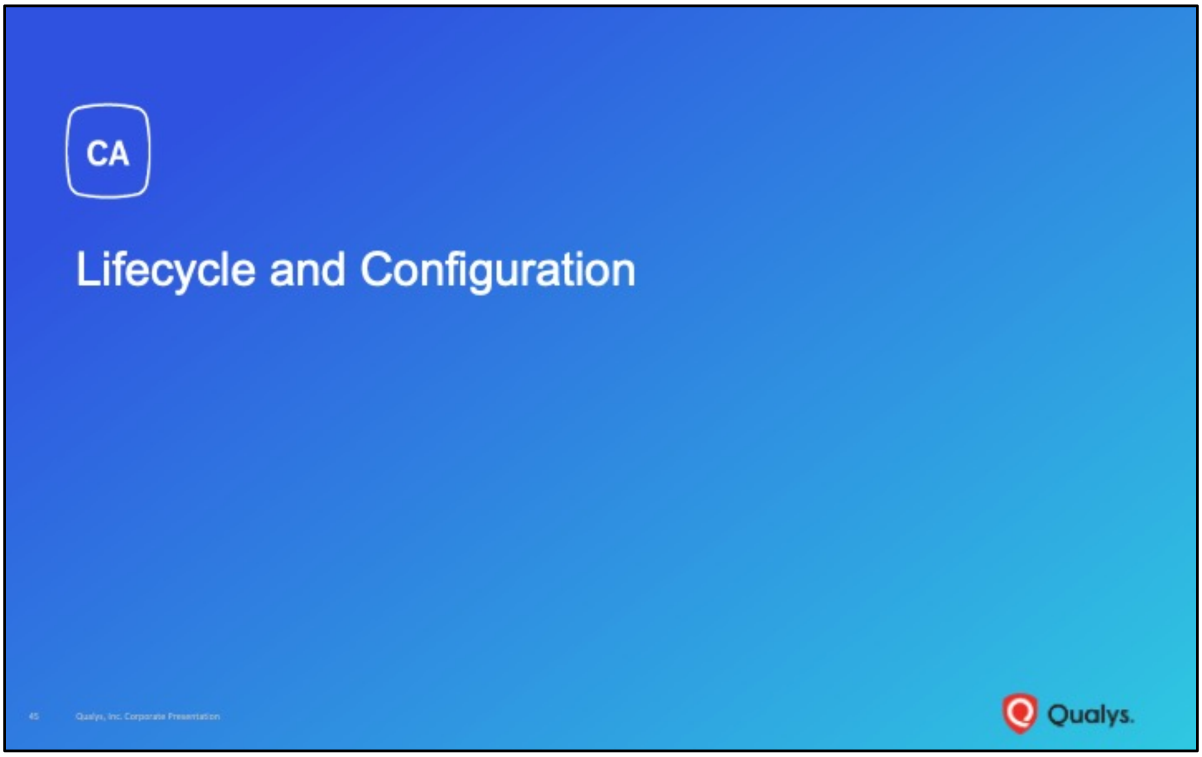
Information and examples for using Qualys Query Language (QQL) to build effective queries can be found by clicking the “Help” icon, inside the “Search” field.



CA

Lifecycle and Configuration

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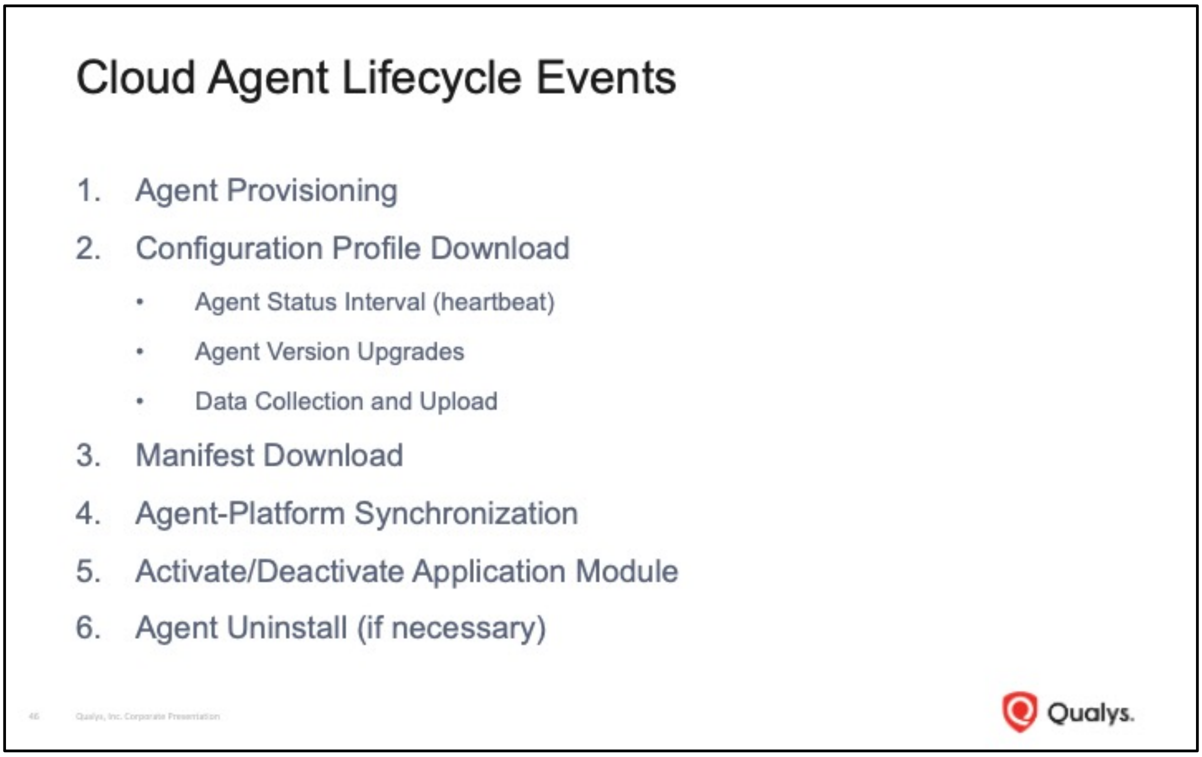
Qualys.

The objectives of this section are:

1. Identify and define the Cloud Agent lifecycle of events, including:
    - Agent Provisioning
    - Download Agent Configuration Profile
    - Agent Upgrades
    - Agent Status Interval
    - Agent Data Collection
    - Download Application Manifests
    - Agent – Platform Synchronization
    - Activate, Deactivate, Uninstall Agents
2. Learn to build and configure a CA Configuration Profile.
3. Understand the different agent data collection methods.



Cloud Agent Lifecycle Events

1. Agent Provisioning
2. Configuration Profile Download
   - Agent Status Interval (heartbeat)
   - Agent Version Upgrades
   - Data Collection and Upload
3. Manifest Download
4. Agent-Platform Synchronization
5. Activate/Deactivate Application Module
6. Agent Uninstall (if necessary)

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Throughout its life, an agent will go through a series of events or workflow. Agent provisioning was demonstrated in the first part of this course.

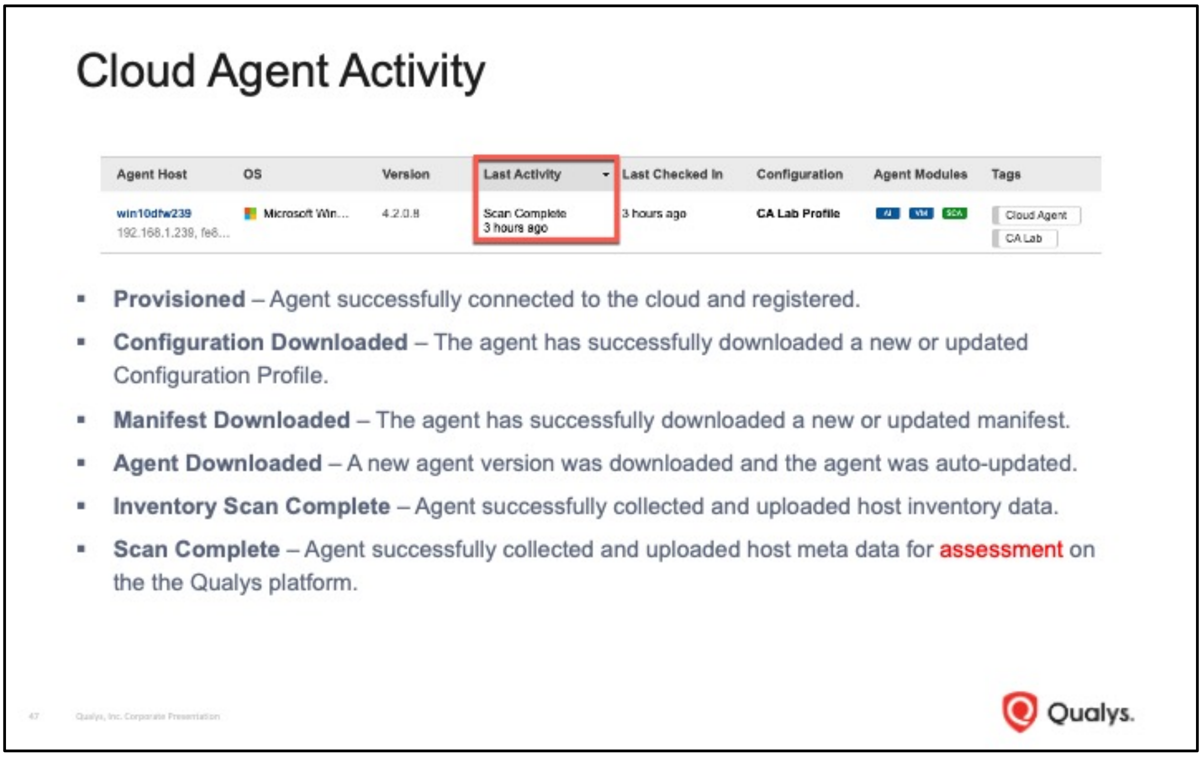
When provisioning is successful an agent will download its configuration profile. A configuration profile specifies various agent behaviors and characteristics. Other lifecycle events are controlled by settings in the downloaded configuration profile, including: 1) Agent Status Interval, 2) Agent Version Upgrades, and 3) Data Collection Methods.

A manifest is downloaded for each activated agent application module. Data collection will begin immediately, following the download of a new or updated application manifest.

Once an agent has successfully transferred its first data “snapshot” to the Qualys Platform, it will regularly perform synchronization checks, to ensure data on both sides is accurate and consistent.

Application modules can be activated or deactivated for individual or entire groups of agents.

Uninstalling an agent will free its license for use elsewhere.



Cloud Agent Activity

Agent Host	OS	Version	Last Activity	Last Checked In	Configuration	Agent Modules	Tags
win10dfw239 192.168.1.239, fe6...	Microsoft Win...	4.2.0.8	Scan Complete 3 hours ago	3 hours ago	CA Lab Profile	AI VM SCA	Cloud Agent CA Lab

- **Provisioned** – Agent successfully connected to the cloud and registered.
- **Configuration Downloaded** – The agent has successfully downloaded a new or updated Configuration Profile.
- **Manifest Downloaded** – The agent has successfully downloaded a new or updated manifest.
- **Agent Downloaded** – A new agent version was downloaded and the agent was auto-updated.
- **Inventory Scan Complete** – Agent successfully collected and uploaded host inventory data.
- **Scan Complete** – Agent successfully collected and uploaded host meta data for **assessment** on the the Qualys platform.

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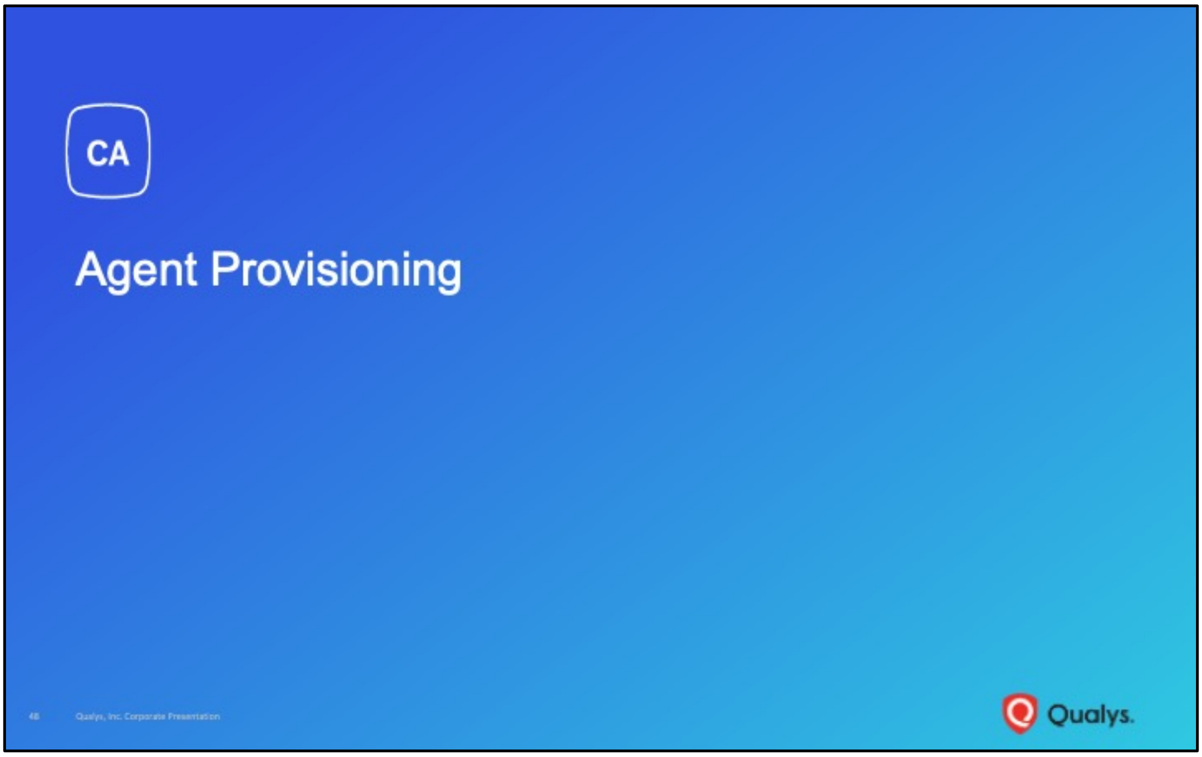
As agents complete various lifecycle events, an event message is displayed in the host’s “Last Activity” column.

To view a comprehensive list of events for any agent host, refer to the agent log file.



CA

Agent Provisioning

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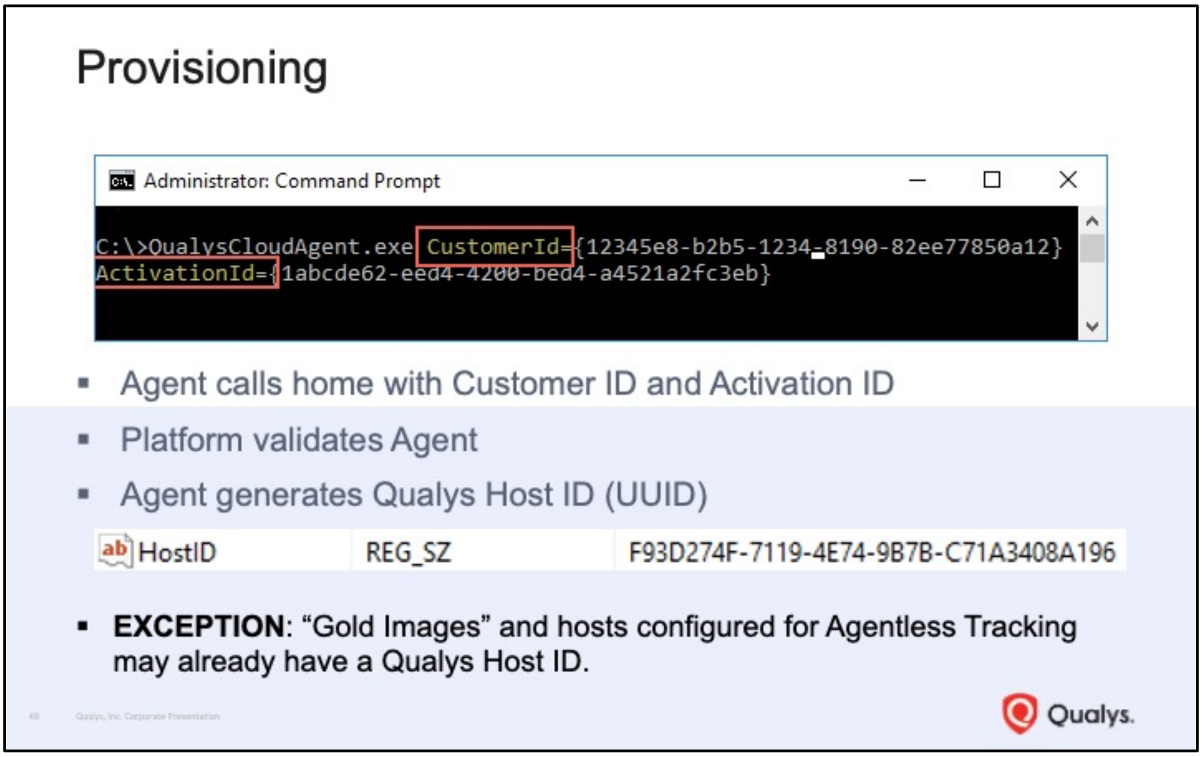


Provisioning

```
C:\>QualysCloudAgent.exe CustomerId={12345e8-b2b5-1234-8190-82ee77850a12}
ActivationId={1abcde62-eed4-4200-bed4-a4521a2fc3eb}
```

- Agent calls home with Customer ID and Activation ID
- Platform validates Agent
- Agent generates Qualys Host ID (UUID)

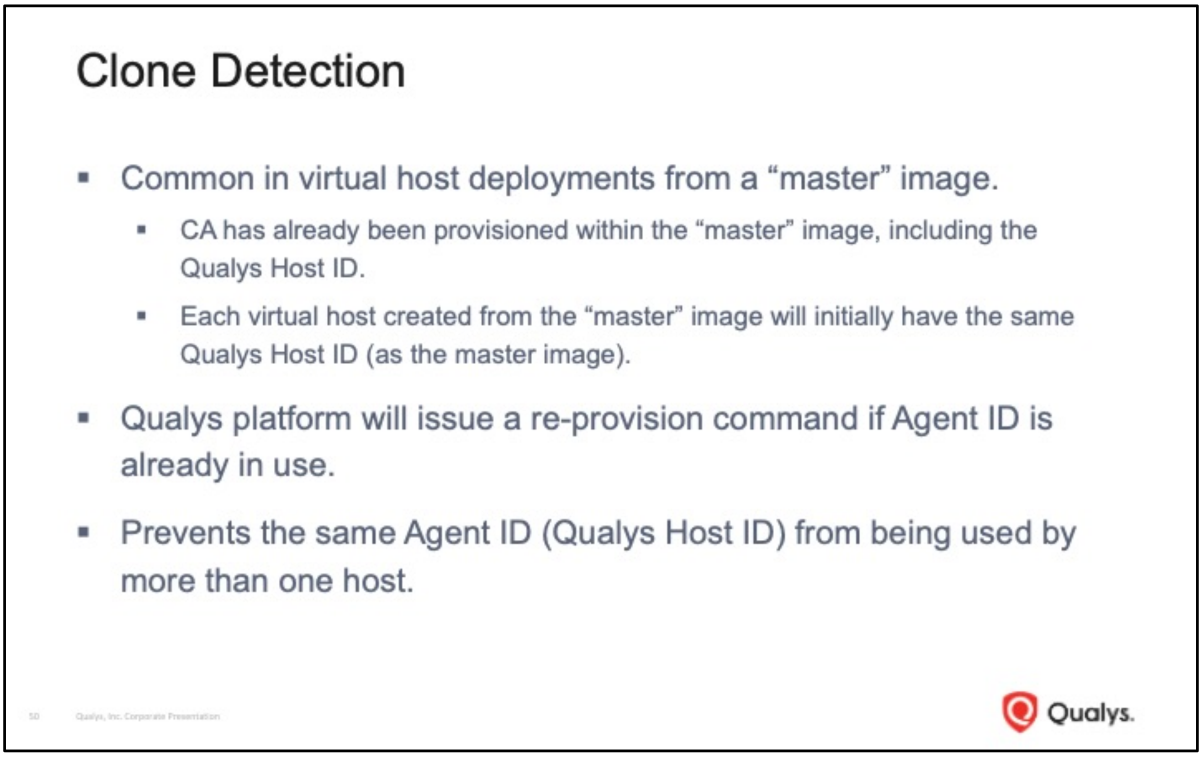
HostID	REG_SZ	F93D274F-7119-4E74-9B7B-C71A3408A196

- **EXCEPTION**: “Gold Images” and hosts configured for Agentless Tracking may already have a Qualys Host ID.

Provisioning is the first request an agent performs, following a successful installation. The provisioning step requires a valid Customer ID and Activation ID to be successful. When verified, the agent generates its Qualys Host ID (UUID) and submits it to the platform.

At the completion of provisioning, the agent does not perform any subsequent provisioning methods except in the case of duplicate agent UUIDs. Agents that cannot communicate to the platform for provisioning will keep retrying with an exponential backoff algorithm (current interval * 1.5 = next interval). The initial current interval is 60 seconds.

If the “Agentless Tracking” feature is enabled in Qualys VM, VMDR, or PC, a host may have already received Its Qualys Host ID, before an agent is installed. In this case, the agent will simply use the Qualys Host ID provisioned by the Agentless Tracking feature. For more information on the “Agentless Tracking” feature, please see the Qualys “Scanning Strategies & Best Practices” and “Reporting Strategies & Best Practices” training courses.

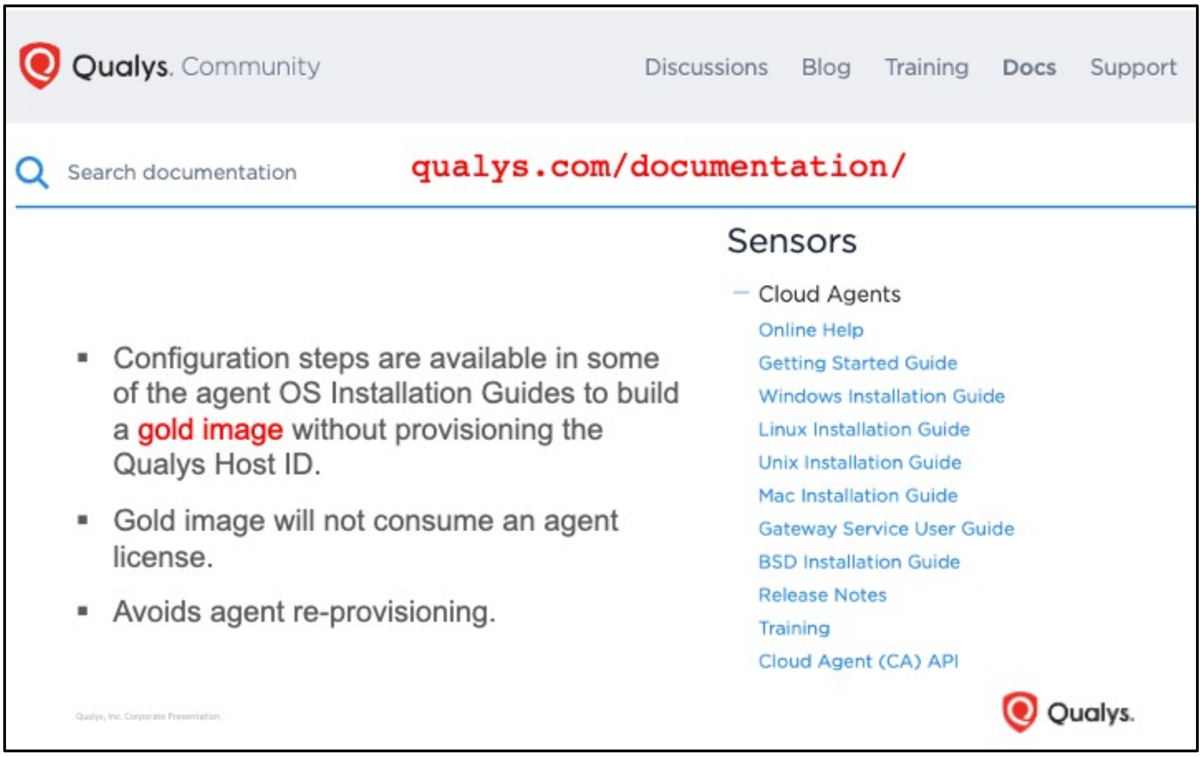


Clone Detection

- Common in virtual host deployments from a “master” image.
  - CA has already been provisioned within the “master” image, including the Qualys Host ID.
  - Each virtual host created from the “master” image will initially have the same Qualys Host ID (as the master image).
- Qualys platform will issue a re-provision command if Agent ID is already in use.
- Prevents the same Agent ID (Qualys Host ID) from being used by more than one host.

