Tanium Patch User Guide

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Table of contents

Overview 11
- Patch scanning options for Windows and Linux endpoints 11
- Patch lists and block lists for Windows and Linux endpoints 16
- Superseded and superseding patches for Windows and Linux endpoints 16
- Microsoft update and servicing details 17
- Windows patch confidence score 18
- Endpoint readiness score 19
- Deployments for Windows and Linux endpoints 20
- Ring deployments for Windows endpoints 20
- Maintenance windows for Windows and Linux endpoints 20
- Linux repository snapshots 21
- Self Service Client application for Windows endpoints 21
- Tanium Autonomous IT Platform in Patch 22
- Supported languages 22
- Patch versus Deploy 23
- Interoperability with other Tanium products 23

Gaining organizational effectiveness 25

Requirements 35
- Core platform dependencies 35
- Computer group dependencies 35
- Solution dependencies 39
  - Tanium recommended installation 40
  - Import specific solutions 40
  - Required dependencies 40
  - Feature-specific dependencies 40
- Client extensions and endpoint tools 41
- Tanium Server and Module Server computer resources 41
- Endpoints 42

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Supported operating systems 42
Resource requirements 44
Third-party software 45
Host and network security requirements 45
Ports 45
Security exclusions 46
Third-party internet URLs 52
User role requirements 55

Installing 69
Before you begin 69
Import Patch with default settings 69
Default settings for Patch 70
Import Patch with custom settings 71
Manage solution dependencies 71
Upgrade Patch 71
Verify Patch version 72

Configuring 73
Restricted targeting 73
Default settings 73
Configure advanced settings 74
Configure Tanium End-User Notifications for Windows endpoints 75
Disable Windows Update restart prompts 75
Configure Patch global settings 78
Configure the Patch action group for Windows and Linux endpoints 78
Organize computer groups for Windows and Linux endpoints 79
Set up Patch users 85
Enable and configure Windows features 88
Enable and configure Tanium Scan for Windows 89
Configure WSUS server allowed URLs 90
wsus_allowed_urls 90
Enable UUP Proxy 91
Enable manual synchronization 92
Enable direct patch downloads from Microsoft 92
Tracking direct download status 94

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Enable and configure Linux features 94
Migration of OS-based Linux configurations to Enhanced Linux configurations 95
Linux Endpoint Behavior Changes 95
Enable Patch for Enhanced Linux configurations 96
Add and target Linux repositories 96
(Red Hat endpoints) Configure Tanium Server to use certificate authentication 98
(Red Hat endpoints) Configure TDownloader to use certificate authentication (Tanium Server version 7.5.2.3552 and earlier) 99
Configure TDownloader on Tanium Server (Appliance) 99
Configure TDownloader on Tanium Server (Windows) 100
Manage Linux repository snapshots 105
Export a Linux repository 106
Import a Linux repository 107
Configure Patch behavior on action-locked endpoints 107
(All operating systems) Endpoints that are not running patch-cx 107
(Windows only) Endpoints that are running patch-cx 108
Initialize Patch on Windows and Linux endpoints 109
Select a language 110

Downloading Windows patches in an air-gapped environment 111
Patch air-gapped environments using Tanium Scan for Windows 111
Patch air-gapped environments using Offline CAB 114
Verify the Offline Cab configuration 116

Downloading Linux patches in an air-gapped environments 118
Download Linux CVE metadata 118
Modify the Patch - External File References – Linux package 120
Recreate the Required Files - Linux configuration 120
Add local repositories 121
Configure scans for air-gapped environments 121
What to do next 122

Enforcing scan configurations 123
Windows scan techniques 123
Tanium Scan 123
Offline CAB File 124
Online Microsoft Windows Update 125

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WSUS 125
Linux scan techniques 126
Repository Scan 126
Tanium Scan 127
Tanium Scan incompatibility with LibZypp Services Plugins 127
Create a scan configuration 128
Scan windows 131
View enforcement status 134
Prioritize scan configurations 134
Edit a scan configuration 135
Remove a scan enforcement 135
Delete a scan configuration 135