The platform has a feature to detect duplicate agent IDs and trigger the agent to reprovision with a newly generated agent ID. This feature is always enabled and not exposed as a configurable setting.

The most common case where duplicate agent IDs are created is when an agent is provisioned in a gold image that is used to create clones. In this case, cloned agents will have the same UUID as the agent in the gold image thus creating duplicate agent IDs in the platform when the cloned agents connect.



Qualys. Community

qualys.com/documentation/

- Configuration steps are available in some of the agent OS Installation Guides to build a gold image without provisioning the Qualys Host ID.
- Gold image will not consume an agent license.
- Avoids agent re-provisioning.

Sensors

— Cloud Agents

Online Help
Getting Started Guide
Windows Installation Guide
Linux Installation Guide
Unix Installation Guide
Mac Installation Guide
Gateway Service User Guide
BSD Installation Guide
Release Notes
Training
Cloud Agent (CA) API

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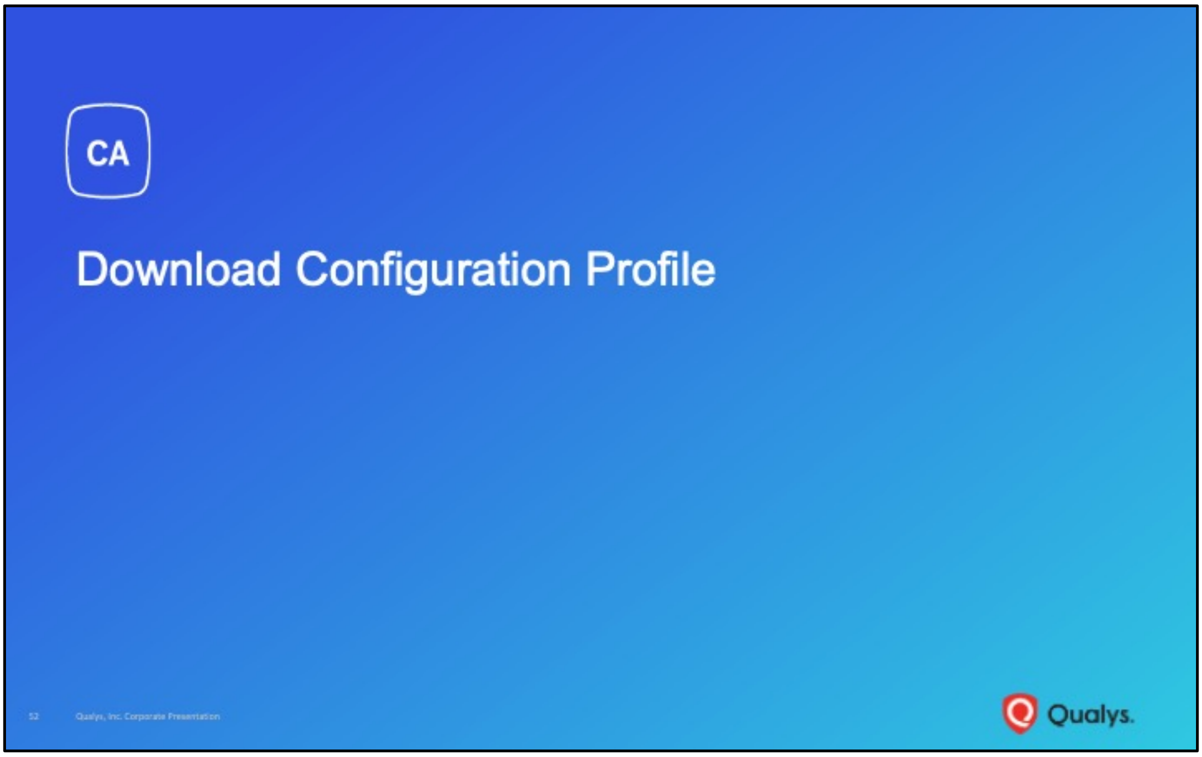
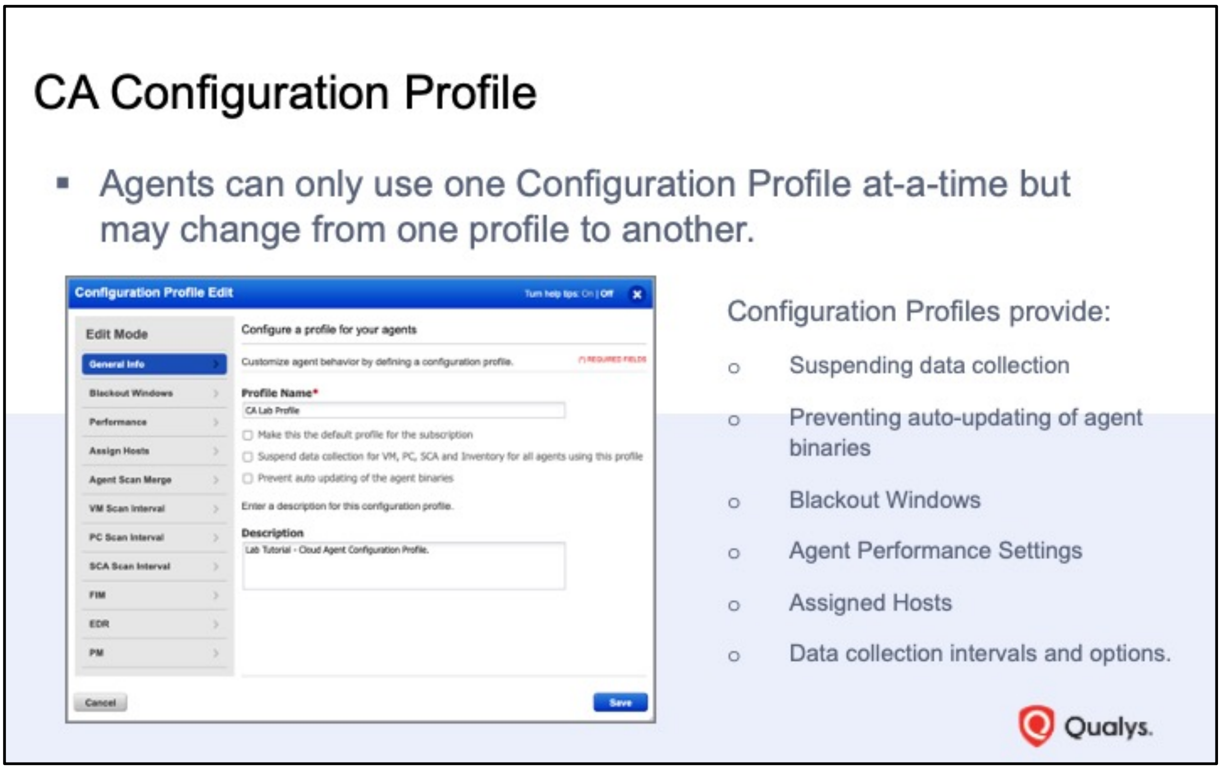
When building a master image, avoid renegotiation by deploying agent on host that is disconnected from the network (i.e, prevent the agent from provisioning).



CA

Download Configuration Profile



CA Configuration Profile

- Agents can only use one Configuration Profile at-a-time but may change from one profile to another.

Configuration Profile Edit

Edit Mode

Configure a profile for your agents

Customize agent behavior by defining a configuration profile.

(*) REQUIRED FIELDS

Profile Name*: CA Lab Profile

□ Make this the default profile for the subscription

□ Suspend data collection for VM, PC, SCA and Inventory for all agents using this profile

□ Prevent auto updating of the agent binaries

Enter a description for this configuration profile.

Description: Lab Tutorial - Cloud Agent Configuration Profile.

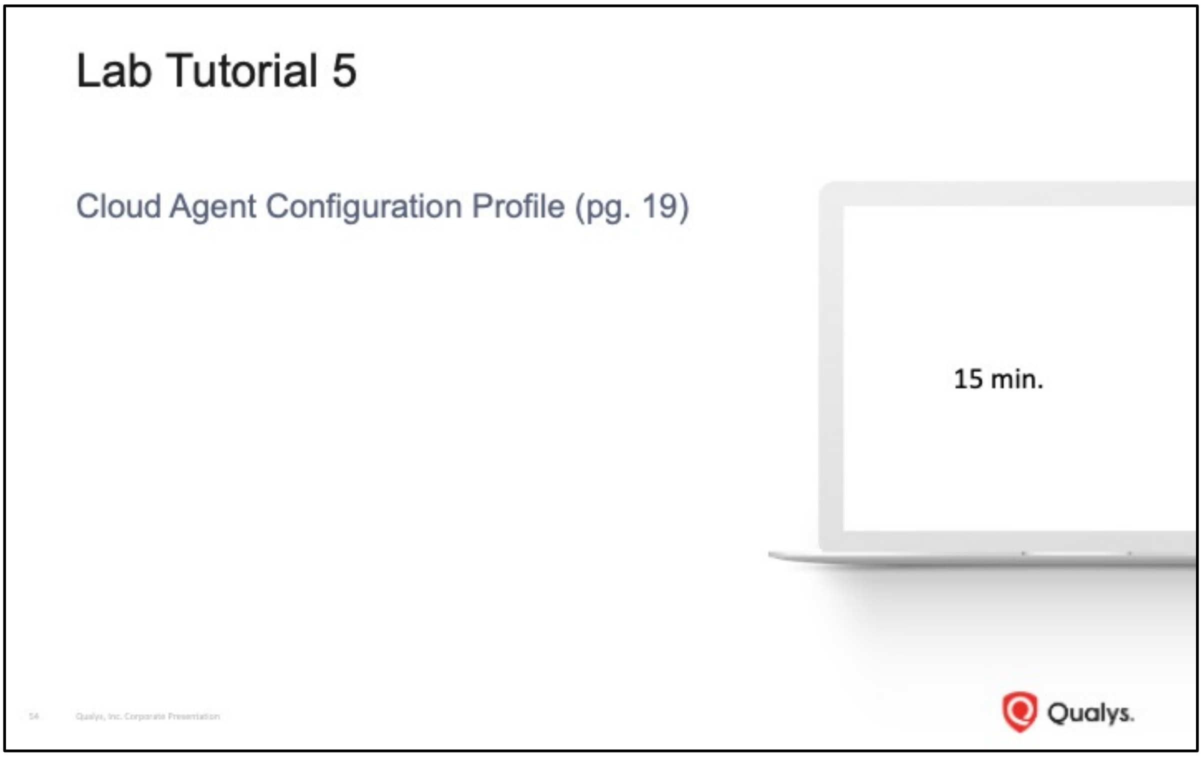
Configuration Profiles provide:

- Suspending data collection
- Preventing auto-updating of agent binaries
- Blackout Windows
- Agent Performance Settings
- Assigned Hosts
- Data collection intervals and options.

Agents can only use one Configuration Profile at-a-time but may change from one profile to another.

Each Configuration Profile contains settings for:

- Suspending data collection
- Preventing auto-updating of agent binaries
- Blackout Windows
- Agent Performance
- Assigned Hosts
- Agent Scan Interval
- Data collection options



Lab Tutorial 5

Cloud Agent Configuration Profile (pg. 19)

15 min.

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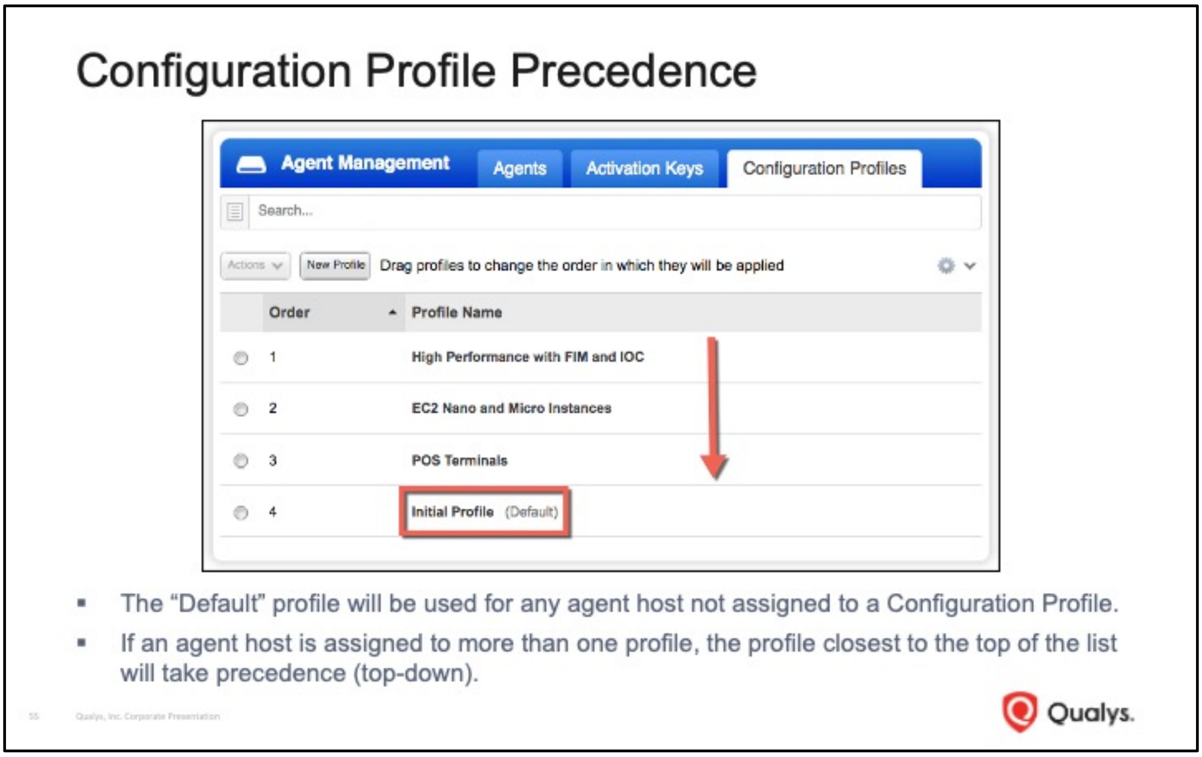
1. Create the CA Lab Configuration Profile
2. Complete all Configuration Profile Creation steps:
   - Define General Info settings
   - Define Blackout Windows
   - Customize agent performance and select the LOW presets
   - Define Agent Status Interval
   - Define Delta Upload Interval and Chunk sizes for file fragment uploads
   - Define Logging Level
   - Define CPU Limit and CPU Throttle
   - Add “CA Lab” tag to Assigned Hosts
   - Briefly define Agent Scan Merge. The lab tutorial supplement provides more details on agent scan merge (pages 23 – 25)
   - Define VM, PC, SCA scan intervals
   - FIM and EDR are defined but not enabled
   - PM is enabled by default
3. Explain Configuration Profile precedence



Configuration Profile Precedence

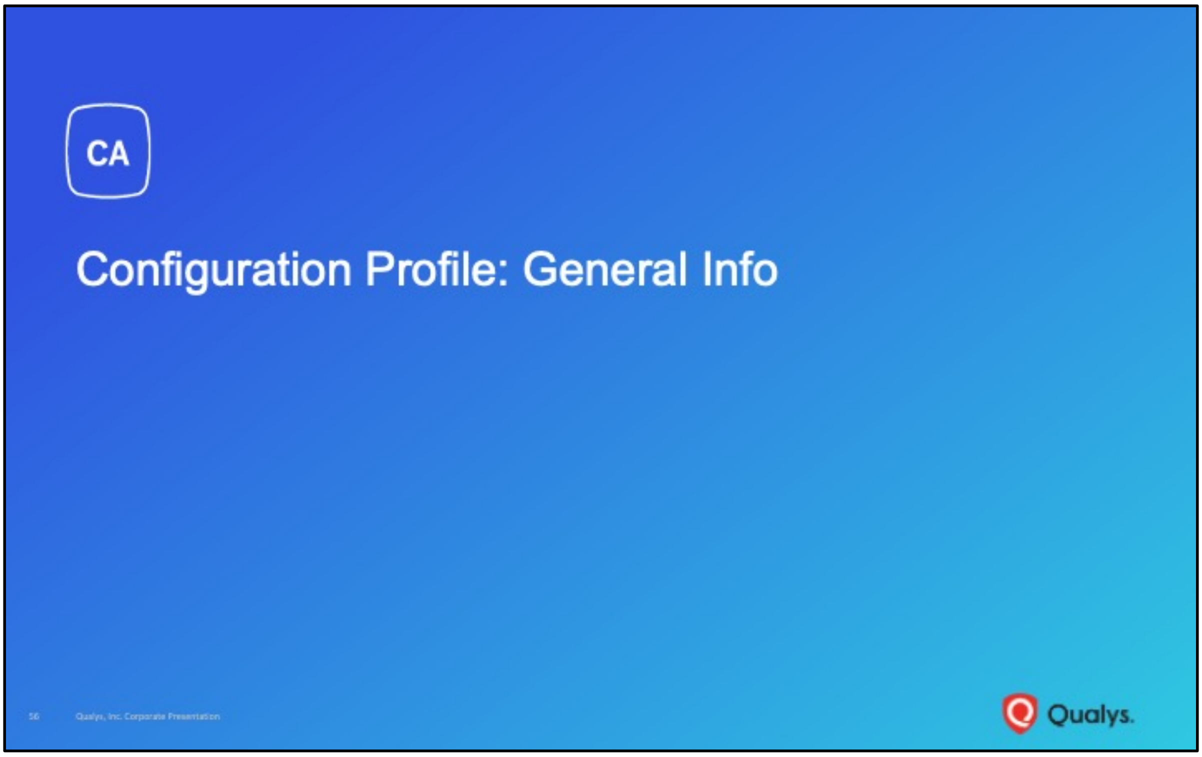
Drag profiles to change the order in which they will be applied

	Order	Profile Name
○	1	High Performance with FIM and IOC
○	2	EC2 Nano and Micro Instances
○	3	POS Terminals
○	4	Initial Profile (Default)

- The “Default” profile will be used for any agent host not assigned to a Configuration Profile.
- If an agent host is assigned to more than one profile, the profile closest to the top of the list will take precedence (top-down).

You can create multiple Configuration Profiles for your needs. There is a precedence that occurs. If an agent is assigned to more than one profile; the highest priority profile will be assigned to the host.

A Default profile also exist for hosts that do not have one assigned explicitly.



CA

Configuration Profile: General Info

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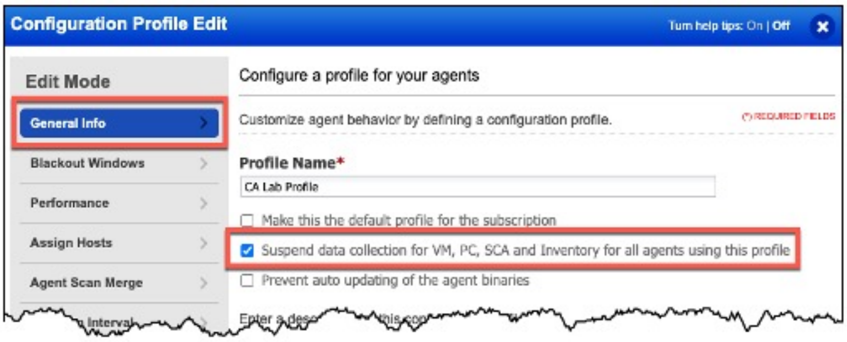
Suspend Data Collection


Configuration Profile Edit

Edit Mode

Configure a profile for your agents

Customize agent behavior by defining a configuration profile.

(*) REQUIRED FIELDS

Profile Name*

CA Lab Profile

☐ Make this the default profile for the subscription

☑ Suspend data collection for VM, PC, SCA and Inventory for all agents using this profile

☐ Prevent auto updating of the agent binaries

Enter a desc... this con...

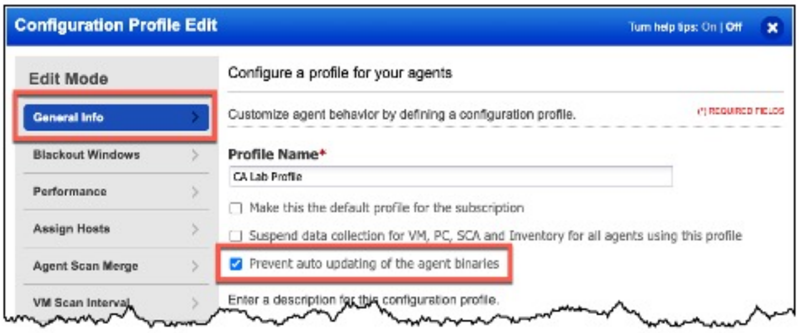
- Although not commonly used, selecting this option will stop agents from performing VM, PC, SCA, and Inventory scans.
- Agents will continue to get manifest updates, configuration updates, and even agent version updates.

The General Information settings establish things like the profile name and description, along with some default data collection and update options. Only one profile can be designated as the default profile for your subscription. If an agent host does not meet the host assignment criteria for any other configuration profile, the default will be used.

The option to suspend data collection from agents will effectively stop the agent from performing VM, PC, SCA and Inventory scans. Although scanning has stopped, agents will continue to receive manifest updates, configuration updates and agent version updates.

Cloud Agent Upgrades

- By default, Cloud Agents will automatically upgrade to the latest version
- ~80% of all agents have the auto-upgrade option enabled.



Configure a profile for your agents

Customize agent behavior by defining a configuration profile.