Managing patches 137
Default patch lists 137
Patch list rules 137
Create a patch list 140
Exclude patches with block lists 141
yum.conf exclusions for Linux endpoints 144
Create lists from the Patches view 144
View confidence score of Windows patch 144
Edit a list 146
Check patch visibility 146
Manually synchronize patches 148
Synchronize patches from the Overview page 148
Synchronize a patch from the Patch details page 149
Copy a patch list 150
Export a list 151
Import a list 151
Delete a list 152
Add a custom Patch field 152
Example CSV 152

Manually deploying patches 154
Before you begin 154
Create a deployment template 155

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Set the default deployment template 158
Create a deployment to install patches 159
Endpoint restarts 166
Create a deployment to install patches on a single endpoint 167
Windows: Create a deployment to uninstall patches 167
Add targets to an existing deployment 168
Stop a deployment 168
Reissue a deployment 169
Delete old inactive deployments 169
Adjust the deployment retries 169

Automatically deploying patches 171
Overview 171
How patch automation works 172
Patch lists 172
Automatic deployments 172
Before you begin 172
Create a patch automatic deployment configuration 173
Results 177
Review all automatic deployment configuration activity 177
Review automatic deployments that need attention 179
Skip the wait interval during deployment 179
Edit a patch automatic deployment configuration 180
Pause or resume a patch automatic deployment configuration 180
Delete a patch automatic deployment configuration 181

Reviewing deployments 182

Setting maintenance windows 184
Create a maintenance window 184
Maintenance window options 187
Edit a maintenance window 189
Override a maintenance window 189
Delete a maintenance window 189

(Windows) Managing End-User Self Service 190
Before you begin 190

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Create a Self Service deployment to install patches 190
Create a Self Service deployment to uninstall patches 194
Use the Self Service Client application on endpoints 197

Maintaining 200
Perform monthly maintenance 200
Review and remediate Patch coverage 200
Review and update scan configurations 201
Review and update deployments 201
Review and update maintenance windows 202
Perform quarterly maintenance 203
Perform as-needed maintenance 203
Check and update the Windows Update Agent 203
Check patch history on Windows endpoints 204
Monitor and troubleshoot Patch coverage 204
Monitor and troubleshoot endpoints missing critical or important patches 205
Monitor and troubleshoot mean time to patch 206

Troubleshooting 208
Collect a troubleshooting package 208
Download audit log 208
View job logs to troubleshoot job failed errors 209
Collect Patch troubleshooting information from Windows and Linux endpoints 209
(Windows) Determine whether patch-cx client extension is running on an endpoint 210
(Windows) Use TaniumCX commands to check patch-cx status 211
Configure endpoint logging for Windows and Linux endpoints 213
Verify endpoint tools 213
Endpoint has unhealthy readiness score (Needs Attention) 214
Windows and Linux patches are not listed in the Patches view 215
Troubleshoot scan errors on Windows and Linux endpoints 215
Offline CAB scans fail for Windows 7 and Windows Server 2008 R2 216
Scans are not completed on Linux endpoints 217
Red Hat Linux endpoints stuck in Waiting for Initial Scan status 217
Linux repository snapshots issues 218
Warning about a failed snapshot 218
Patch process is not running on Linux endpoints 218

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Patch deployment status: Download Failed, Download Size Threshold Exceeded 218
Issue 218
Solution 219
Resolve UUP synchronization errors 220
OpenSUSE and SLES endpoints install later version of software 223
End-user notifications are not displayed or endpoints have errors 224
Patch workbench slowly loads pages 224
Identify and resolve issues with Client Extensions 225
Review the Extensions log for an endpoint 227
(Windows) Disable patch-cx 228
Remove Patch tools from endpoints 229
Uninstall Patch 231
Restore the state of the Patch database 232
(Windows) Configure endpoint disk space requirements 233
Disk space requirement example 233
Procedure 234
Cannot use Tanium Patch to deploy Microsoft out-of-band updates 235
Contact Tanium Support 235

Reference: Patch status 236

Reference: Common Patch errors 240

Reference: End-User Self Service sensors 250

Reference: Patch endpoint tools 251

Reference: Gateway examples for Patch 254
Patch query filter syntax 254
Create a Patch install deployment for Linux 262
Create a Patch install deployment for Windows 265
Get Patch definitions 270
Get a Patch deployment by ID 271
Stop a Patch deployment by ID 274
Upsert (create or update by ID) a Patch patch list 277

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Patch overview

Use Patch to manage operating system patching across your enterprise at the speed and scale of Tanium. For Windows and Linux endpoints managed using Tanium Client, you can deploy a single patch to a computer group immediately. You can also perform more complex tasks, such as delivering groups of patches across your environment at specified times using advanced rule sets and maintenance windows.