(*) REQUIRED FIELDS

Profile Name*

CA Lab Profile

□ Make this the default profile for the subscription

□ Suspend data collection for VM, PC, SCA and Inventory for all agents using this profile

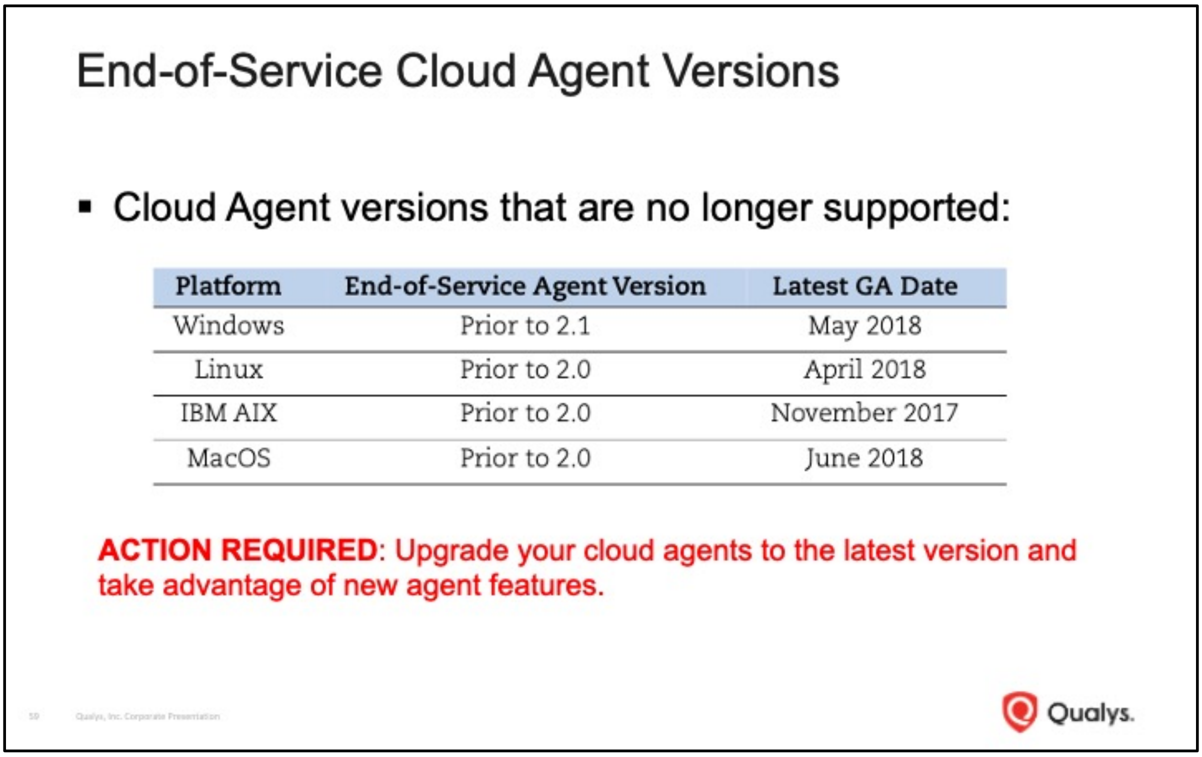
☑ Prevent auto updating of the agent binaries

Enter a description for this configuration profile.

- To certify and upgrade agents via a third-party software manager, click the "Prevent auto updating of the agent binaries" check box.

By default, agents will automatically upgrade to the latest agent version. It is very common to find agents configured in the "auto-upgrade" mode.

Enable the "Prevent auto updating of the agent binaries" option, if you intend to use third-party software management and distribution tools (e.g., SCCM, RPM, BigFix, Casper, Altiris, etc…) to perform agent upgrades. This feature supports an organization's change management policies, allowing for testing and certifying new agent versions before they they are released into production environments.



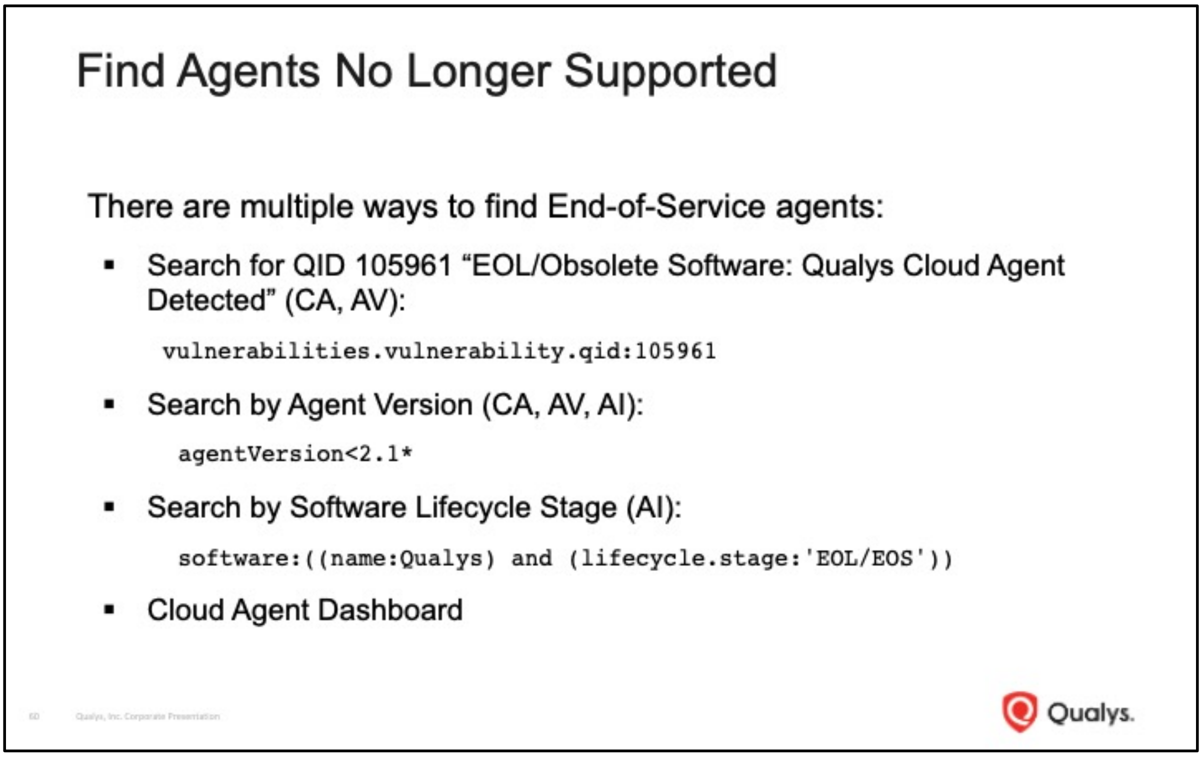
End-of-Service Cloud Agent Versions

- Cloud Agent versions that are no longer supported:

Platform	End-of-Service Agent Version	Latest GA Date
Windows	Prior to 2.1	May 2018
Linux	Prior to 2.0	April 2018
IBM AIX	Prior to 2.0	November 2017
MacOS	Prior to 2.0	June 2018

ACTION REQUIRED: Upgrade your cloud agents to the latest version and take advantage of new agent features.

Some older version of Cloud Agent have reach end-of-support and should be upgraded to the latest version to take full advantage of new features and benefits.



Find Agents No Longer Supported

There are multiple ways to find End-of-Service agents:

- Search for QID 105961 “EOL/Obsolete Software: Qualys Cloud Agent Detected” (CA, AV):

```
vulnerabilities.vulnerability.qid:105961
```

- Search by Agent Version (CA, AV, AI):

```
agentVersion<2.1*
```

- Search by Software Lifecycle Stage (AI):

```
software:((name:Qualys) and (lifecycle.stage:'EOL/EOS'))
```

- Cloud Agent Dashboard

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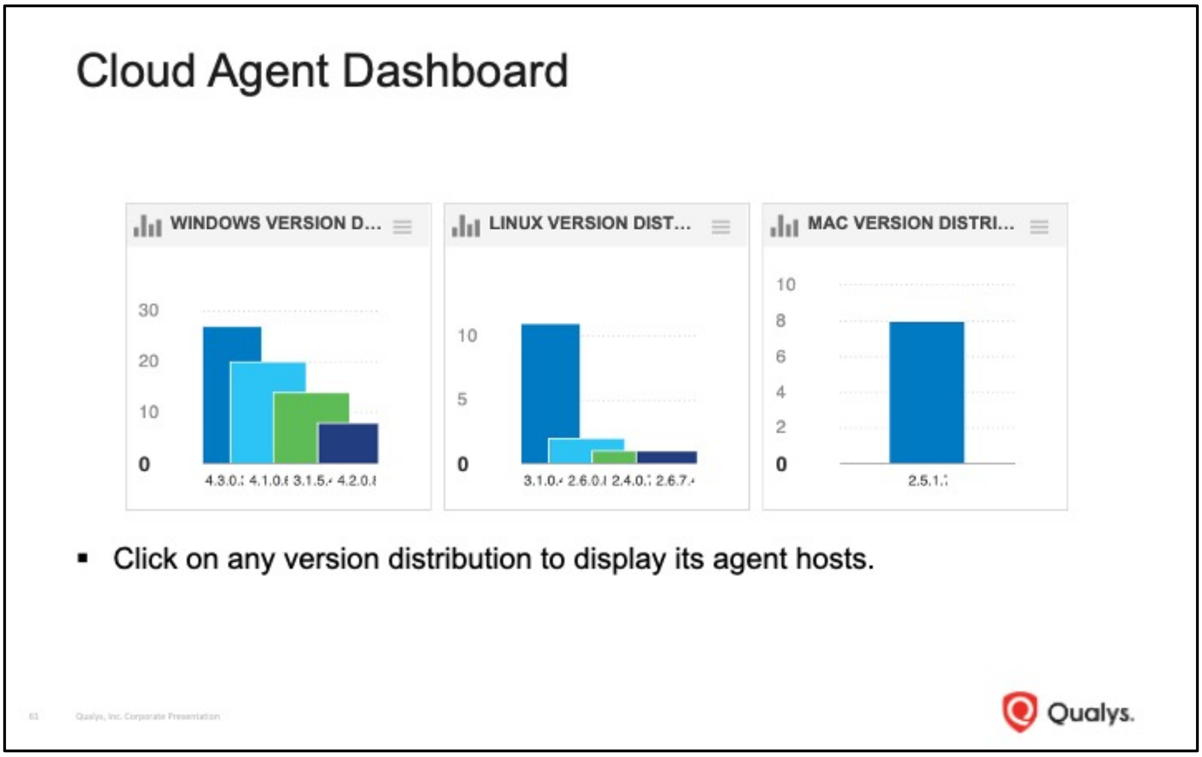
Here are a few ways to find end-of-service agents:

Search for QID 105961 “EOLObsolete Software: Qualys Cloud Agent Detected.” The “`vulnerabilities.vulnerability.qid:” token`, is presently supported in the Cloud Agent and AssetView applications.

Seach for EOS agent versions. The “agentVersion:” token is supported in CA, AV, and AI.

Seach for ‘EOL/EOS’ software lifecycle stage. The “software:(name:)” and “software:(lifecycle.stage:)” tokens are supported in the Asset Inventory application.

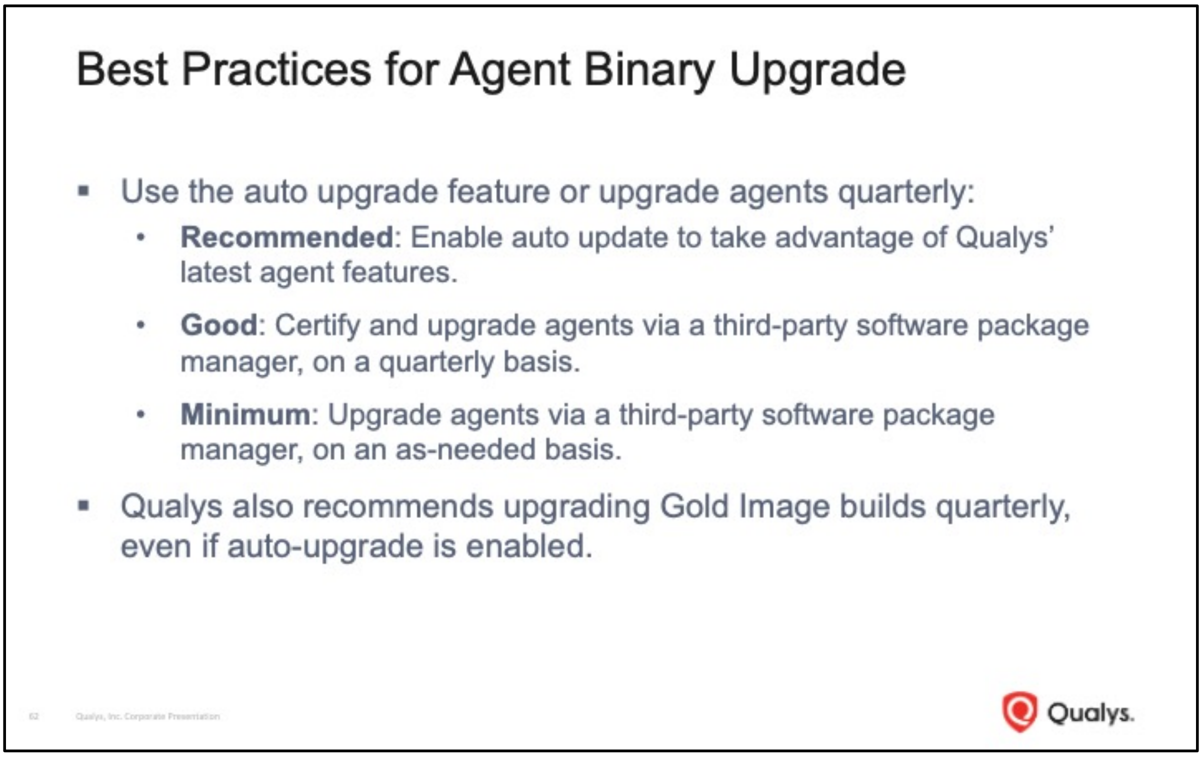
Use the “Agent Version Distribution” widgets in the CA Dashboard.



Cloud Agent Dashboard

- Click on any version distribution to display its agent hosts.

Click on any version number in the bar chart to display its agent hosts.



Best Practices for Agent Binary Upgrade

- Use the auto upgrade feature or upgrade agents quarterly:
  - **Recommended**: Enable auto update to take advantage of Qualys' latest agent features.
  - **Good**: Certify and upgrade agents via a third-party software package manager, on a quarterly basis.
  - **Minimum**: Upgrade agents via a third-party software package manager, on an as-needed basis.
- Qualys also recommends upgrading Gold Image builds quarterly, even if auto-upgrade is enabled.

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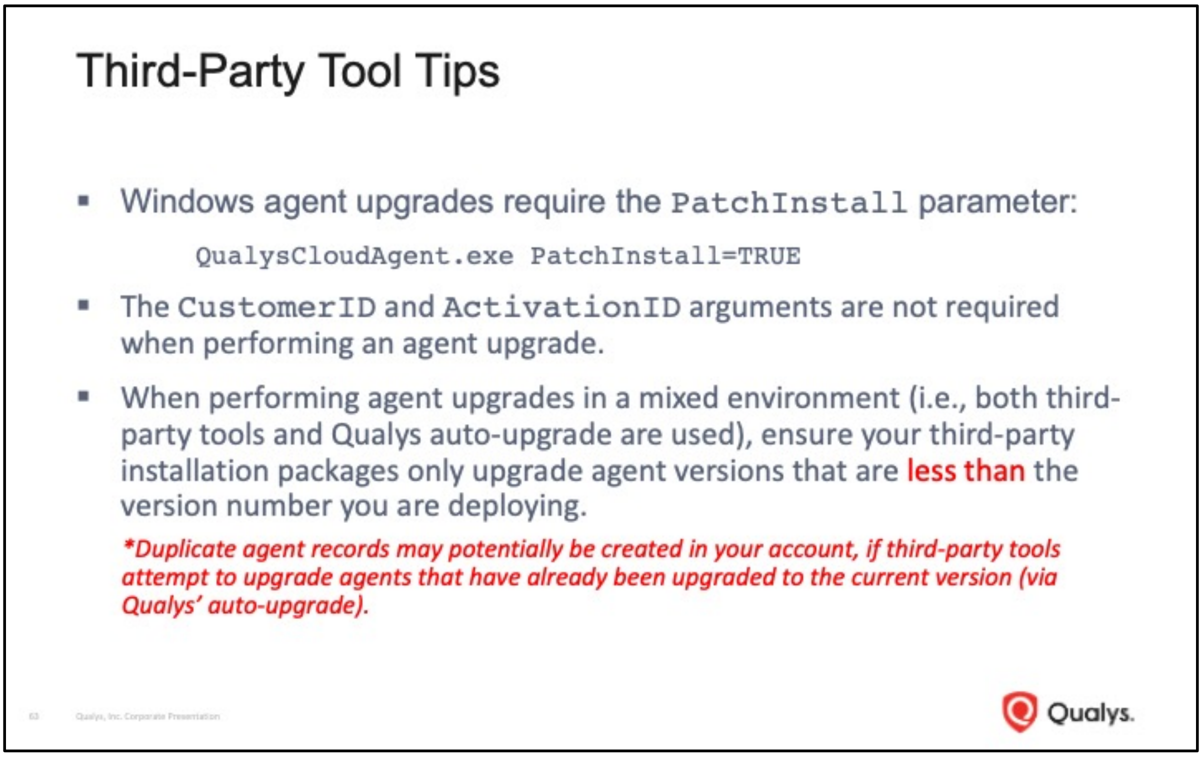
Although not all hosts are candidates for the agent auto-upgrade feature, Qualys recommends using this option wherever possible to take advantage of the latest agent features.

When using third-party software distribution tools to upgrade agents, Qualys recommends performing agent upgrades quarterly. At a minimum, upgrade all EOS agents and continue to keep agents upgraded on an as-needed basis.

Qualys recommends updating Gold Image builds quarterly, even if auto-upgrade is enabled.



Third-Party Tool Tips

- Windows agent upgrades require the `PatchInstall` parameter:

```
QualysCloudAgent.exe PatchInstall=TRUE
```

- The `CustomerID` and `ActivationID` arguments are not required when performing an agent upgrade.
- When performing agent upgrades in a mixed environment (i.e., both third-party tools and Qualys auto-upgrade are used), ensure your third-party installation packages only upgrade agent versions that are **less than** the version number you are deploying.

  Duplicate agent records may potentially be created in your account, if third-party tools attempt to upgrade agents that have already been upgraded to the current version (via Qualys' auto-upgrade).

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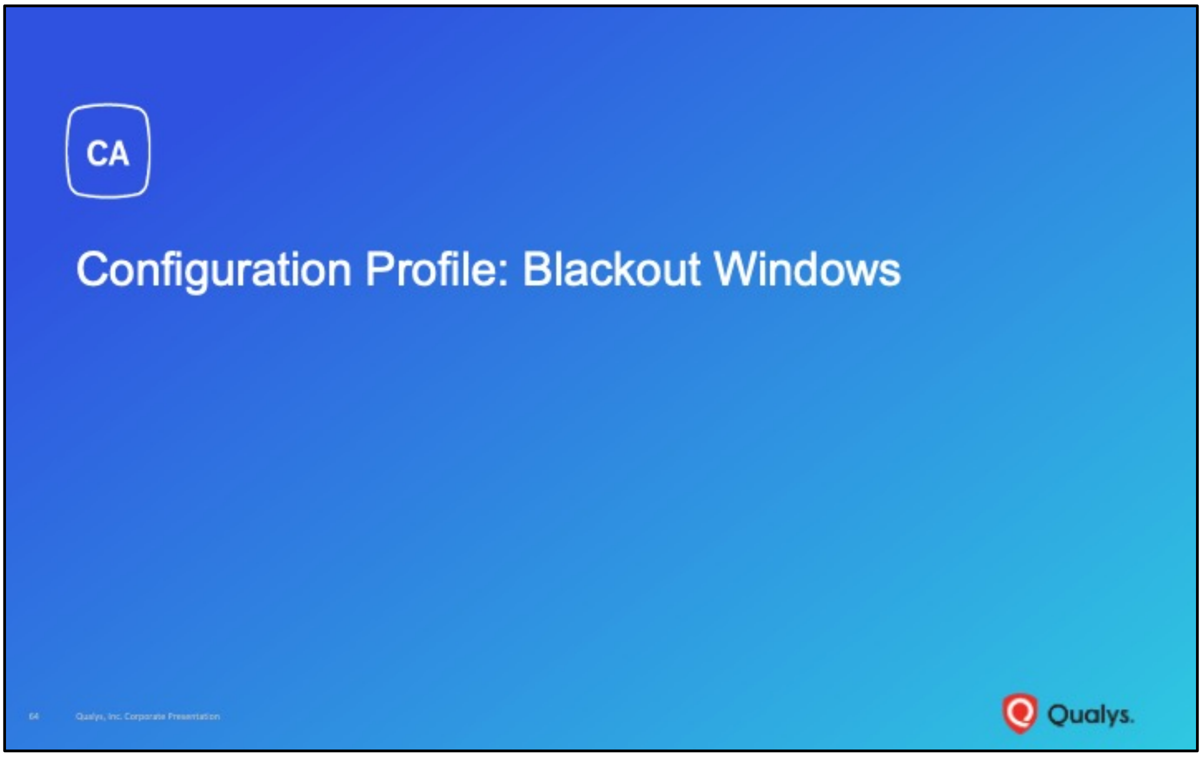
Here are a couple of tips when upgrading agents:

Windows agent upgrades must be performed using the PatchInstall parameter.

Do not attempt to use the CustomerID and ActivationID parameters when upgrading agents.

Ensure your third-party installation packages are designed to upgrade agent versions that are less than the version number you are deploying. This will help to prevent adding duplicate agent host records to your account.



CA

Configuration Profile: Blackout Windows

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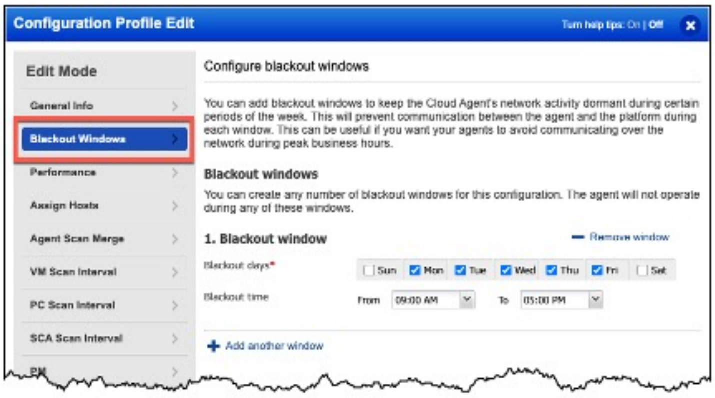
Blackout Windows



Configure blackout windows

You can add blackout windows to keep the Cloud Agent's network activity dormant during certain periods of the week. This will prevent communication between the agent and the platform during each window. This can be useful if you want your agents to avoid communicating over the network during peak business hours.

Blackout windows

You can create any number of blackout windows for this configuration. The agent will not operate during any of these windows.

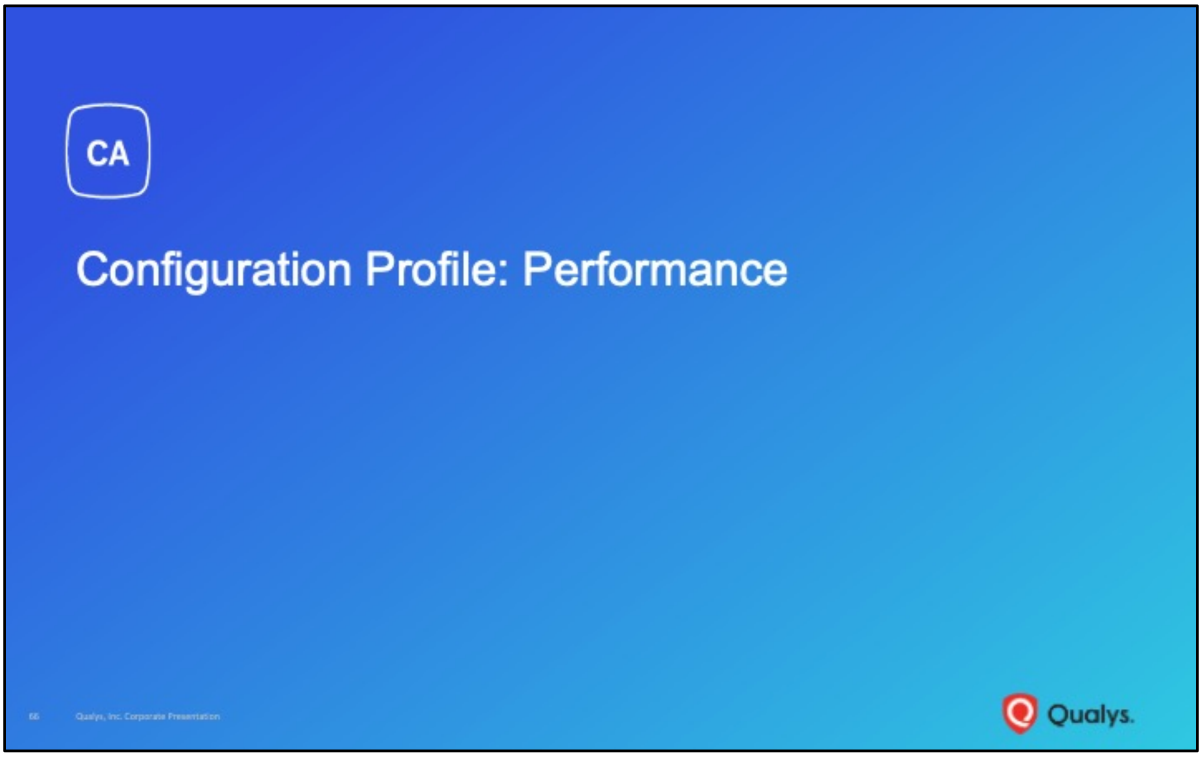
1. Blackout window

Blackout days* □ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri □ Sat

Blackout time From 09:00 AM To 05:00 PM

- Prevent communication between agents and the Qualys Platform at specified times of the week.
- This is useful if you want your agents to stop communicating during expected times of heavy or increased network traffic.

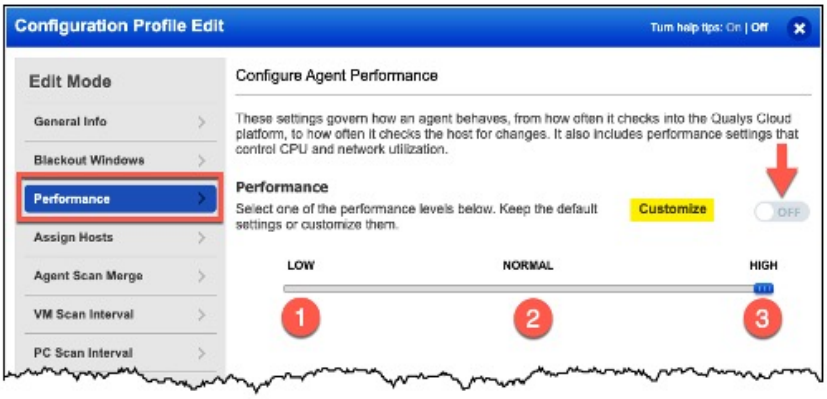
You can add blackout windows to stop communication between the agent and the Qualys Cloud platform, at specified times each day of the week. This can be especially useful when coordinating the communication flows for different groups of agents, or simply use this option to stop agent communications during expected times of peak network traffic.



CA

Configuration Profile: Performance

Performance



Configure Agent Performance

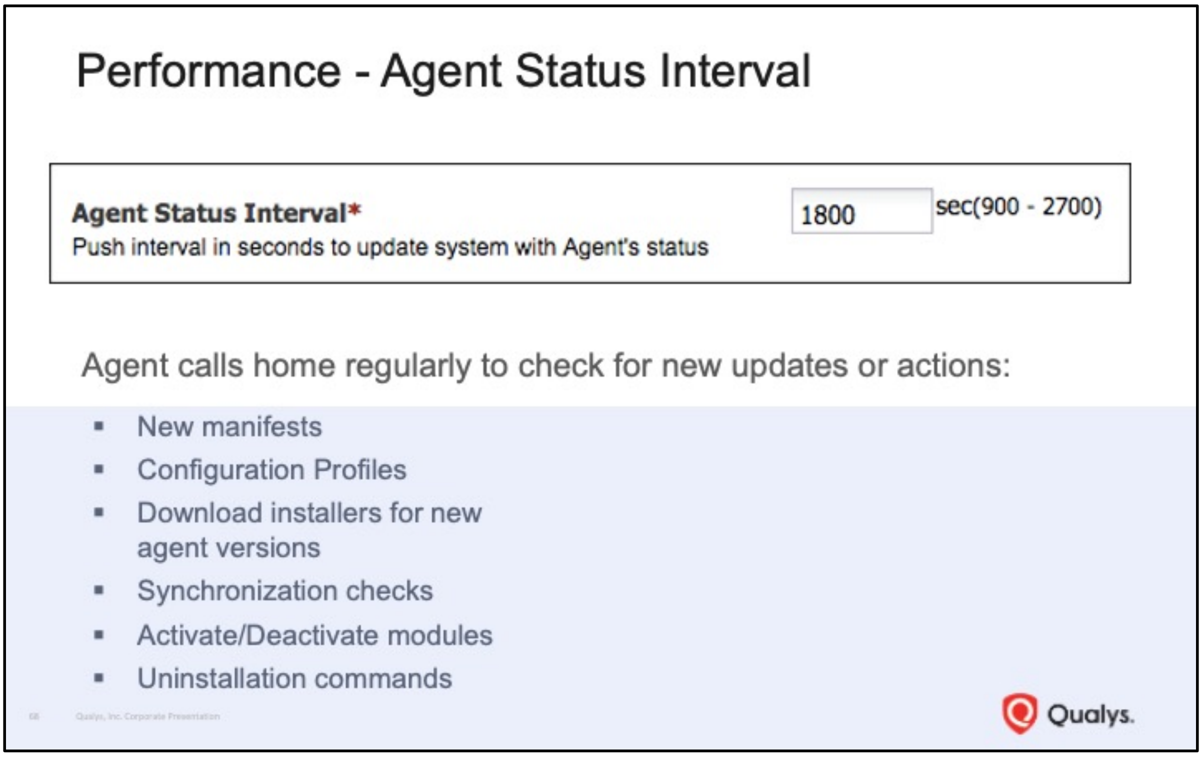
These settings govern how an agent behaves, from how often it checks into the Qualys Cloud platform, to how often it checks the host for changes. It also includes performance settings that control CPU and network utilization.

Performance

Select one of the performance levels below. Keep the default settings or customize them.

- Select default preset levels (LOW, NORMAL, or HIGH) or turn-on the "Customize" toggle switch.

To control the amount of system or network resources used by each agent, you can use the preset performance settings of (LOW, NORMAL, or HIGH). Or use the "Customize" option for more granular control.



Performance - Agent Status Interval

Agent Status Interval*
Push interval in seconds to update system with Agent's status

1800 sec(900 - 2700)

Agent calls home regularly to check for new updates or actions:

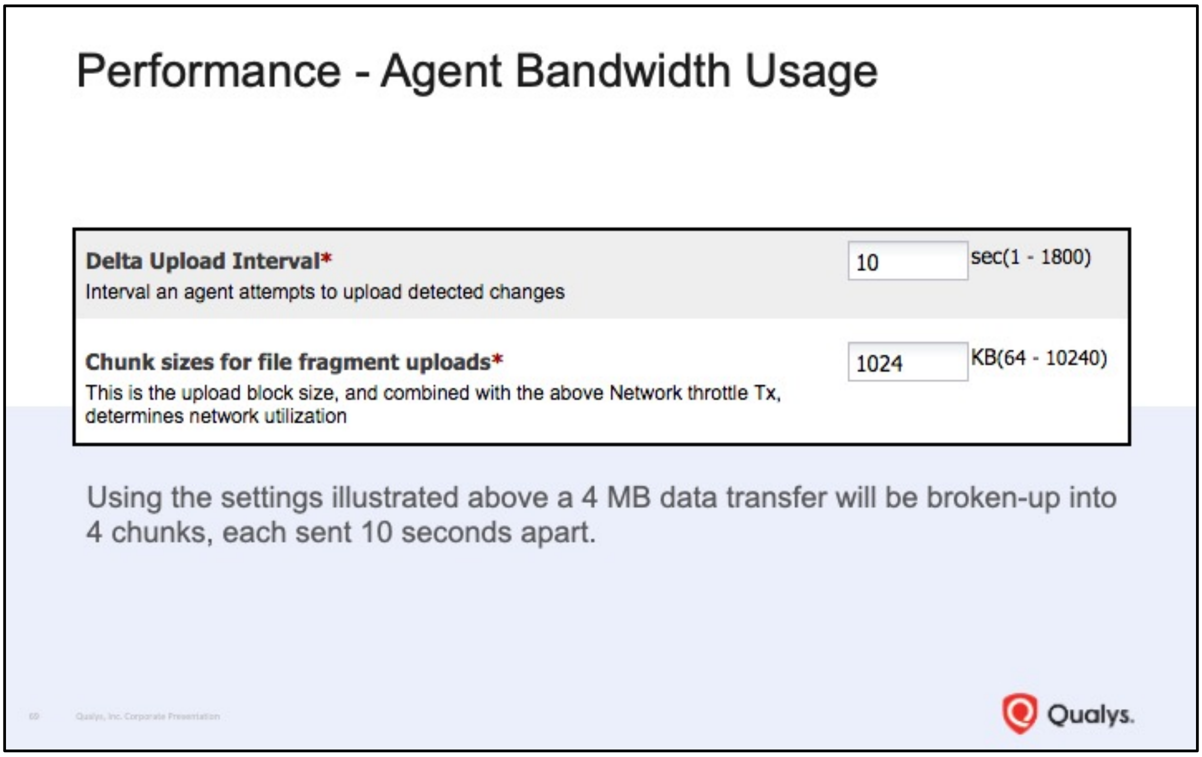
- New manifests
- Configuration Profiles
- Download installers for new agent versions
- Synchronization checks
- Activate/Deactivate modules
- Uninstallation commands

All communication between an agent and the Qualys Platform must be initiated by the agent.

The agent communicates to the Qualys platform at regular, configurable intervals (15 - 45 min.) to receive any new content or actions to perform. The request/reply is typically small in size (usually less than 1 KB).

The content or actions received through the Status Update include:

- New manifests
- Configuration Profiles
- Download installers for new agent versions (if configured)
- Re-provisioning commands
- Re-synchronization commands
- Activate/Deactivate application modules
- Uninstallation commands



Performance - Agent Bandwidth Usage

Delta Upload Interval*
Interval an agent attempts to upload detected changes
10 sec(1 - 1800)

Chunk sizes for file fragment uploads*
This is the upload block size, and combined with the above Network throttle Tx, determines network utilization
1024 KB(64 - 10240)

Using the settings illustrated above a 4 MB data transfer will be broken-up into 4 chunks, each sent 10 seconds apart.

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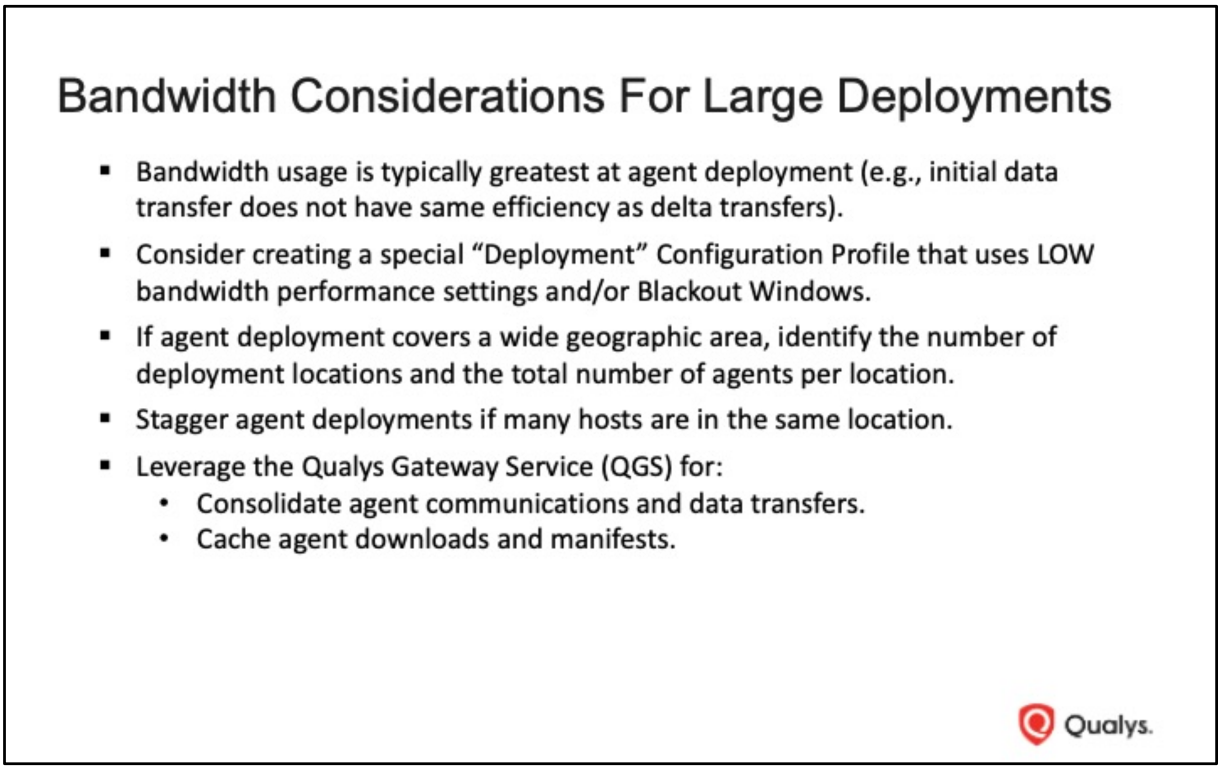
When an agent is ready to transmit a “snapshot” to the Qualys Cloud Platform, the “Chunk sizes for file fragment uploads” setting will determine whether the “snapshot” file will be broken-up into smaller fragments or chunks.

If more than one “chunk” is to be sent to the Qualys Cloud Platform, the “Delta Upload Interval” setting determines the amount of time between individual “chunk” transmissions.

Data collections are compared to latest snapshot and only changes (deltas) are uploaded to the Qualys Platform.



Bandwidth Considerations For Large Deployments

- Bandwidth usage is typically greatest at agent deployment (e.g., initial data transfer does not have same efficiency as delta transfers).
- Consider creating a special "Deployment" Configuration Profile that uses LOW bandwidth performance settings and/or Blackout Windows.
- If agent deployment covers a wide geographic area, identify the number of deployment locations and the total number of agents per location.
- Stagger agent deployments if many hosts are in the same location.
- Leverage the Qualys Gateway Service (QGS) for:
  - Consolidate agent communications and data transfers.
  - Cache agent downloads and manifests.

Bandwidth usage is typically greatest at agent deployment (e.g., initial data transfer does not have same efficiency as delta transfers). When deploying agents in an enterprise (large) environment, consider spacing out your deployment over time and wide geographic areas. Consider creating a special "Deployment" Configuration Profile that uses LOW bandwidth performance settings and/or Blackout Windows.

If agent deployment covers a wide geographic area, identify the number of deployment locations and the total number of agents per location. You likely do not want all your agents calling home at the same time. Stagger your deployment over hours or days if located in the same location.

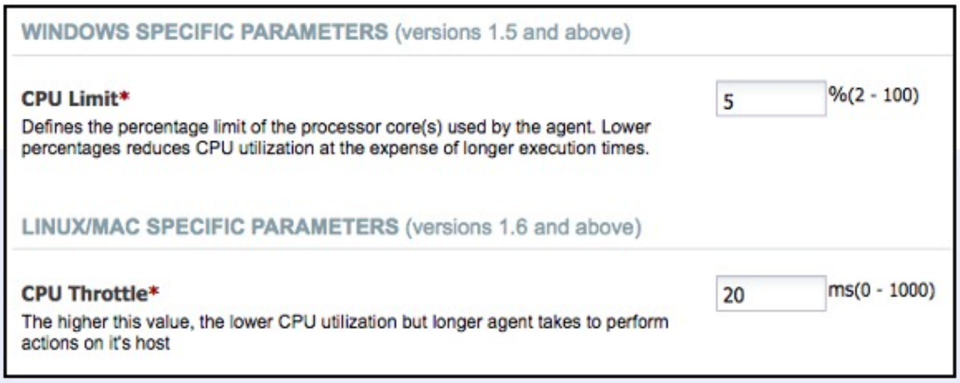
Qualys Gateway Server provides proxy services for cloud agents. It an be used for assets that don't have direct internet access or when you want to optimize bandwidth.

Leverage the Qualys Gateway Service (QGS) to:

Consolidate agent communications and data transfers.
Cache agent downloads and manifests.

Performance – CPU Limit & Throttle

- How Long Does It Take an Agent to Collect Data?



WINDOWS SPECIFIC PARAMETERS (versions 1.5 and above)

CPU Limit*
Defines the percentage limit of the processor core(s) used by the agent. Lower percentages reduces CPU utilization at the expense of longer execution times.

5 %(2 - 100)

LINUX/MAC SPECIFIC PARAMETERS (versions 1.6 and above)

CPU Throttle*
The higher this value, the lower CPU utilization but longer agent takes to perform actions on it's host

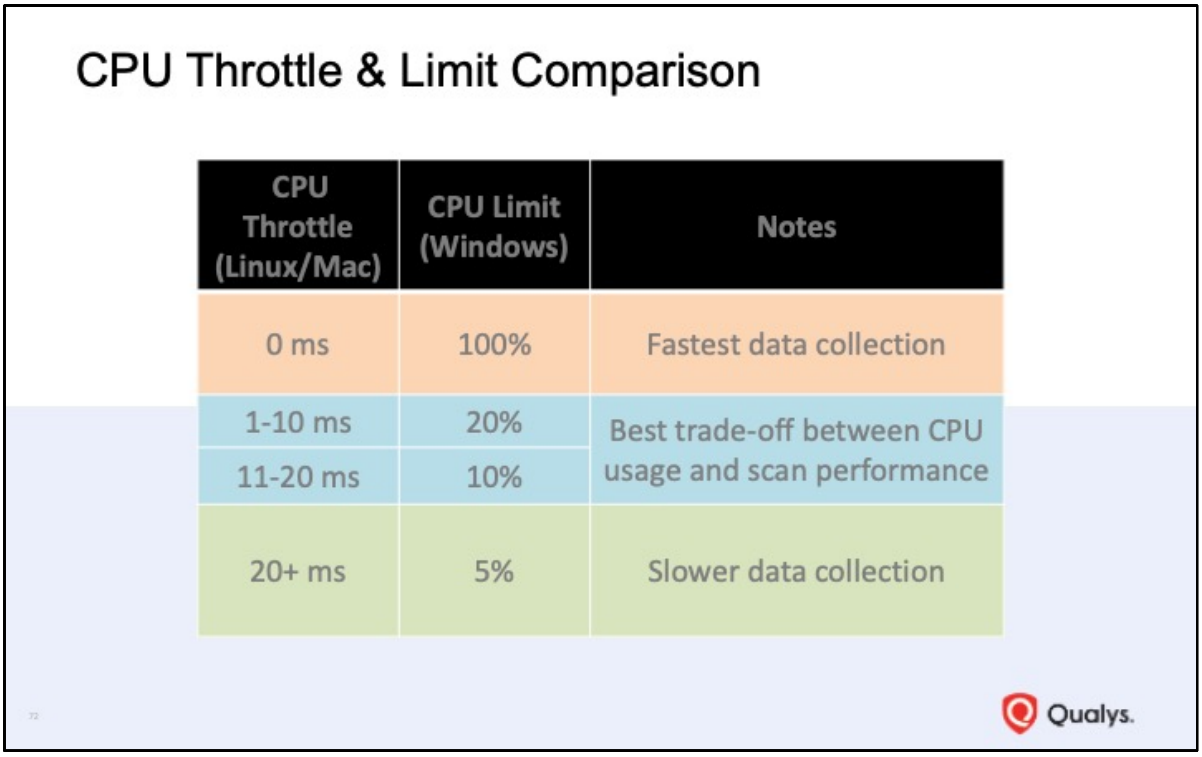
20 ms(0 - 1000)

While the agent “Data Collection Interval” setting determines how often or frequently an agent collects assessment and inventory data, the CPU Performance settings determine how quickly or slowly the agent goes about the task of data collection.

For Windows, faster data collections speeds are associated with higher “CPU Limit” percentages and slower data collection speeds are associated with lower “CPU Limit” settings.

For Unix/Linux, faster data collection speeds are associated with lower “CPU Throttle” values and slower data collection speeds are associated with higher “CPU Throttle” values.

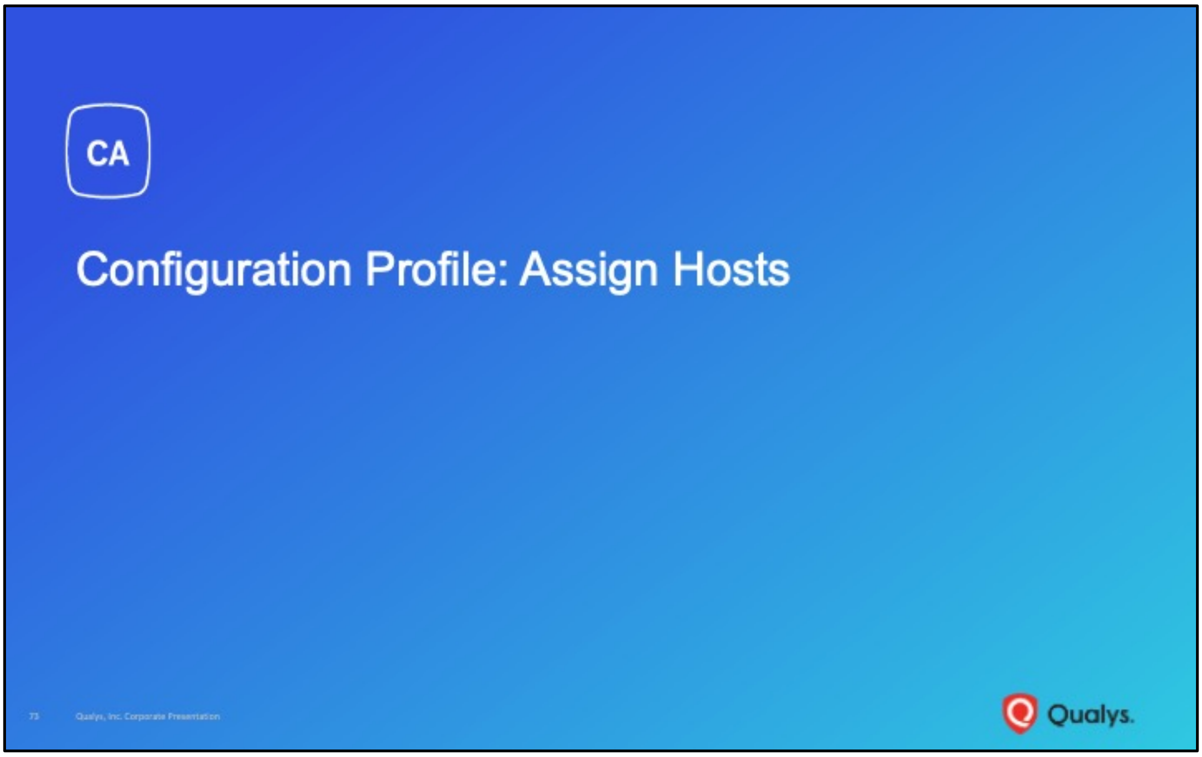
Windows agents are single threaded, and only consume a single CPU core--to calculate the real CPU usage on a four core system, divide the CPU Limit percentage by 4. On an eight core system, divide the CPU Limit percentage by 8.