For Windows and Linux endpoints, you can define custom workflows and schedule patches based on rules or exceptions built around patch lists, block lists, and maintenance windows. For example, you might always apply critical Microsoft patches to all machines except for datacenter servers, or always exclude .NET patches, or install patches during non-working hours.

Patch generates reports and returns current patch applicability results from every endpoint. For any patch or patch list deployment, the following details are provided:

- The patch details, such as severity, release date, applicable Common Vulnerabilities and Exposures (CVE), files, and links to knowledge base articles
- The status of the patch, split out by computer group
- The assigned patch lists or block lists for the patch

Note: The Patch **Overview** page provides **Summary** and **Health** charts to monitor compliance. Unlike earlier versions of Patch, these charts currently only support Windows and Linux endpoints.

Patch scanning options for Windows and Linux endpoints

You can choose from several scan methods for Windows and Linux endpoints to determine the installed and missing patches across your network. *Scan configurations* define a scan method, scan frequency, and the computer groups that are being scanned, known as an *enforcement*. One scan configuration is applied to an endpoint. If an endpoint is included in multiple computer groups, the highest priority scan configuration is applied. For more information, see Enforcing scan configurations on page 123.

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Review the following lists of scanning options for Windows on page 12 and Linux on page 15 endpoints to decide the best method to use for each computer group.

Available Patch scan methods for Windows endpoints

	Tanium Scan [1]	Offline CAB File [2]	Online Microsoft Windows Update	WSUS (Windows Server Update Services) [1,3]
Platform OS	Windows	Windows	Windows	Windows
Updates included	Scanning and installing: • Critical Updates • Feature Packs • Security Updates • Service Packs • Tools • Update Rollups • Updates	Scanning and installing: • Security Updates • Service Packs • Update Rollups	Scanning: • Critical Updates • Definition Updates • Drivers **Important:** Tanium Patch can scan for drivers but cannot distribute or install the drivers. To install, use Tanium Deploy. For more information, see Tanium Deploy User Guide: Create a software package. • Feature Packs • Security Updates • Service Packs • Tools • Update Rollups • Updates • Upgrades Installing:	Scanning: • Critical Updates • Definition Updates • Drivers **Important:** Tanium Patch can scan for drivers but cannot distribute or install the drivers. To install, use Tanium Deploy. For more information, see Tanium Deploy User Guide: Create a software package. • Feature Packs • Security Updates • Service Packs • Tools • Update Rollups • Updates • Upgrades Installing:

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	Tanium Scan [1]	Offline CAB File [2]	Online Microsoft Windows Update	WSUS (Windows Server Update Services) [1,3]
			• Critical Updates • Feature Packs • Security Updates • Service Packs • Tools • Update Rollups • Updates	• Critical Updates • Feature Packs • Security Updates • Service Packs • Tools • Update Rollups • Updates
Client impact	• Initial scan: Moderate • Subsequent scans: Low	Initial and subsequent scans: Moderate	• Initial scan: Moderate • Subsequent scans: Low	Initial and subsequent scans: Low
Connectivity	• A client database file is stored locally by the Tanium Client. • With the direct download option for isolated endpoints, the endpoint contacts Microsoft directly.	• The CAB file is stored locally by the Tanium Client. • With the direct download option for isolated endpoints, the endpoint contacts Microsoft directly.	• The Tanium Client must contact Microsoft directly. • With the direct download option for isolated endpoints, the endpoint contacts Microsoft directly.	• The Tanium Client must contact the WSUS server. • With the direct download option for isolated endpoints, the endpoint contacts the location that is defined by the WSUS server directly. Depending on WSUS server configuration, the location is the WSUS server or Microsoft.
Support for direct download of patches on isolated endpoints	Yes	Yes	Yes	Yes
Details	• The Patch service on the Module	• Requires 600+	• Requires additional	• Must deploy and

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	Tanium Scan [1]	Offline CAB File [2]	Online Microsoft Windows Update	WSUS (Windows Server Update Services) [1,3]
	Server is configured to synchronize update metadata and detection rules directly from Microsoft. Alternatively, it can be configured to synchronize from WSUS in airgap scenarios where WSUS is available and already has approved and downloaded patches. • Supports direct patch downloads from Microsoft to isolated endpoints. • Supports using Tanium architecture to deliver cumulative updates for Windows 11, version 22H2 or later endpoints.	MB download of CAB file. • Does not include non-security updates, out-of-band fixes, hotfixes, and enhancements that are included with WSUS or Online to Microsoft scan methods. • Supports direct patch downloads from Microsoft to isolated endpoints.	network traffic to Microsoft directly. • Supports direct patch downloads from Microsoft to isolated endpoints.	configure one or more WSUS servers. • Updates must be approved in WSUS prior to scanning or deployment. • Supports direct patch downloads from Microsoft or the WSUS server to isolated endpoints.

[1] Windows 10 Home and Windows 11 Home do not support specifying a WSUS intranet server and will not work with the Tanium Scan or WSUS scan methods.

[2] **Offline CAB File** includes only Security Updates, Service Packs, and Update Rollups updates. Because other scan methods include more updates than **Offline CAB File** includes, if you change the scan configuration technique on an active deployment from **Offline CAB File** to another technique, additional patches might be installed on endpoints.

[3] If you are using Microsoft System Center Configuration Manager (SCCM) with your WSUS server, do not use Tanium for WSUS scanning with the same server.

For more information, see Windows scan techniques on page 123.

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Available Patch scan methods for Linux endpoints

	Tanium Scan [1]	Repository Scan
Platform OS	• Red Hat • CentOS • Oracle Linux • SUSE[2] • Ubuntu • Debian	• Red Hat • CentOS • Oracle Linux • Amazon Linux • SUSE[2] • Ubuntu • Debian
Updates included	All updates in the repositories [3]	All updates in the repositories [3]
Client impact	Initial and subsequent scans: Moderate	Initial and subsequent scans: Moderate
Connectivity	The Tanium Client stores the repository scanning logic locally.	The Tanium Client must contact the repositories for scanning and patch downloads.
Support for direct download of patches on isolated endpoints	No	Yes
Details	• Internal or external repositories can be used. • Only the Tanium™ Server needs connectivity to the repositories.	• Must deploy and configure one or more repositories. • Updates must be maintained in the repositories.

[1] Tanium Scan for Linux is not compatible with LibZypp Service Plugins. Tanium Scan will scan repositories provided by the plugin, but will not have access to the metadata in these repositories, which leads to scan results with incomplete metadata. Patch list applicability reports packages with incomplete metadata, but Patch cannot install them. If possible, uninstall the plugin and create repositories using Tanium.

[2] SUSE 11.x Service Pack 3 support is limited to scanning only.

[3] When installing package dependencies for patches on Debian and Ubuntu endpoints, Tanium Patch includes only packages that are required dependencies. Recommended dependencies are not included.

For more information, see Core platform dependencies on page 35, Linux scan techniques on page

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126, and Tanium Scan incompatibility with LibZypp Services Plugins on page 127.

Patch lists and block lists for Windows and Linux endpoints

A *patch list* is a set of patches that you want to deploy to a group of Windows and Linux endpoints. A *block list* is a set of patches that you want to exclude from deployments. Patch provides a baseline reporting patch list for Windows and Linux. You can compile lists by manually adding individual patches or by defining rules that add patches dynamically. Here are some examples of how you can utilize patch lists and block lists:

- Focus only on CVE issues.
- Create lists based on severity, prioritize the most critical and most recent updates first.
- Create lists based on the month or a specific release date.
- Create a patch list that includes Servicing Stack Updates (SSUs) and Cumulative Updates (CUs).
- Create a block list to block SQL server patches.