CPU Throttle & Limit Comparison

CPU Throttle (Linux/Mac)	CPU Limit (Windows)	Notes
0 ms	100%	Fastest data collection
1-10 ms	20%	Best trade-off between CPU usage and scan performance
11-20 ms	10%	
20+ ms	5%	Slower data collection

The middle (blue) rows in this table represent the agent performance sweet spot. This is a good place to start and attempts to balance agent performance with CPU usage. Adjustments should then be made higher or lower, according to available resources and performance needs.



CA

Configuration Profile: Assign Hosts

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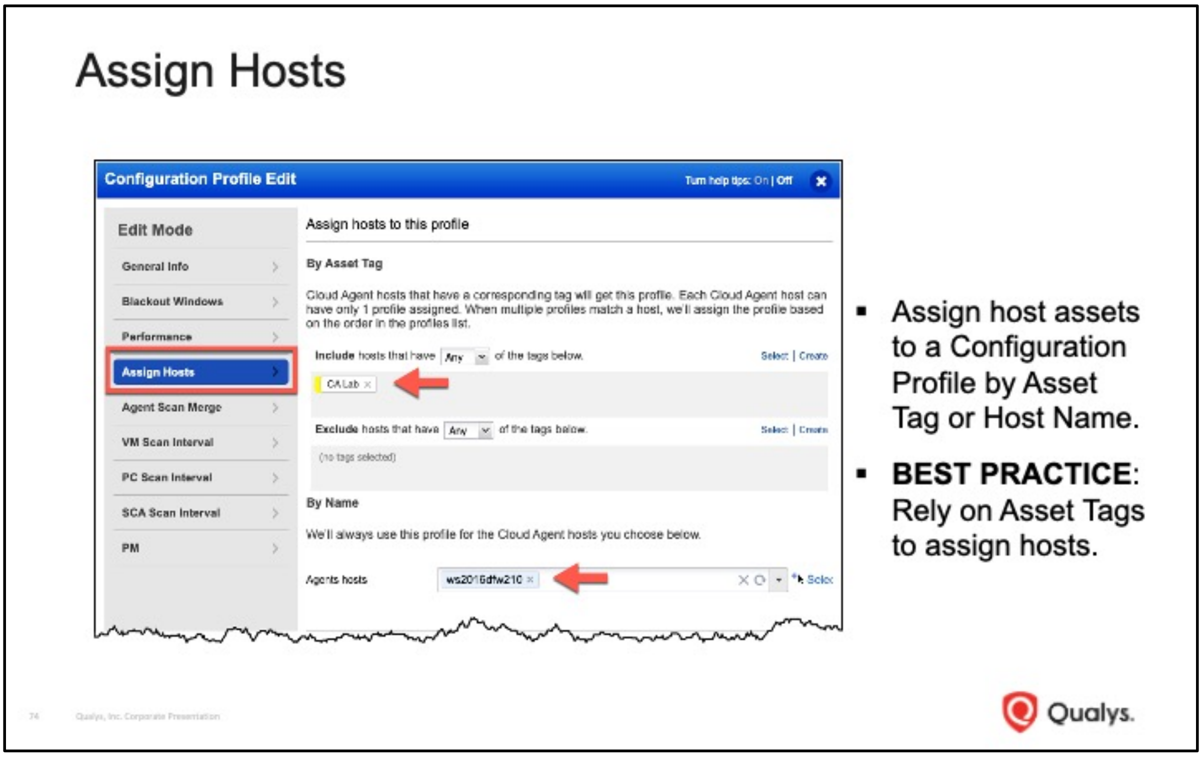

Assign Hosts

Configuration Profile Edit

Turn help tips: On | Off

Edit Mode

- General Info
- Blackout Windows
- Performance
- Assign Hosts
- Agent Scan Merge
- VM Scan Interval
- PC Scan Interval
- SCA Scan Interval
- PM

Assign hosts to this profile

By Asset Tag

Cloud Agent hosts that have a corresponding tag will get this profile. Each Cloud Agent host can have only 1 profile assigned. When multiple profiles match a host, we'll assign the profile based on the order in the profiles list.

Include hosts that have Any of the tags below. Select | Create

CA Lab ×

Exclude hosts that have Any of the tags below. Select | Create

(no tags selected)

By Name

We'll always use this profile for the Cloud Agent hosts you choose below.

Agents hosts ws2016dfw210 × Selec

- Assign host assets to a Configuration Profile by Asset Tag or Host Name.
- **BEST PRACTICE**: Rely on Asset Tags to assign hosts.

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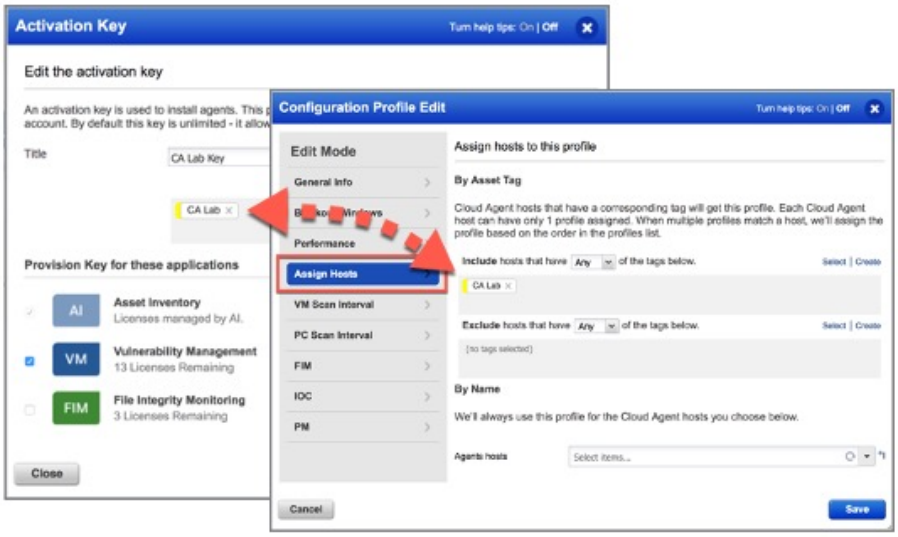
Agent hosts can be assigned to a configuration profile by Asset Tag or explicitly by name.

BEST PRACTICE: Rely on Asset Tags to assign hosts.

Activation Key Tag Strategy

- **BEST PRACTICE:** Assign "static" tags to agent Activation Keys and use them to ensure agent hosts receive their appropriate performance settings, patching licenses, and patch job assignments.



Activation Key

Edit the activation key

An activation key is used to install agents. This p
account. By default this key is unlimited - it allow

Title: CA Lab Key

CA Lab ×

Provision Key for these applications

- AI — Asset Inventory — Licenses managed by AI.
- ☑ VM — Vulnerability Management — 13 Licenses Remaining
- □ FIM — File Integrity Monitoring — 3 Licenses Remaining

Configuration Profile Edit

Assign hosts to this profile

By Asset Tag

Cloud Agent hosts that have a corresponding tag will get this profile. Each Cloud Agent host can have only 1 profile assigned. When multiple profiles match a host, we'll assign the profile based on the order in the profiles list.

Include hosts that have Any of the tags below. Select | Create

CA Lab ×

Exclude hosts that have Any of the tags below. Select | Create

(no tags selected)

By Name

We'll always use this profile for the Cloud Agent hosts you choose below.

Agents hosts: Select items...

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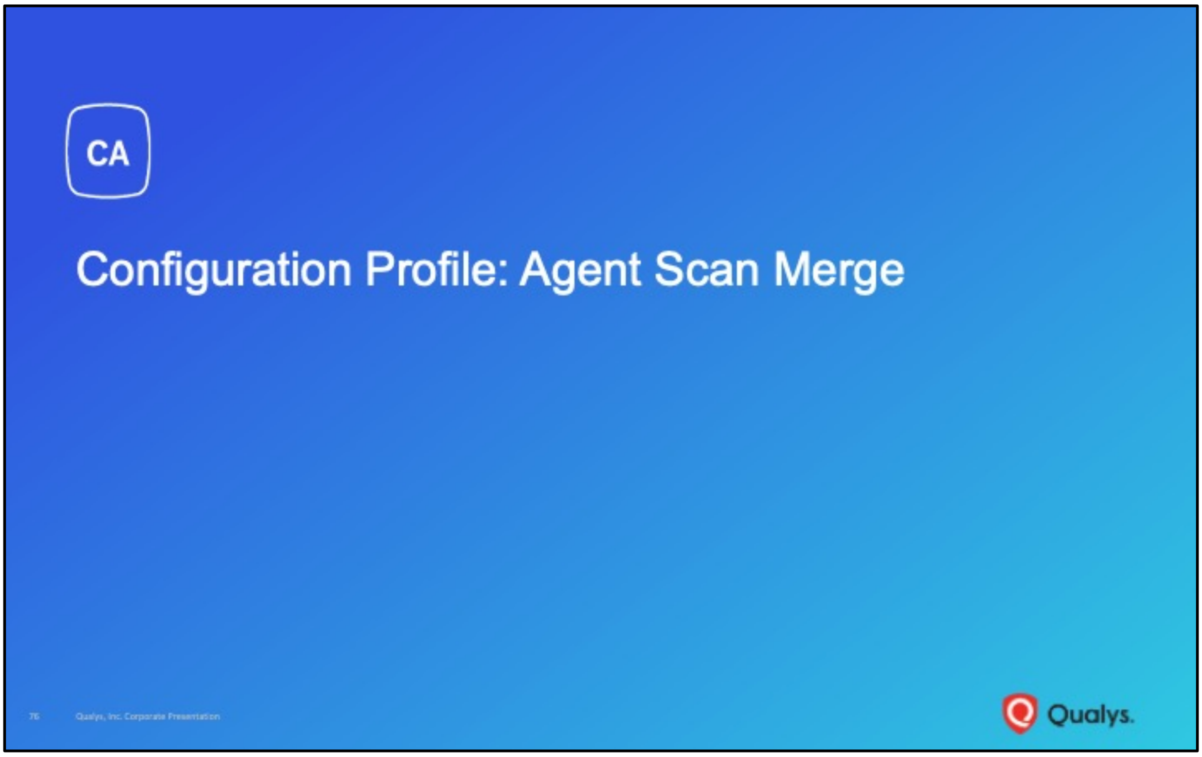
Assign a "static" tag to each agent Activation Key to easily locate the agent hosts it deploys. You can then use the same "static" tag to assign these hosts to their Configuration Profile

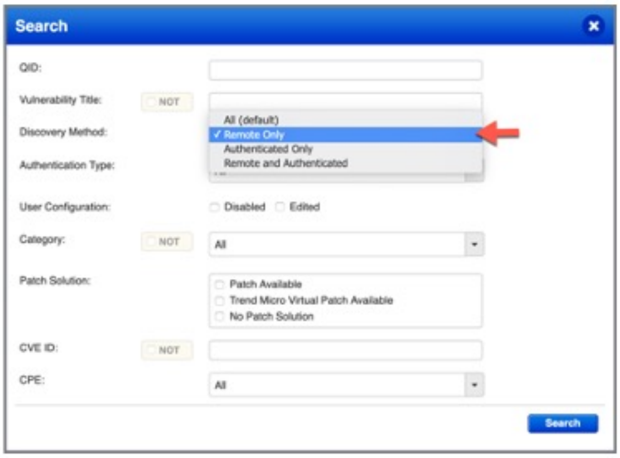
BEST PRACTICE: Use this strategy to assign agent host assets to their appropriate profiles, licenses, and jobs (at the time of agent deployment).



CA

Configuration Profile: Agent Scan Merge

Remote Only QIDs



Search

QID:

Vulnerability Title: □ NOT

Discovery Method:
- All (default)
- ✓ Remote Only
- Authenticated Only
- Remote and Authenticated

Authentication Type:

User Configuration: □ Disabled □ Edited

Category: □ NOT All

Patch Solution:
- □ Patch Available
- □ Trend Micro Virtual Patch Available
- □ No Patch Solution

CVE ID: □ NOT

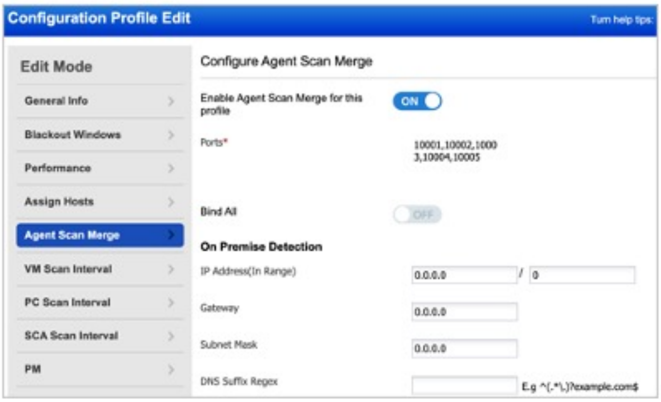
CPE: All

- A Qualys Scanner's "remote" perspective is required to detect "Remote Only" QIDs.
- Perform supplemental scans for agent hosts that are impacted by "Remote Only" QIDs.
- These hosts will have both SCAN data and AGENT data.

Supplemental scans (using a Qualys Scanner Appliance) may be performed on agent hosts, to provide coverage for "Remote Only" QIDs.

Agent Scan Merge

- Enable Agent Scan Merge in the agent Configuration Profile to expose the Agent Correlation Identifier.
- The agent will attempt to bind to the lowest available TCP port, in the range of 10001 through 10005.
- Use the “Bind All” option to bind on all ports simultaneously.



Configure Agent Scan Merge

Enable Agent Scan Merge for this profile: ON

Ports*: 10001,10002,10003,10004,10005

Bind All: OFF

On Premise Detection

IP Address(In Range): 0.0.0.0 / 0

Gateway: 0.0.0.0

Subnet Mask: 0.0.0.0

DNS Suffix Regex: E.g ^(.*\.)?example.com$

- Configure “On Premise Detection” to expose the Agent Correlation Identifier only when on a trusted network.

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Qualys Scanner Appliances produce SCAN data. Qualys Agents produce AGENT data. When a Qualys Scanner is used to scan a host that already has a Qualys Agent installed, both SCAN data and AGENT data records are collected and stored.

SCAN data and AGENT data can be successfully merged, when both types of records contain a common field or attribute. The Agent Correlation Identifier provides this common attribute.

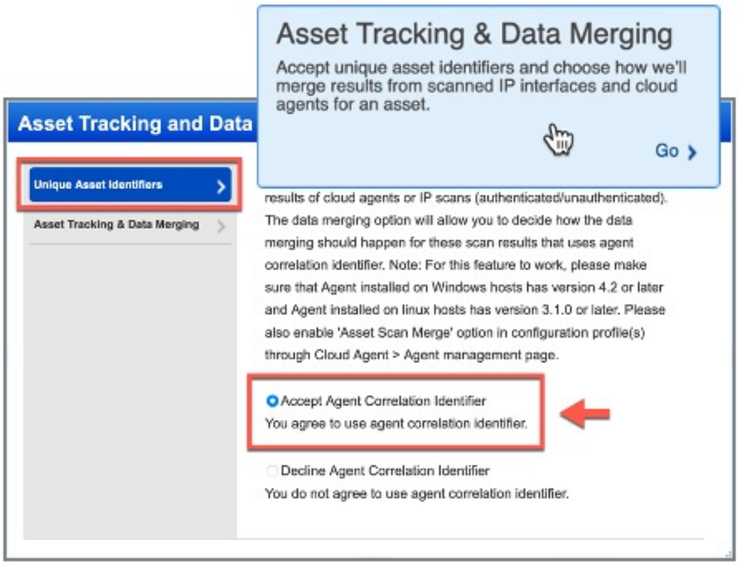
When Agent Scan Merge is enabled in a Configuration Profile, the Agent Correlation Identifier is exposed on TCP ports 10001-10005. By default the lowest available port number will be used. Use the “Bind All” option to bind on all five ports simultaneously.

Configure “On Premise Detection” to expose the Agent Correlation Identifier only on a trusted network. An IP address range configured to: 0.0.0.0/0 enables this feature for all agent hosts.

Once Agent Scan Merger is enabled, the ‘agentid-service’ can be viewed from Windows Task Manager or within a Unix/Linux process list. Use the netstat command to view its assigned port number(s).

Unique Asset Identifiers

- From Qualys VM or VMDR, accept the “Agent Correlation Identifier” option (Assets > Setup > Asset Tracking & Data Merging).
- Qualys Scanner Appliances will attempt to read the correlation identifier when scanning agent hosts, allowing the SCAN data to be linked to its associated agent.



Asset Tracking & Data Merging

Accept unique asset identifiers and choose how we'll merge results from scanned IP interfaces and cloud agents for an asset.

results of cloud agents or IP scans (authenticated/unauthenticated). The data merging option will allow you to decide how the data merging should happen for these scan results that uses agent correlation identifier. Note: For this feature to work, please make sure that Agent installed on Windows hosts has version 4.2 or later and Agent installed on linux hosts has version 3.1.0 or later. Please also enable 'Asset Scan Merge' option in configuration profile(s) through Cloud Agent > Agent management page.

● Accept Agent Correlation Identifier
You agree to use agent correlation identifier.

○ Decline Agent Correlation Identifier
You do not agree to use agent correlation identifier.

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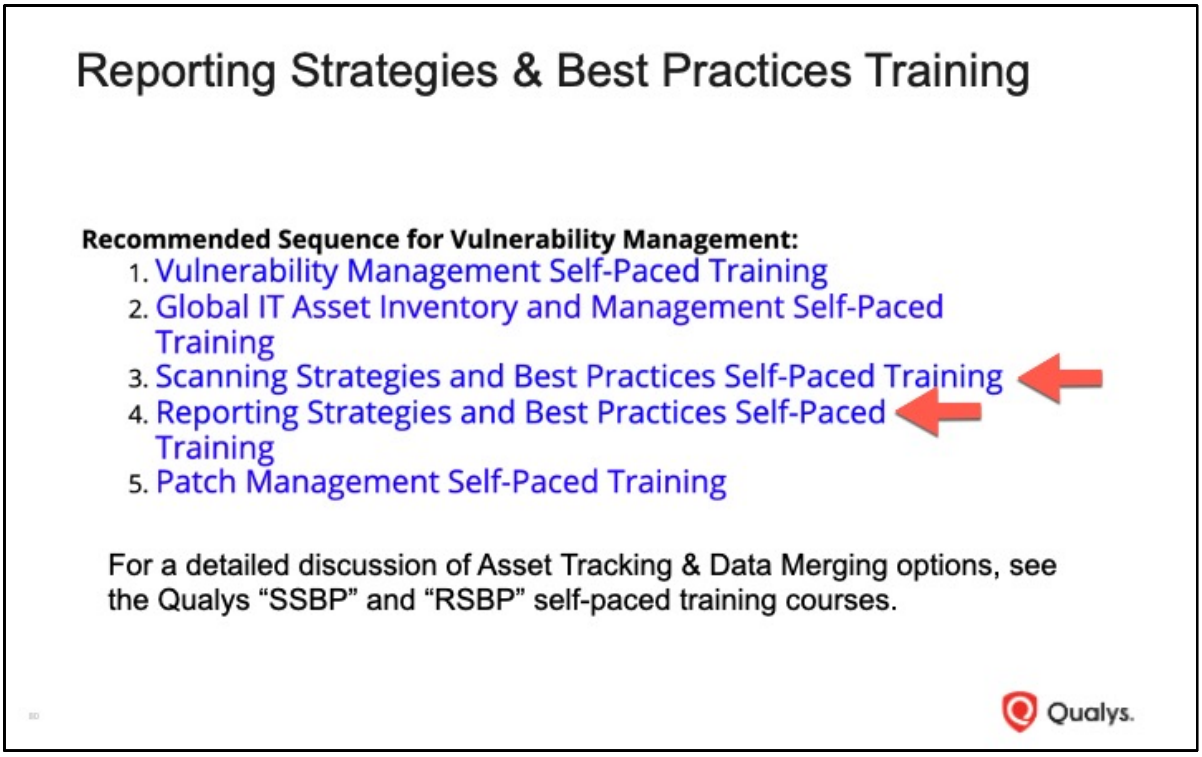
Once the Agent Correlation Identifier is accepted, within the “Asset Tracking and Data Merging Setup” options (in Qualys VM or VMDR), Qualys Scanners will attempt to read the Agent Correlation Identifier from agent hosts.

AGENT data and SCAN data can be successfully merged using the Agent Correlation Identifier attribute.



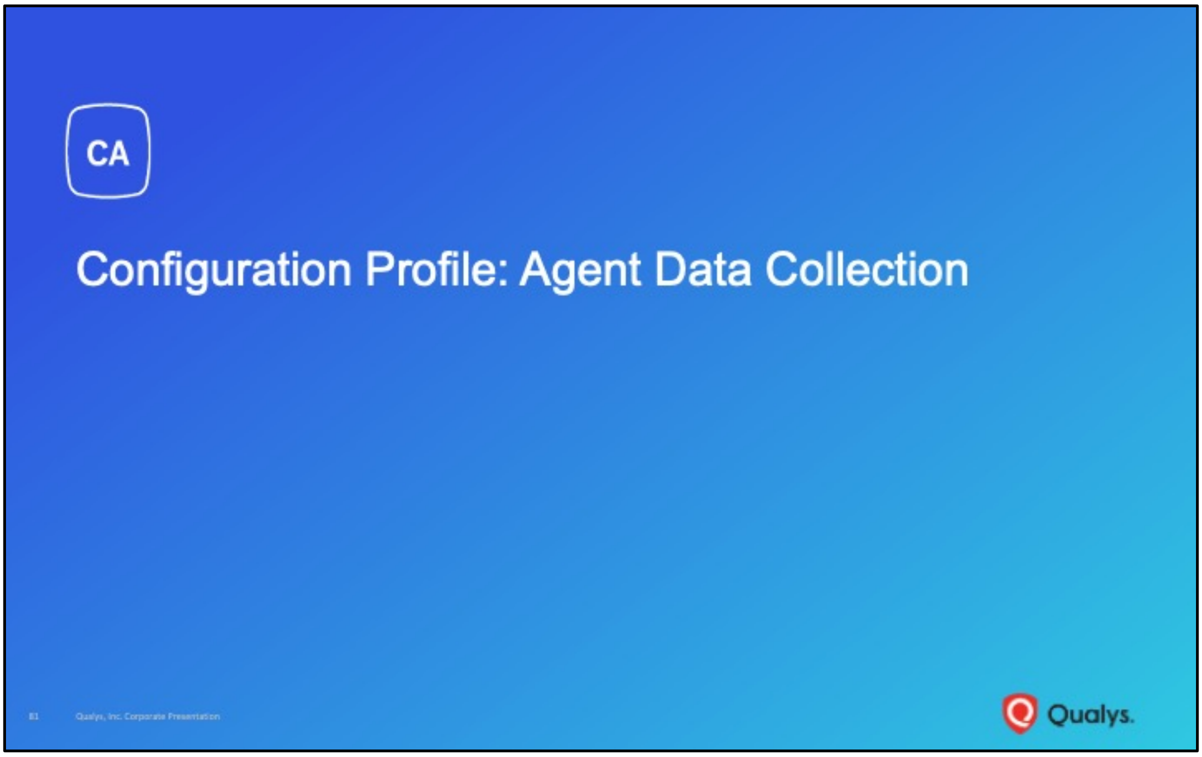
Reporting Strategies & Best Practices Training

Recommended Sequence for Vulnerability Management:

1. Vulnerability Management Self-Paced Training
2. Global IT Asset Inventory and Management Self-Paced Training
3. Scanning Strategies and Best Practices Self-Paced Training
4. Reporting Strategies and Best Practices Self-Paced Training
5. Patch Management Self-Paced Training

For a detailed discussion of Asset Tracking & Data Merging options, see the Qualys “SSBP” and “RSBP” self-paced training courses.