As new patches come out, you can use dynamic rules to automatically assess and populate patches to the appropriate lists. You can iteratively develop these lists by creating new versions. You can deploy any version of the list as needed. For more information, see Managing patches on page 137.



Best Practice: To manage Linux patching based on a current release date, use repository snapshots instead of patch lists. Snapshots reduce dependency mismatches and deployment failures. For more information, see Linux repository snapshots on page 21.

Superseded and superseding patches for Windows and Linux endpoints

Each patch for Windows and Linux endpoints includes a column that indicates if the patch has been superseded, or effectively replaced by a newer patch. A patch is marked as superseded when a single endpoint reports that the patch is superseded. For best results, include superseded patches in patch lists for visibility of non-compliance on endpoints. Superseded patches are automatically included in block lists.

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The following example demonstrates the differing level of detail that an endpoint reports when a patch list includes or excludes superseded patches. The expanded detail with including superseded patches provides visibility to understand the scope of non-compliance on endpoints A and B.

Endpoint report detail when including and excluding superseded patches

Endpoint status	Patch list includes superseded patches	Patch list excludes superseded patches
Endpoint A has not installed any cumulative updates since January 2023.	Endpoint reports that it has not installed a cumulative update since January 2023.	Endpoint reports that it only needs the most recent cumulative update.
Endpoint B is only missing the most recent cumulative update.	Endpoint reports that it only needs the most recent cumulative update.	Endpoint reports that it only needs the most recent cumulative update.

For disk space and bandwidth efficiencies, if a deployment contains both a superseded patch and the patch that supersedes it, then Patch downloads only the superseding patch (the newer patch). If a superseding patch is included in multiple deployments, Patch downloads the patch only one time. After a deployment completes, Patch removes patch files that are no longer required by any deployment on the endpoint.

For more information, see Exclude patches with block lists on page 141.

Microsoft update and servicing details

Microsoft provides software patch updates in different ways depending on the operating system of the endpoint. Microsoft changes these terms occasionally, and it is important to understand how these policies affect your patching processes.

- **Windows 11 (22H2 and later), Windows Server 2025**
    - *2024-XX Cumulative Update*: Released monthly, a cumulative update supersedes any previous cumulative update for Windows. Contains all security and non-security fixes for the month and all previous months. Microsoft introduced the Unified Update Platform (UUP) method for delivering Windows updates. To patch endpoints on Windows Server 2025 or Windows 11 22H2 or later, you need to use Tanium Scan for Windows. Offline CAB is not supported.
- **Windows 10, Windows 11 (up to but not including 22H2), Windows Server 2016, and Windows Server 2019**

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- *Feature Updates*: Feature builds are essentially a new build of Windows 10. These upgrades are published twice a year with a target of March and September of each year (for example 1709, 1803, 1809, 1902, 1909). Consider the following Tanium capabilities when you select a solution for Windows feature updates.
    - Tanium Deploy provides out of the box capabilities that enable efficient assessment, reporting, and deployment of Windows feature updates. For more information, see Windows 10 Upgrades and Servicing Made Easy With Tanium.
    - Tanium Core with custom sensors and custom packages
- *2019-XX Cumulative Update*: Released monthly, a cumulative update supersedes any previous cumulative update for Windows 10. Contains all security and non-security fixes for the month and all previous months.

- **Windows 7, 8.1, 2008, 2008R2, 2012, 2012R2**
    - *2019-XX Security Monthly Quality Rollup*: Package is a cumulative update for current and all previous months. Only the current month will be applicable. All previous versions are superseded.
    - *2019-XX Security Only Quality Update*: Security updates for the specified month only. Does not include updates from any previous month. Previous monthly updates will still be applicable and needed.

  Do not deploy both the Security Monthly Quality Rollup and the Security Only Quality Update for the same month at the same time. If both updates are targeted to an endpoint, the Windows Update Agent installs the Security Monthly Quality Rollup, and the Security Only update is ignored. The download size increases without any benefit.