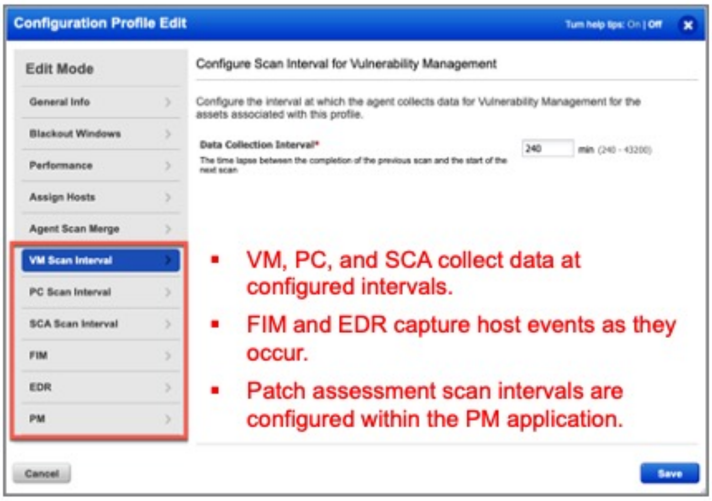
For a complete description of the different Data Merging options in Qualys VM and VMDR, please enroll in the Qualys “Scanning Strategies & Best Practices” self-paced training course.



CA

Configuration Profile: Agent Data Collection

Interval vs. Event-Driven Data Collection



Configure Scan Interval for Vulnerability Management

Configure the interval at which the agent collects data for Vulnerability Management for the assets associated with this profile.

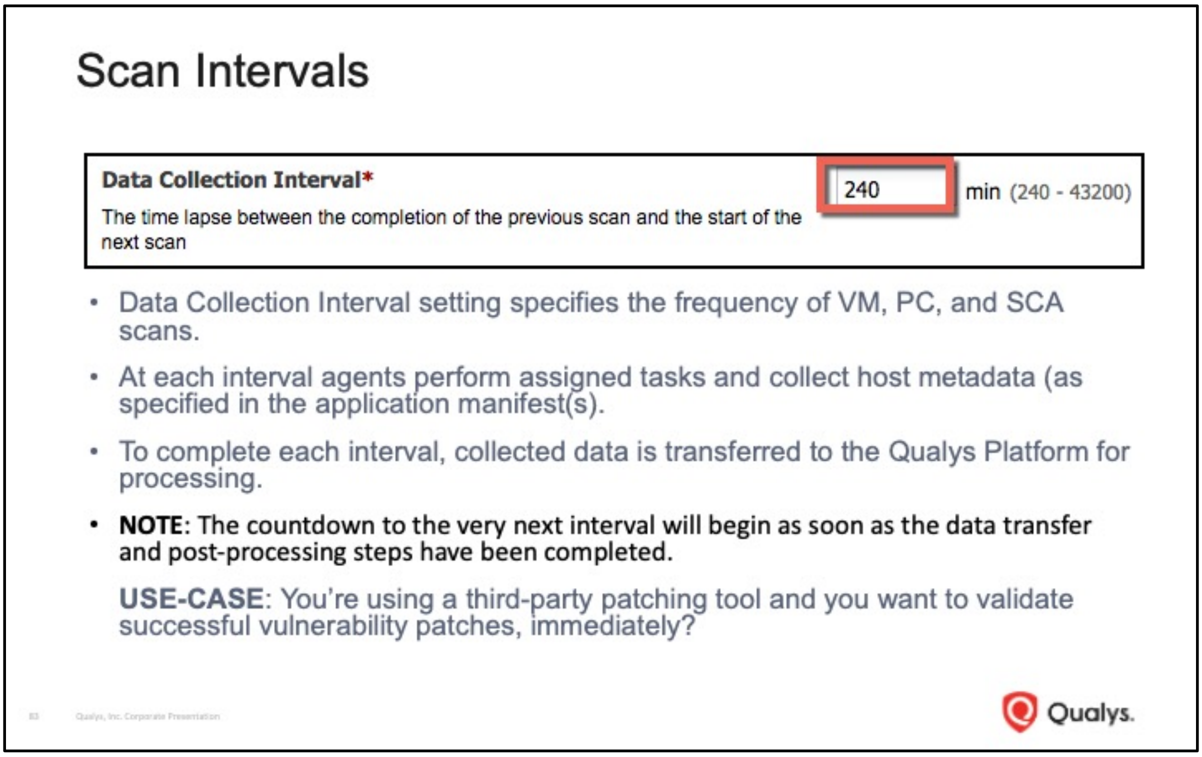
Data Collection Interval* 240 min (240 - 43200)
The time lapse between the completion of the previous scan and the start of the next scan

- VM, PC, and SCA collect data at configured intervals.
- FIM and EDR capture host events as they occur.
- Patch assessment scan intervals are configured within the PM application.

The remaining options, allow you to customize the data collection methods used by agent hosts. Some Qualys applications collect data at user-defined intervals and other applications capture events as they occur on the host.

Focusing on data collection allows the agent to remain relatively lightweight, while sending the collected data to the Qualys platform for assessment and enrichment.

VM, PC, and SCA provide user-defined intervals for data collection, while FIM and EDR use event-driven techniques. Although Patch Management (PM) provides user-defined intervals for its patch assessment scans, this setting must be configured within the PM application.



Scan Intervals

Data Collection Interval*

The time lapse between the completion of the previous scan and the start of the next scan

240 min (240 - 43200)

- Data Collection Interval setting specifies the frequency of VM, PC, and SCA scans.
- At each interval agents perform assigned tasks and collect host metadata (as specified in the application manifest(s).
- To complete each interval, collected data is transferred to the Qualys Platform for processing.
- **NOTE: The countdown to the very next interval will begin as soon as the data transfer and post-processing steps have been completed.**

USE-CASE: You're using a third-party patching tool and you want to validate successful vulnerability patches, immediately?

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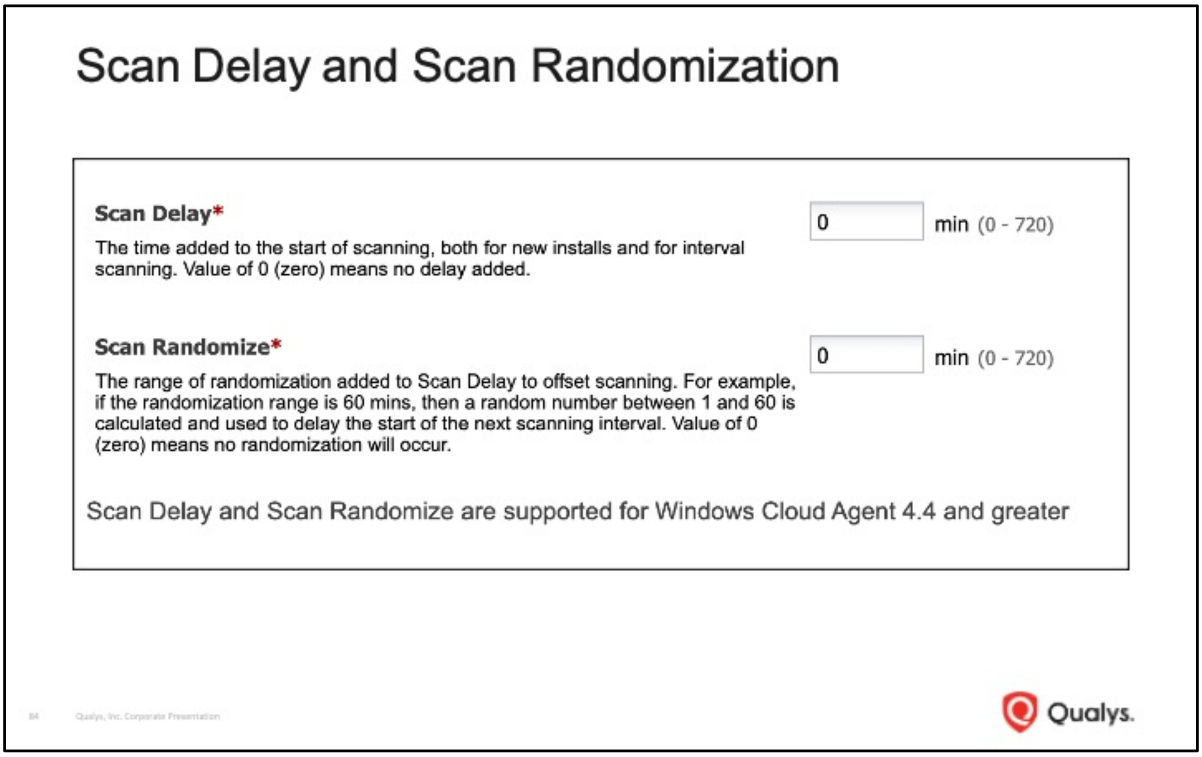
The VM, PC, and SCA Scan Interval setting determine how often Cloud Agent collects vulnerability and compliance assessment data. Configured at its minimal value, data collections will occur every four hours.

NOTE: The countdown to the very next interval will begin as soon as the data transfer and post-processing steps have been completed. The countdown to the next interval begins at the END of the previous interval (i.e., it does NOT begin at the START of the previous interval).

The solution to the use-case in this slide calls for the ability to run “on-demand” agent scans.



Scan Delay and Scan Randomization

Scan Delay*

The time added to the start of scanning, both for new installs and for interval scanning. Value of 0 (zero) means no delay added.

0 min (0 - 720)

Scan Randomize*

The range of randomization added to Scan Delay to offset scanning. For example, if the randomization range is 60 mins, then a random number between 1 and 60 is calculated and used to delay the start of the next scanning interval. Value of 0 (zero) means no randomization will occur.

0 min (0 - 720)

Scan Delay and Scan Randomize are supported for Windows Cloud Agent 4.4 and greater

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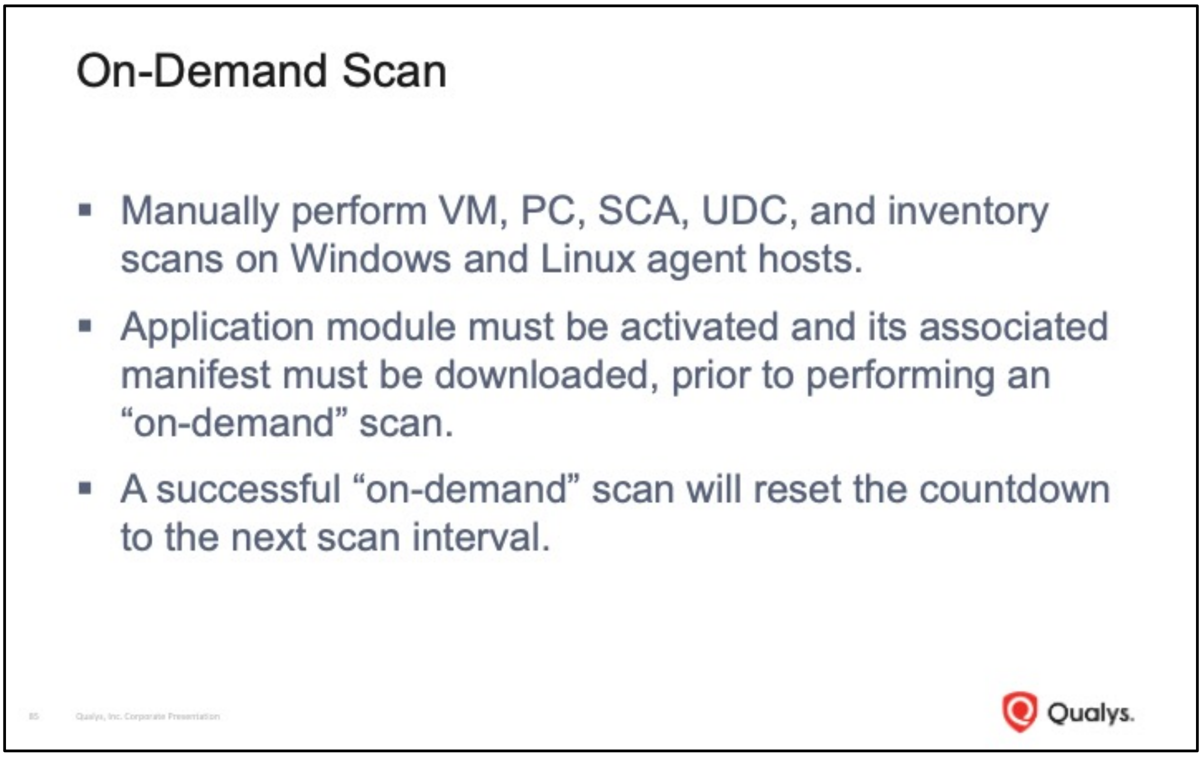
The use case for this would be to make sure that all agents don't send the data to platform at the same time. It can be seen as a means to stagger the communication, so that impact on the network is reduced.

Additional Use cases for this:

Client VDI all starting at 9am when employees start working
Elastic cloud when 1000s of assets are deployed at the same time
Agent assets in Blackout Windows all start processing at the same time
When new manifests come out, especially for remote office locations and slow links
When new agent installer versions come out



On-Demand Scan

- Manually perform VM, PC, SCA, UDC, and inventory scans on Windows and Linux agent hosts.
- Application module must be activated and its associated manifest must be downloaded, prior to performing an "on-demand" scan.
- A successful "on-demand" scan will reset the countdown to the next scan interval.

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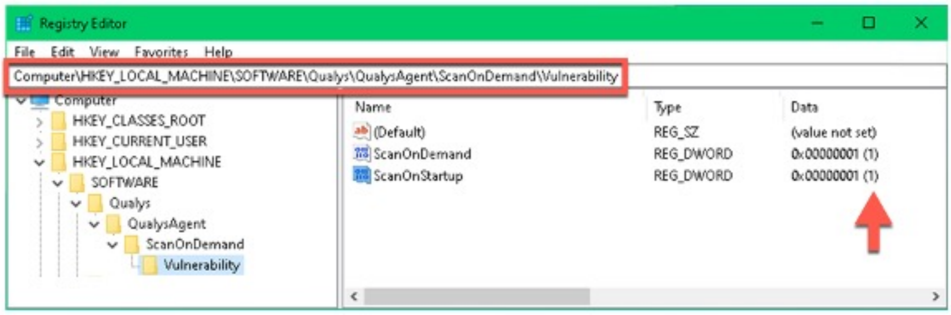
You can run an On Demand Scan to instruct the agent to immediately scan as long as the agent is not already scanning.

The target application module must be activated and its associated manifest must be downloaded, prior to performing an "on-demand" scan.

The On Demand Scan runs independently of the interval scan that you configure in the Configuration Profile and will reset the scan interval on the local agent after a successful scan.

On-Demand Scan Examples

- On-demand scans for Windows are configured in the Windows Registry.



Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Qualys\QualysAgent\ScanOnDemand\Vulnerability

- Computer
  - HKEY_CLASSES_ROOT
  - HKEY_CURRENT_USER
  - HKEY_LOCAL_MACHINE
    - SOFTWARE
      - Qualys
        - QualysAgent
          - ScanOnDemand
            - Vulnerability

Name	Type	Data
(Default)	REG_SZ	(value not set)
ScanOnDemand	REG_DWORD	0x00000001 (1)
ScanOnStartup	REG_DWORD	0x00000001 (1)

- On-demand scans for Linux are executed from the command line.

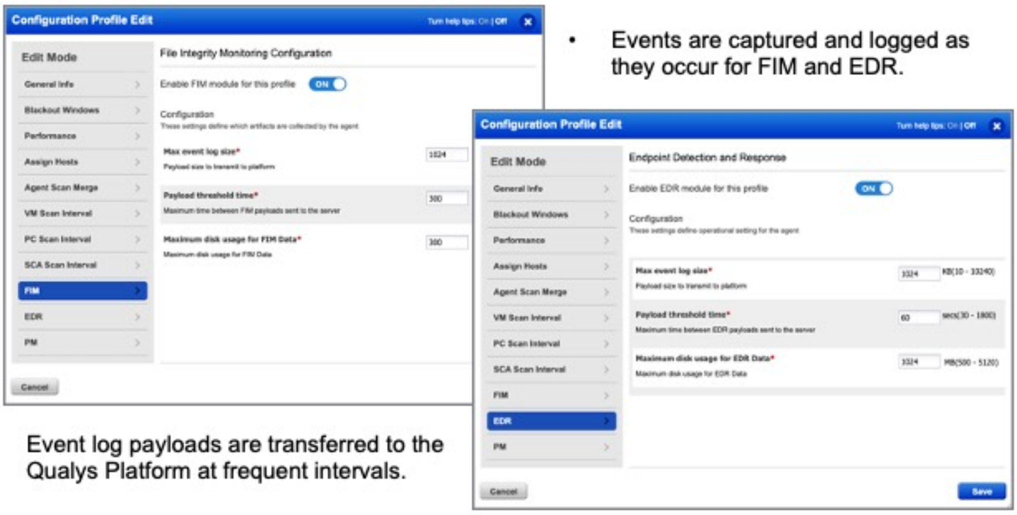
```
>#  ./cloudagentctl.sh action={demand} type=vm
```

On-demand scans for Windows are configured in the Windows Registry and on-demand scans for Linux are executed from the command line. Please see the lab tutorial supplement for this course for more examples and details for running on-demand scans for Windows and Linux.

The same command of LinuxOS can even be used for MacOS.

Event-Driven Data Collection

- Events are captured and logged as they occur for FIM and EDR.



File Integrity Monitoring Configuration

Enable FIM module for this profile: ON

Configuration
These settings define which artifacts are collected by the agent

Max event log size* Payload size to transmit to platform	1024	
Payload threshold time* Maximum time between FIM payloads sent to the server	300	
Maximum disk usage for FIM Data* Maximum disk usage for FIM Data	300	

Endpoint Detection and Response

Enable EDR module for this profile: ON

Configuration
These settings define operational setting for the agent

Max event log size* Payload size to transmit to platform	1024	KB(10 - 10240)
Payload threshold time* Maximum time between EDR payloads sent to the server	60	secs(30 - 1800)
Maximum disk usage for EDR Data* Maximum disk usage for EDR Data	1024	MB(500 - 5120)

- Event log payloads are transferred to the Qualys Platform at frequent intervals.

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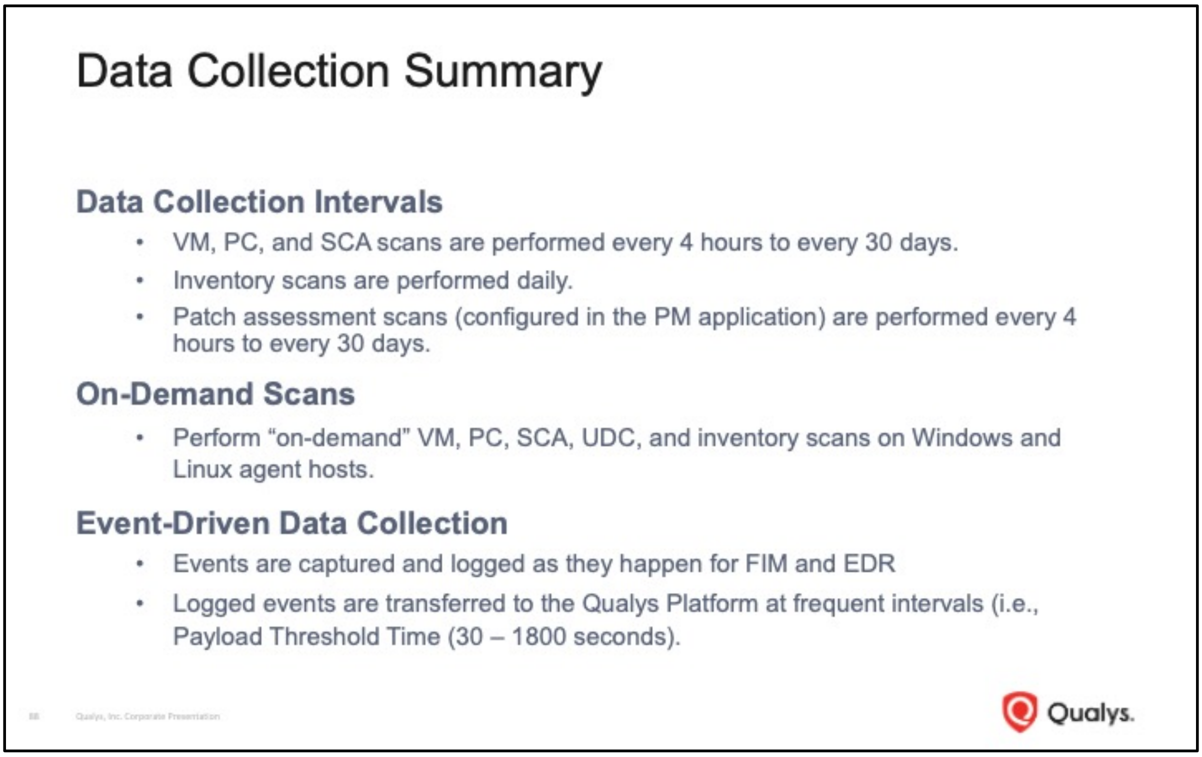
Kernel drivers allow agents to collect event data for FIM and EDR, as the events occur on the agent host. The “Payload Threshold Time” setting specifies the frequency of event log transmissions to the Qualys Platform (anywhere from 30 to 1800 seconds).



Data Collection Summary

Data Collection Intervals

- VM, PC, and SCA scans are performed every 4 hours to every 30 days.
- Inventory scans are performed daily.
- Patch assessment scans (configured in the PM application) are performed every 4 hours to every 30 days.

On-Demand Scans

- Perform “on-demand” VM, PC, SCA, UDC, and inventory scans on Windows and Linux agent hosts.

Event-Driven Data Collection

- Events are captured and logged as they happen for FIM and EDR
- Logged events are transferred to the Qualys Platform at frequent intervals (i.e., Payload Threshold Time (30 – 1800 seconds).