Windows patch confidence score

Tanium assigns a confidence score to Windows patches that have been released within the last 365 days or are applicable in your Windows environment. A patch is applicable in your environment if at least one endpoint is reporting `Not Installed` for the patch.

The confidence score rates the probability that a patch deployment will succeed and will not cause post-installation downtime. Tanium bases the score on execution success and performance metrics that endpoints across all Tanium environments returned for previous deployments of the patch. For

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more information, see View confidence score of Windows patch on page 144.

Tanium does not calculate confidence score for the following patches:

- Windows patches released over 365 days ago
- Windows patches that are not applicable in your environment
- Linux patches

Note: Confidence score is available only if your Tanium instance is linked to your Tanium Account. For more information, see Tanium Account User Guide: Link an on-premises Tanium instance. It can take up to one hour for confidence scores to appear after linking your account. If you unlink your account, it can take up to five hours for confidence scores to disappear.

Endpoint readiness score

Tanium assigns a readiness score to all endpoints in your environment. The score indicates if the Tanium Client and Patch tools on the endpoint are healthy and are configured for regular scanning. You can view the readiness score on the **Overview** page, when creating a deployment after selecting endpoints to target, and when viewing a deployment.

Endpoint readiness is divided into the following categories:

- **Optimal**: Endpoints where Patch tools are installed and operational.
- **Needs Attention**: Endpoints where Patch tools are not installed or are unhealthy.
- **Initializing**: Endpoints where Patch tools are in the process of installing or running the first scan.
- **Unsupported**: Endpoints with an operating system version that is not supported by Patch

Use the readiness score to remediate unhealthy endpoints before a deployment or to reduce targeted endpoints in a deployment. For more information, see Endpoint has unhealthy readiness score (Needs Attention) on page 214.

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Deployments for Windows and Linux endpoints

Deployments compile patches, typically from lists, and then distribute Patch packages to the target Windows and Linux computers. You can configure deployment options to set when and how patches are installed or uninstalled, including allowing Windows endpoint users to manage patches using the Self Service Client application.

For example, you might want to restart an endpoint after patches are installed to apply the changes. If a patch comes out that would normally be blocked but is needed for some reason, you can override the block list for that specific deployment instead of making a new block list. In urgent situations, you can even override a closed maintenance window.

You can choose whether to restart the endpoint after patch installation, to inform the user about the restart, and to allow the user to postpone the restart. For more information, see Manually deploying patches on page 154.

Deployment templates can be used to save settings for a deployment that you can issue repeatedly. For more information, see Create a deployment template on page 155.

Ring deployments for Windows endpoints

For deployments to Windows endpoints, you can select a ring deployment plan that specifies how the deployment progresses through a sequence of rings. The Patch deployment specifies when a deployment starts in ring 1. The ring deployment plan then specifies how the deployment progresses through the rings. For more information about how to add a ring deployment, see Manually deploying patches on page 154.

For example, you might configure a ring deployment plan with a ring that targets the **All Windows** filter group and assign the plan to a deployment that targets the **All Servers** computer group. When the deployment progresses to that ring, the deployment only targets endpoints that are members of both the **All Windows** and **All Servers** groups. Effectively, that means only Windows Servers in that ring are targeted. For more information, including how Patch actions work with ring criteria, see Tanium Console User Guide: Managing deployment plans.

Maintenance windows for Windows and Linux endpoints

Maintenance windows for Windows and Linux endpoints designate the permitted times that the targeted computer groups are open for patches to be installed or uninstalled. You can have multiple maintenance windows, even with overlapping times. Maintenance windows do not interfere with

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each other. For a patch deployment to take effect, the deployment and maintenance window times must be met.

Consider establishing a maintenance cycle that keeps your endpoints as up-to-date as possible. You can avoid many security risks with good operational hygiene. Some considerations might include coordinating with the Microsoft Patch Tuesday releases, on weekends, or outside the core work hours for your network. For example, you might create a maintenance window that starts three days after Microsoft Patch Tuesday each month.

For more information, see Setting maintenance windows on page 184.