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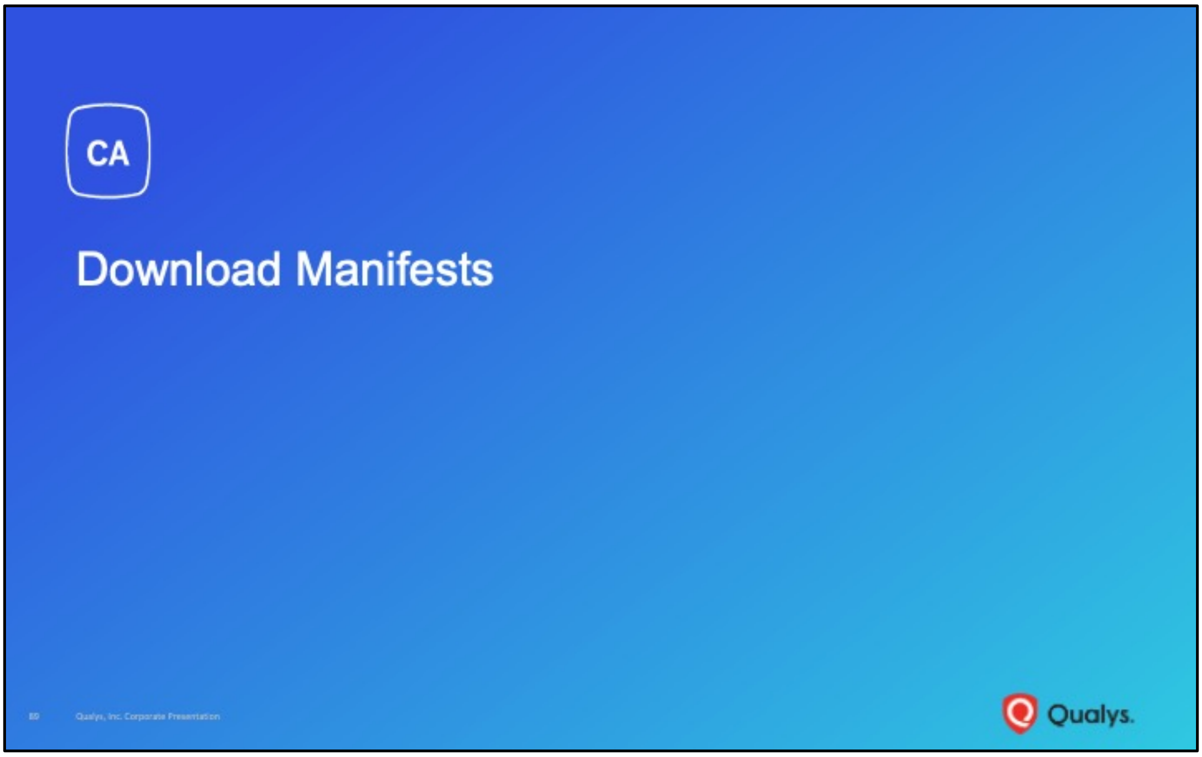
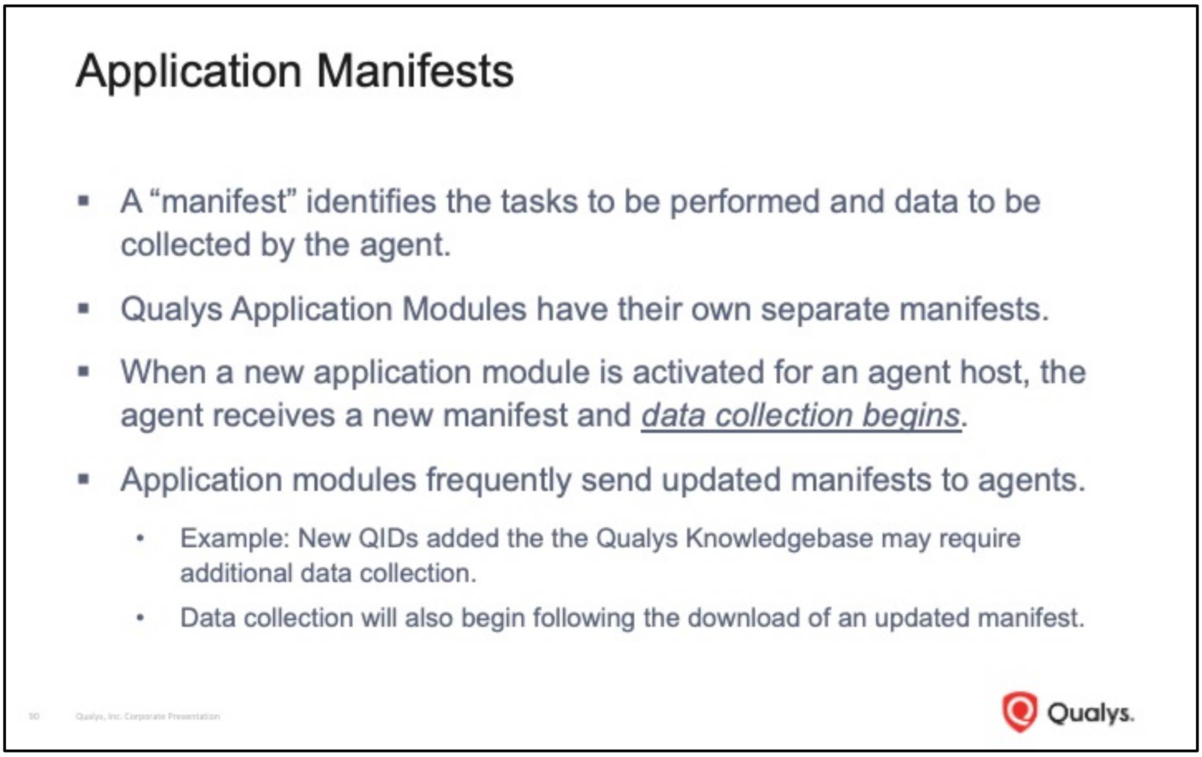
This slide provides a summary of the various agent data collection methods.

Agent data collection methods are dependent on the Qualys application module.



CA

Download Manifests



Application Manifests

- A “manifest” identifies the tasks to be performed and data to be collected by the agent.
- Qualys Application Modules have their own separate manifests.
- When a new application module is activated for an agent host, the agent receives a new manifest and *data collection begins*.
- Application modules frequently send updated manifests to agents.
  - Example: New QIDs added the the Qualys Knowledgebase may require additional data collection.
  - Data collection will also begin following the download of an updated manifest.

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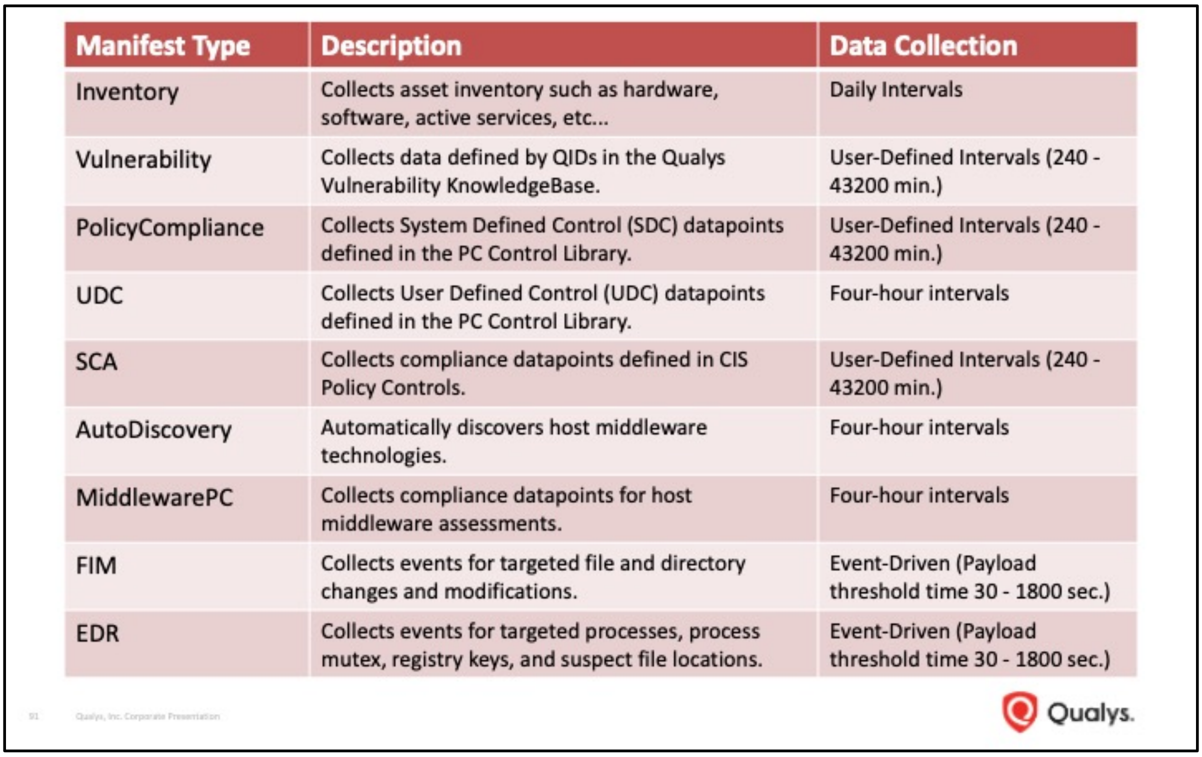
A manifest identifies the metadata an agent will collect from its host for a given application. Qualys Application Modules have their own separate manifests.

When a new application module is activated for an agent host, the agent receives a new manifest and *data collection begins*. Data collection also begins after an agent receives an updated manifest.

Manifests get updated regularly, especially in the case of VM where Qualys is continually adding new vulnerability signatures to our KnowledgeBase.



Manifest Type	Description	Data Collection
Inventory	Collects asset inventory such as hardware, software, active services, etc...	Daily Intervals
Vulnerability	Collects data defined by QIDs in the Qualys Vulnerability KnowledgeBase.	User-Defined Intervals (240 - 43200 min.)
PolicyCompliance	Collects System Defined Control (SDC) datapoints defined in the PC Control Library.	User-Defined Intervals (240 - 43200 min.)
UDC	Collects User Defined Control (UDC) datapoints defined in the PC Control Library.	Four-hour intervals
SCA	Collects compliance datapoints defined in CIS Policy Controls.	User-Defined Intervals (240 - 43200 min.)
AutoDiscovery	Automatically discovers host middleware technologies.	Four-hour intervals
MiddlewarePC	Collects compliance datapoints for host middleware assessments.	Four-hour intervals
FIM	Collects events for targeted file and directory changes and modifications.	Event-Driven (Payload threshold time 30 - 1800 sec.)
EDR	Collects events for targeted processes, process mutex, registry keys, and suspect file locations.	Event-Driven (Payload threshold time 30 - 1800 sec.)

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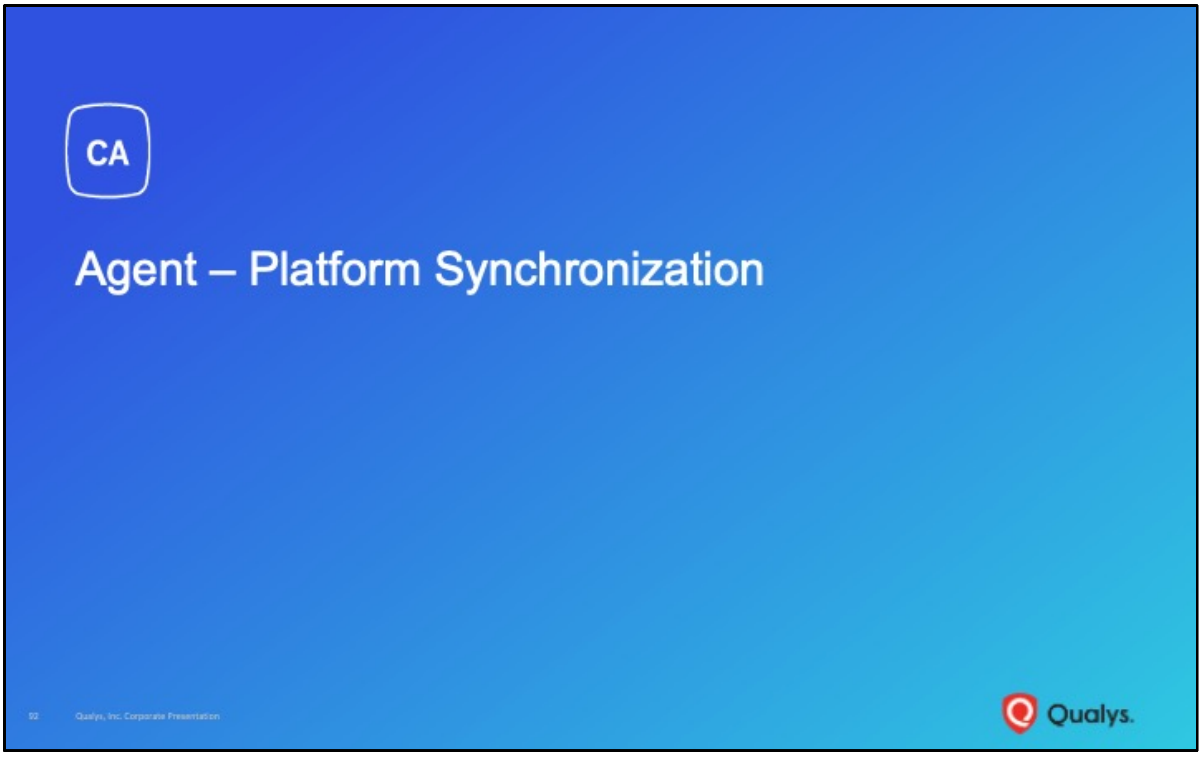
This table provides a summary of manifest types along with their respective data collection methods.



CA

Agent – Platform Synchronization

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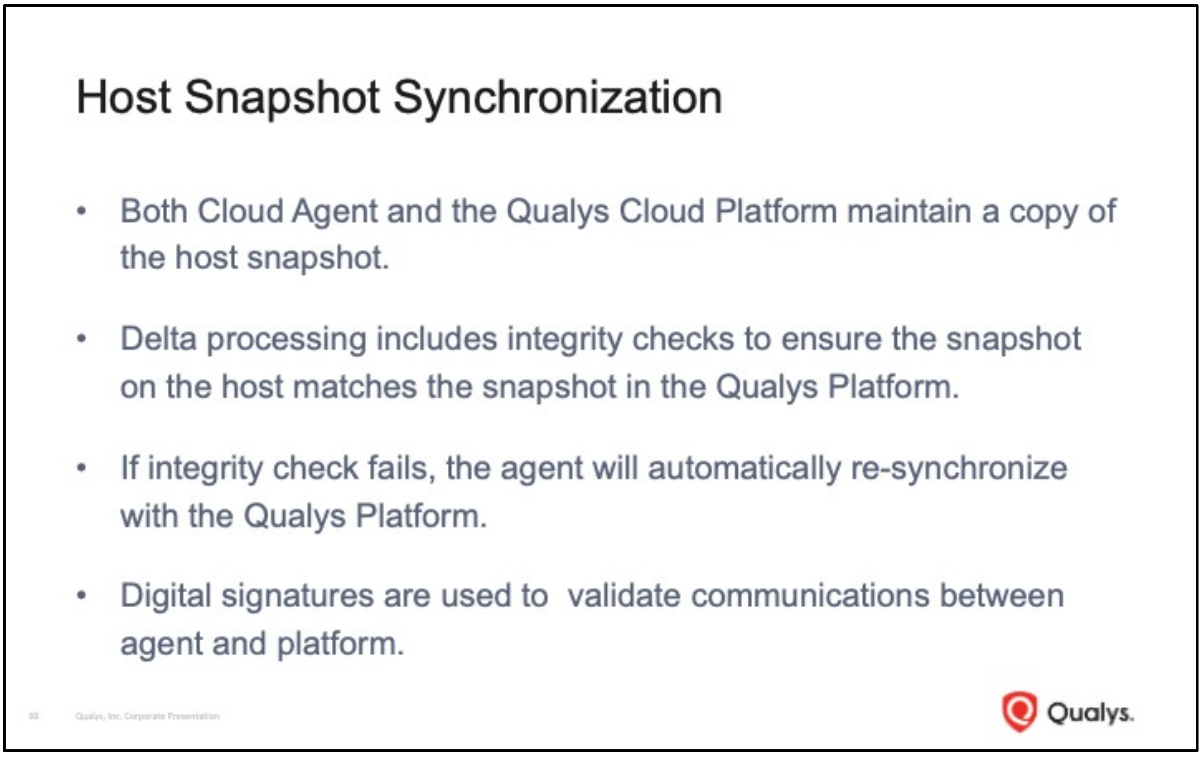

Host Snapshot Synchronization

- Both Cloud Agent and the Qualys Cloud Platform maintain a copy of the host snapshot.
- Delta processing includes integrity checks to ensure the snapshot on the host matches the snapshot in the Qualys Platform.
- If integrity check fails, the agent will automatically re-synchronize with the Qualys Platform.
- Digital signatures are used to validate communications between agent and platform.

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The delta processing feature of the Cloud Agent includes a synchronization mechanism that guarantees that local snapshot files and the data processed by the platform are the same. If the integrity check fails on either side, the agent will re-synchronize (called “scorch” internally) where both the agent and the platform delete existing snapshot data and start as if a newly provisioned agent. This process is performed automatically, if synchronization checks fail.

CA

Activate, Deactivate & Uninstall Agents

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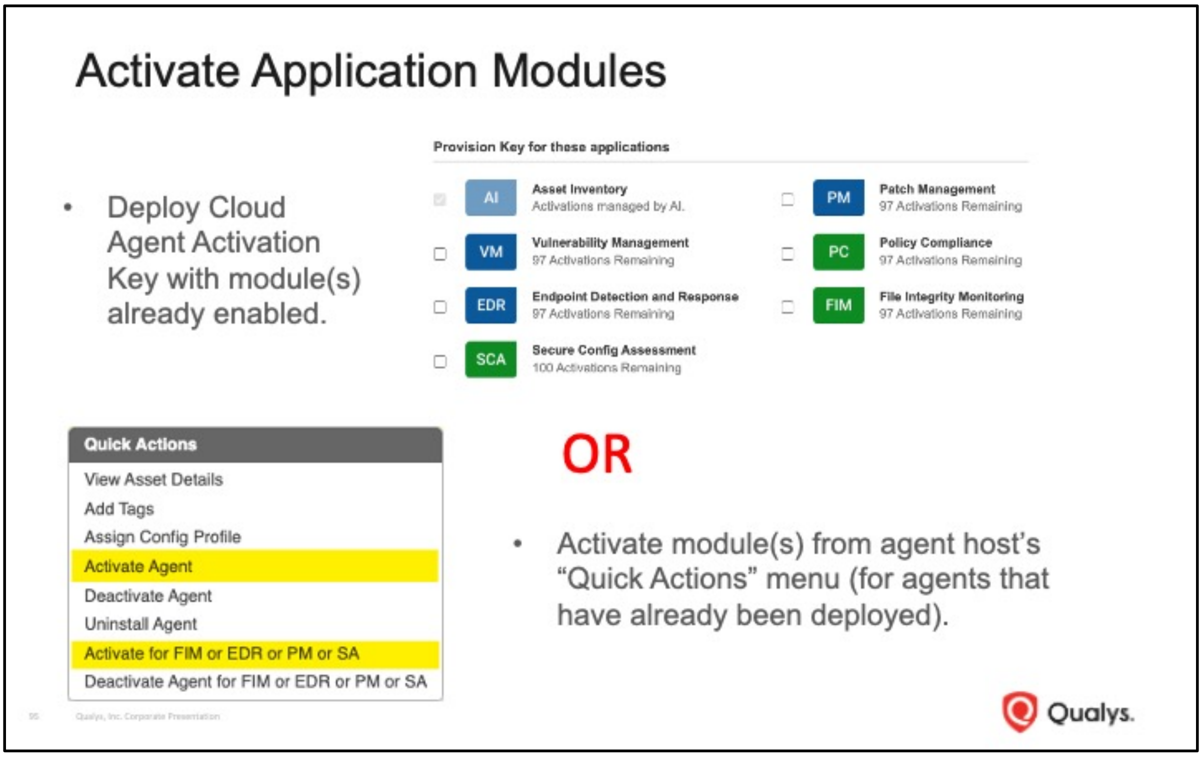


Activate Application Modules

- Deploy Cloud Agent Activation Key with module(s) already enabled.

Provision Key for these applications

☑ AI Asset Inventory
Activations managed by AI.

□ PM Patch Management
97 Activations Remaining

□ VM Vulnerability Management
97 Activations Remaining

□ PC Policy Compliance
97 Activations Remaining

□ EDR Endpoint Detection and Response
97 Activations Remaining

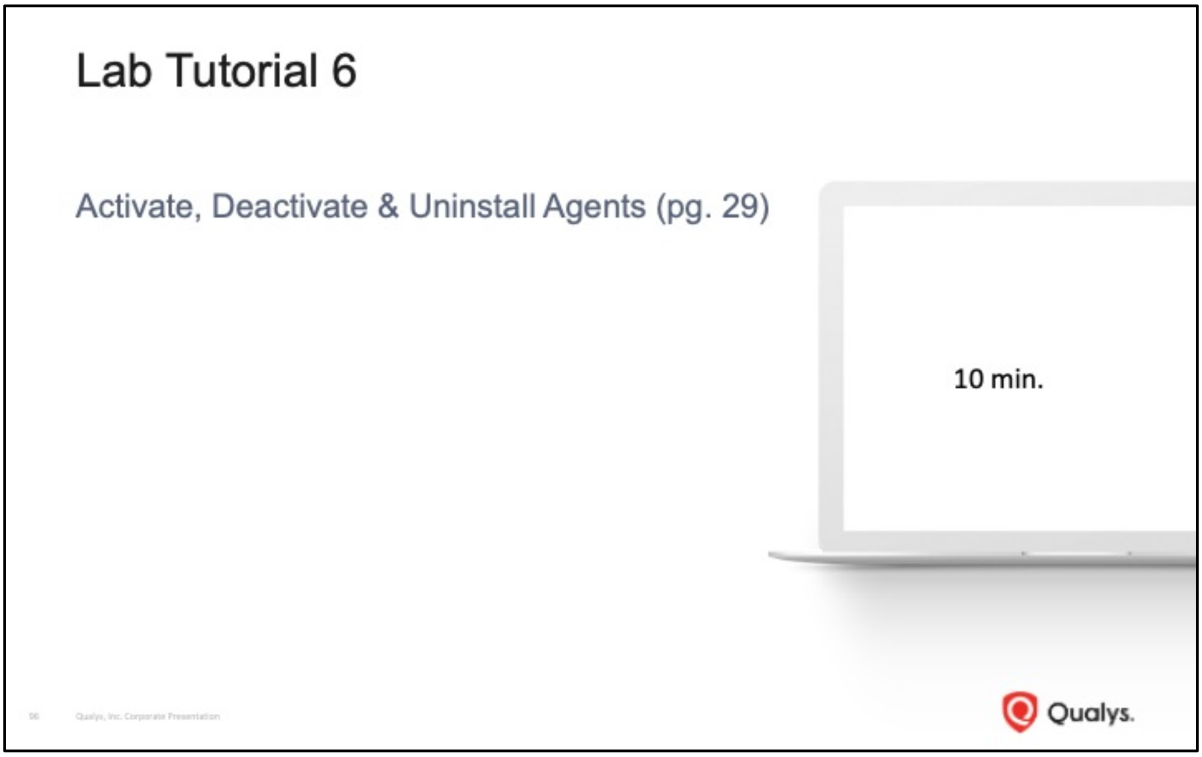
□ FIM File Integrity Monitoring
97 Activations Remaining

□ SCA Secure Config Assessment
100 Activations Remaining

OR

- Activate module(s) from agent host's "Quick Actions" menu (for agents that have already been deployed).

Qualys application modules (selected within an agent Activation Key) are activated at the time of agent deployment.   Application modules can also be activated from the "Quick Actions" Menu of any agent hosts.



Lab Tutorial 6

Activate, Deactivate & Uninstall Agents (pg. 29)

10 min.

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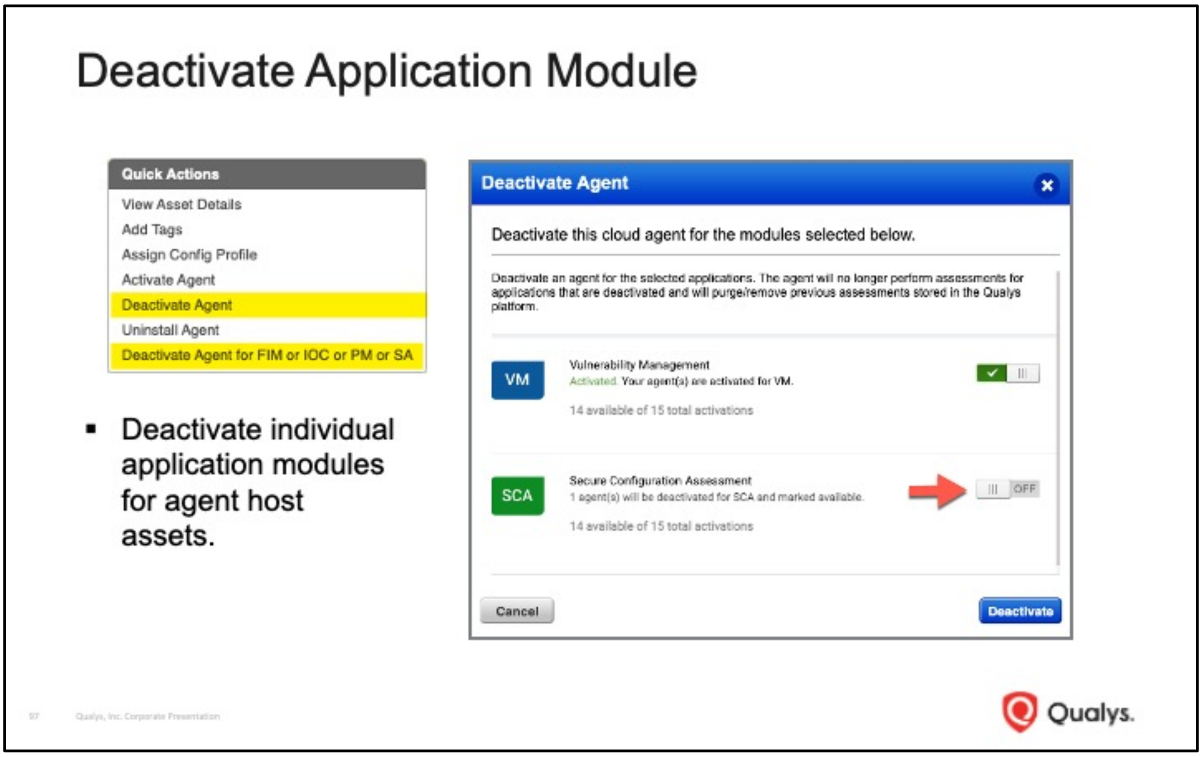
1. Deactivate the PC application module for an agent host
2. From the “Agents” tab, uninstall agents from three hosts, using the “Actions” button in the Cloud Agent UI



Deactivate Application Module

- Deactivate individual application modules for agent host assets.

Deactivate this cloud agent for the modules selected below.

Deactivate an agent for the selected applications. The agent will no longer perform assessments for applications that are deactivated and will purge/remove previous assessments stored in the Qualys platform.

Activated. Your agent(s) are activated for VM.

14 available of 15 total activations

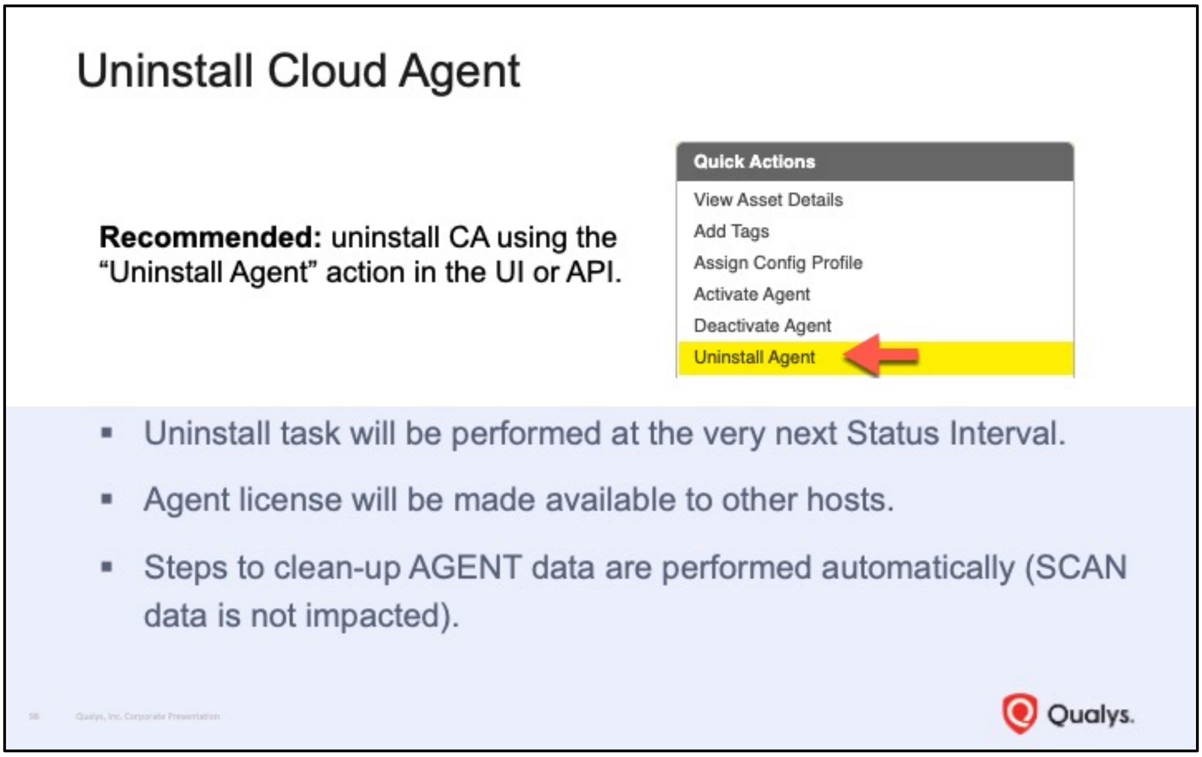
1 agent(s) will be deactivated for SCA and marked available.

14 available of 15 total activations

Application modules can be deactivated for one agent host and then activated for another.

To deactivate an Agent Module, select “Deactivate Agent” from the “Quick Actions” menu. Then turn-off the targeted module, before clicking the “Deactivate” button.

A deactivated module can also be re-activated by using the “Activate Agent” option from the “Quick Actions” menu.



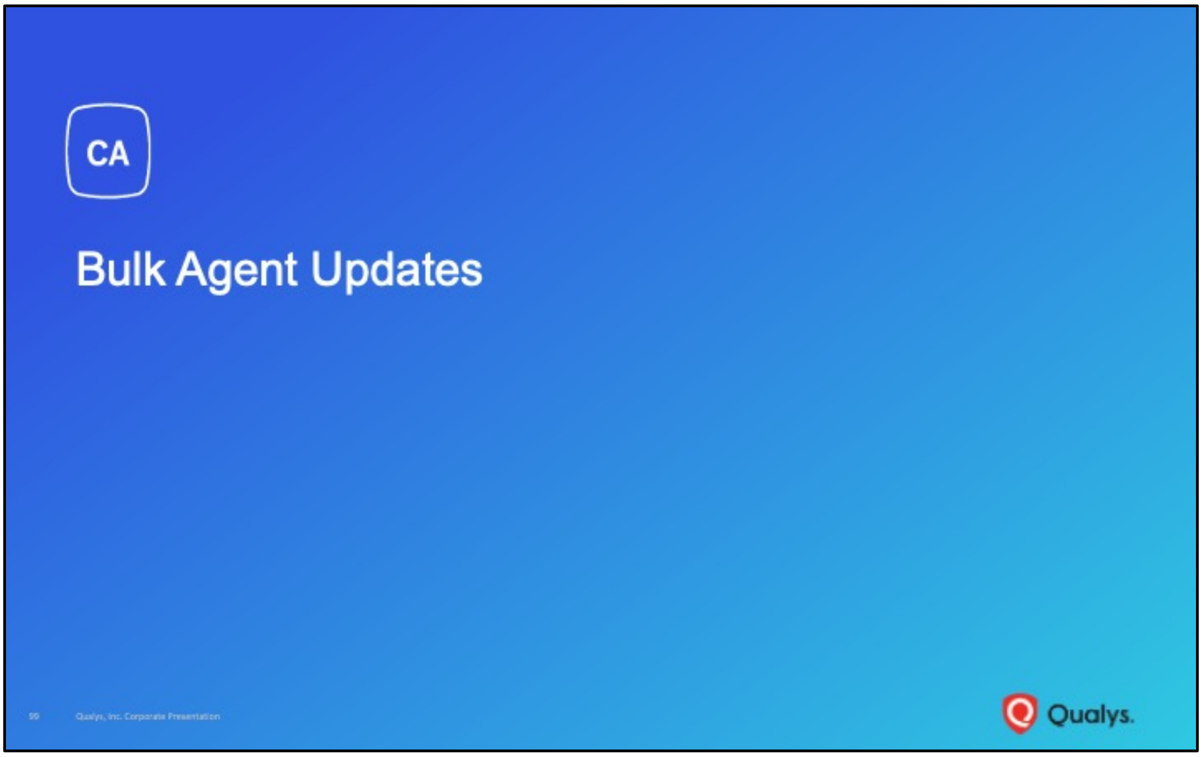
Uninstall Cloud Agent

Recommended: uninstall CA using the "Uninstall Agent" action in the UI or API.

- Uninstall task will be performed at the very next Status Interval.
- Agent license will be made available to other hosts.
- Steps to clean-up AGENT data are performed automatically (SCAN data is not impacted).

Selecting the "Uninstall Agent" option from the "Quick Actions" menu of any agent, will remove the agent from its host the very next time it checks-in. Any asset inventory, vulnerability, or policy compliance data is purged from the platform.

Agents must be uninstalled from the Qualys UI of API to ensure appropriate data clean-up measures are performed.



CA

Bulk Agent Updates

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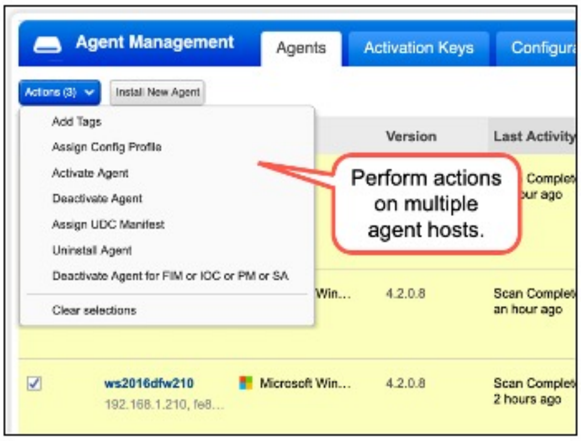
The objective of this section is to understand the different option for updating agents in bulk.

Actions Button



Perform actions on multiple agent hosts.

- Within the Cloud Agent application, select multiple agent hosts and use the “Actions” button to perform tasks in bulk.
- Execute queries to help filter agents for selection.

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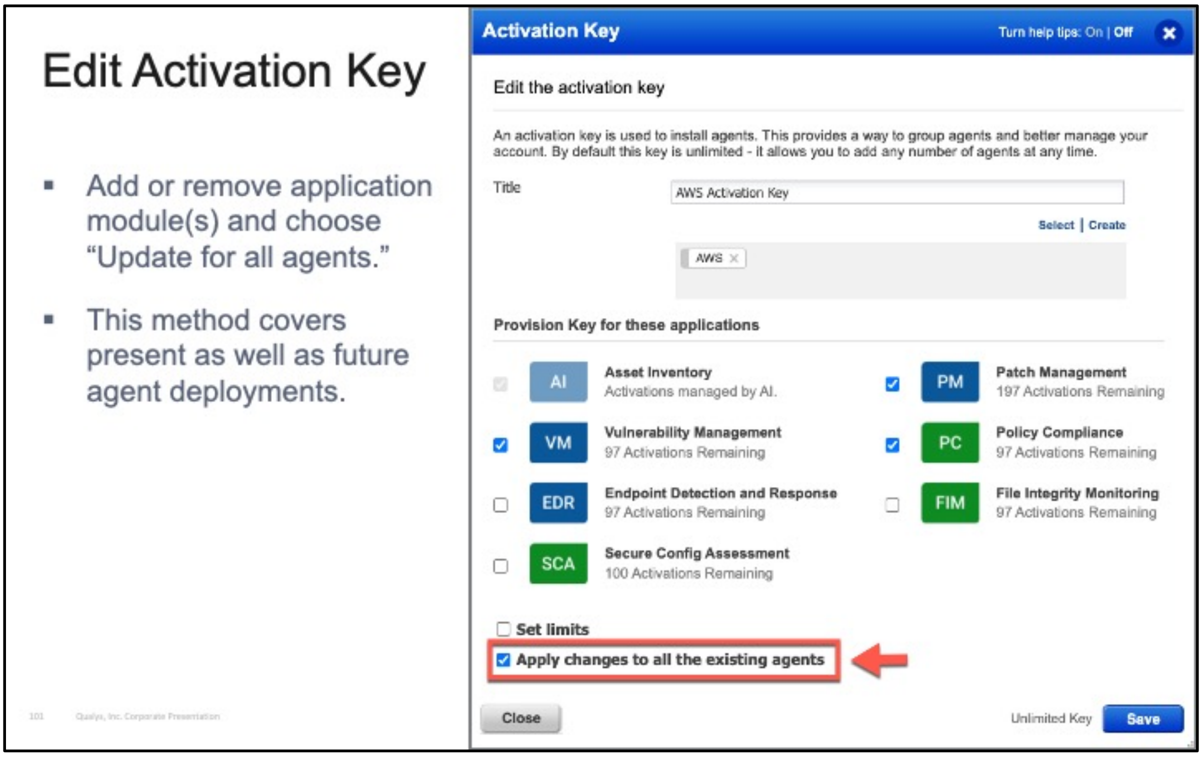
Select multiple agent hosts from the Cloud Agent UI and then use the “Actions” button to perform updates in bulk.



Edit Activation Key

- Add or remove application module(s) and choose "Update for all agents."
- This method covers present as well as future agent deployments.

Activation Key

Edit the activation key

An activation key is used to install agents. This provides a way to group agents and better manage your account. By default this key is unlimited - it allows you to add any number of agents at any time.

Title: AWS Activation Key

AWS

Provision Key for these applications

☑ AI **Asset Inventory** Activations managed by AI.

☑ PM **Patch Management** 197 Activations Remaining

☑ VM **Vulnerability Management** 97 Activations Remaining

☑ PC **Policy Compliance** 97 Activations Remaining

□ EDR **Endpoint Detection and Response** 97 Activations Remaining

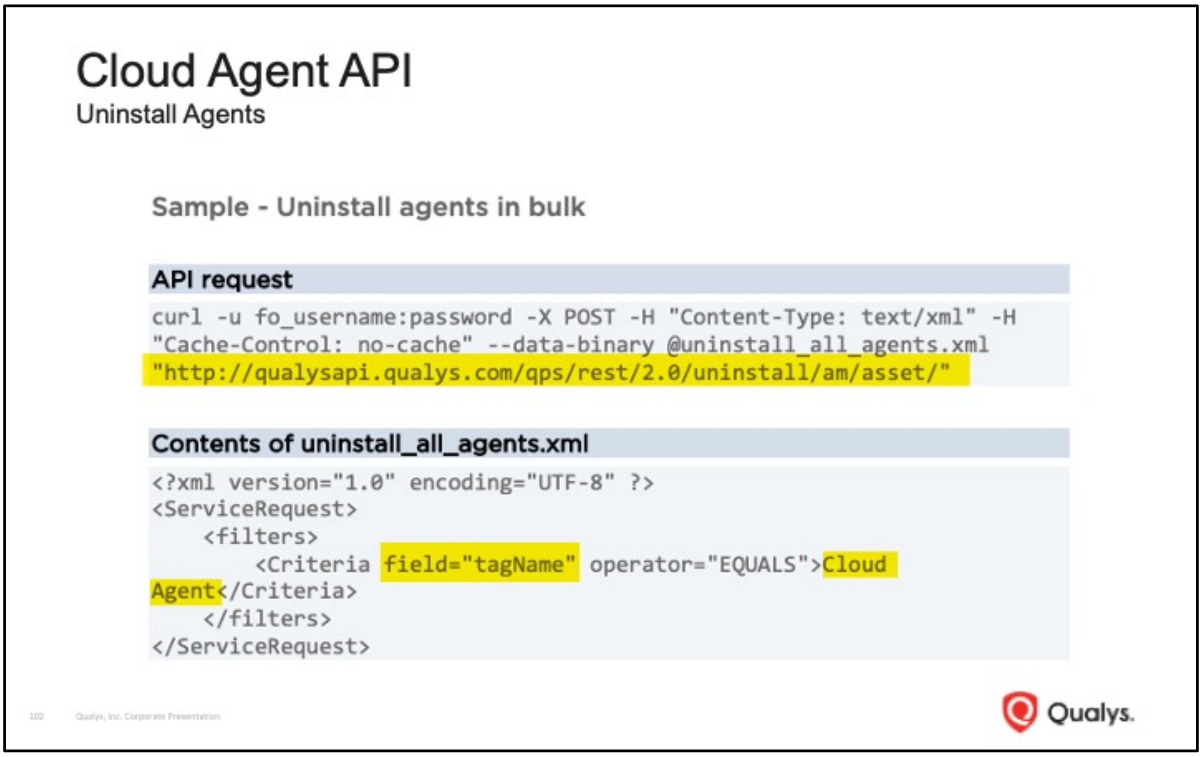
□ FIM **File Integrity Monitoring** 97 Activations Remaining

□ SCA **Secure Config Assessment** 100 Activations Remaining

□ **Set limits**

☑ **Apply changes to all the existing agents**

Adding and removing application modules can be performed for all existing agents using their associated Activation Key. Simply select the "Apply Changes to all existing agents" option. Future agent deployments will receive the updated module configuration.



Cloud Agent API

Uninstall Agents

Sample - Uninstall agents in bulk

API request

```
curl -u fo_username:password -X POST -H "Content-Type: text/xml" -H
"Cache-Control: no-cache" --data-binary @uninstall_all_agents.xml
"http://qualysapi.qualys.com/qps/rest/2.0/uninstall/am/asset/"
```

Contents of uninstall_all_agents.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<ServiceRequest>
    <filters>
        <Criteria field="tagName" operator="EQUALS">Cloud
Agent</Criteria>
    </filters>
</ServiceRequest>
```

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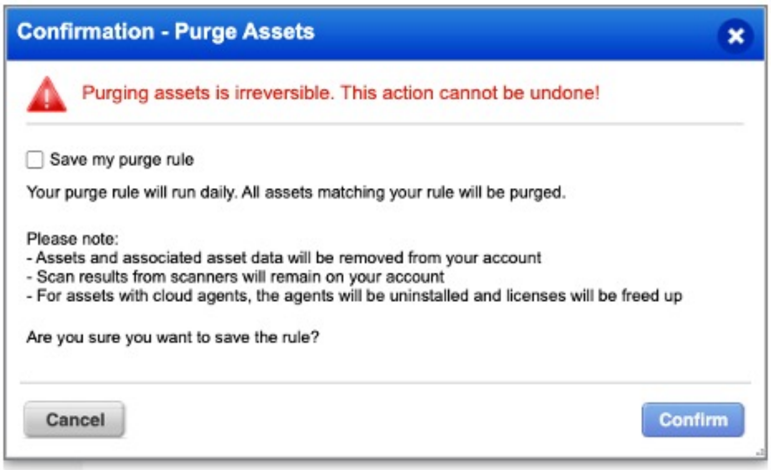
Agents can be uninstalled in bulk using the Cloud Agent API.

Agent Purge Rules

Qualys AssetView



Confirmation - Purge Assets

Purging assets is irreversible. This action cannot be undone!

□ Save my purge rule

Your purge rule will run daily. All assets matching your rule will be purged.

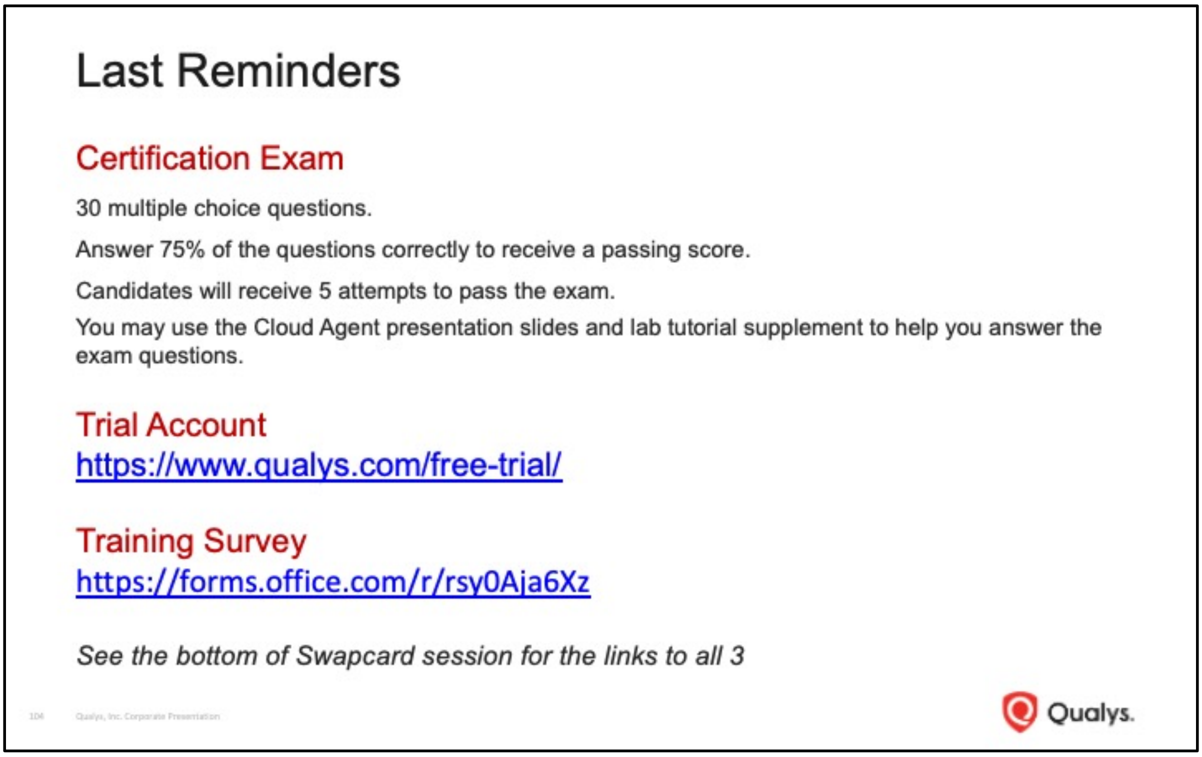
Please note:
- Assets and associated asset data will be removed from your account
- Scan results from scanners will remain on your account
- For assets with cloud agents, the agents will be uninstalled and licenses will be freed up

Are you sure you want to save the rule?

- Purge rules run daily.
- Create rules to automatically purge agent host assets from your account by:
  - lastActivity
  - lastCheckedIn
  - activatedForModule
  - agentActivationKey
  - agentVersion
  - configurationProfile

Purge Rules (provided in the AssetView application) will remove agent assets from your account, based upon various agent statuses and configurations:

- lastActivity
- lastCheckedIn
- activatedForModule
- agentActivationKey
- agentVersion
- configurationProfile



Last Reminders

Certification Exam

30 multiple choice questions.

Answer 75% of the questions correctly to receive a passing score.

Candidates will receive 5 attempts to pass the exam.

You may use the Cloud Agent presentation slides and lab tutorial supplement to help you answer the exam questions.

Trial Account

https://www.qualys.com/free-trial/

Training Survey

https://forms.office.com/r/rsy0Aja6Xz

See the bottom of Swapcard session for the links to all 3

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The link to enrol for the course and the certification exam is https://gm1.geolearning.com/geonext/qualys/scheduledclassdetails4enroll.geo?&id=22511237821

Please consult the Lab Tutorial Supplement for information regarding registration for the Cloud Agent course certification exam.
NOTE: We recommend that you take this certification exam at the earliest possible convenience.

You can request a free Qualys limited trial account by submitting a request on this link https://www.qualys.com/free-trial/

Qualys.

Thank You

training@qualys.com