Linux repository snapshots

A *repository snapshot* captures point-in-time metadata that determine patch versions and their dependencies and provides control over dependencies for Linux endpoint patches. Using a repository snapshot can help ensure that your production systems are installing the same patches as your testing systems, which reduces deployments of untested patches on production systems.



Best Practice: Use repository snapshots, instead of patch lists, for patching based on a current release date.



Important: Be aware that CentOS reached its end of life in June 2024.

For more information, see Manage Linux repository snapshots on page 105.

Self Service Client application for Windows endpoints

With the Self Service Client application, you can publish patches to Windows endpoints so that users can start a patch deployment early or completely control when patches are installed. For example, you might deploy the Self Service Client application to a manufacturing endpoint that can be patched only between manufacturing runs or an endpoint in an operating room that must be patched between surgeries.

Patch self-service deployments and the Self Service Client application are used in conjunction with End-User Notification configurations in Tanium™ End-User Notifications 1.11.38 or later. The Self Service Client application is installed on endpoints targeted in the End-User Notification

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configuration.

For more information, see Managing End-User Self Service for Windows endpoints on page 190.

Tanium Autonomous IT Platform in Patch

Tanium Autonomous IT Platform comprises a set of interrelated features across multiple Tanium solutions. The Autonomous IT Platform provides guided initial configuration for solutions, proactively collects intelligence about conditions in Tanium environments, provides guidance based on those conditions, and enables automated workflows to address issues.

For more information, see Tanium Console User Guide: Working with the Autonomous IT Platform. Tanium Patch provides the following Autonomous IT Platform features:

- **Confidence score**: The confidence score rates the probability that a Windows patch deployment will succeed and not cause post-installation downtime. Tanium assigns confidence scores to Windows patches released within the last 365 days or that are applicable in your environment. Use the score to determine if a patch is reliable enough for deployment or if you must first edit the endpoint targeting in the deployment. For more information, see Windows patch confidence score on page 18 and Tanium Console User Guide: Confidence score.

- **Deployment plans**: A deployment plan defines the sequence of rings (ring set) for a ring-based deployment. You can assign a deployment plan to manual ongoing patch deployments or patch automatic deployment configurations. For more information, see Manually deploying patches on page 154 and Tanium Console User Guide: Managing ring deployments.

- **Patch automatic deployment configurations**: A patch automatic deployment configuration automates the creation of patch lists and patch deployments based on patch criteria. For more information, see Automatically deploying patches on page 171.

Supported languages

You can select one of the languages in the following table for user interface (UI) text in the Patch workbench and Tanium documentation.

The language that you select for the workbench also sets the date and time format:

- Dates: In the table, the letters `dd`, `mm`, and `yyyy` represent the digits for day, month, and year

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respectively.

- Times: English (United States) times use the 12-hour clock in the format hh:mm:ss [AM|PM] <time zone>, where `hh`, `mm`, and `ss` represent the hour, minute, and second respectively. Other times use the 24-hour clock, where GMT-<#> indicates the offset from Greenwich Mean Time (GMT). For example, `GMT-7` indicates a time zone that is 7 hours ahead of GMT.

Supported languages with associated date and time formats

Language	Locale code	Date and time format
English (United States)	en-US	mm/dd/yyyy [AM|PM] <time zone>
French (France)	fr-FR	dd/mm/yyyy GMT- <#>
German (Germany)	de-DE	dd/mm/yyyy GMT- <#>
Japanese (Japan)	ja-JP	yyyy/mm/dd GMT- <#>
Korean (Korea, Republic of)	ko-KR	yyyy.mm.dd GMT- <#>
Spanish (Latin American)	es-LA	dd/mm/yyyy GMT- <#>

For information about language support, which types of text are translated, and the steps to select a language, see Tanium Console User Guide: Reference: Language support.

Patch versus Deploy

The following table describes the Tanium Patch and Tanium Deploy modules, and differentiates between Patch deployments and Deploy deployments.

Patch versus Deploy

Module	Description
Patch	Use the Tanium Patch module to install operating system patches, such as Windows Cumulative Updates, service packs, and security updates. For more information, see Patch overview on page 11 . **Note:** To deploy Microsoft out-of-band updates, use Tanium Deploy. For more information, see Cannot use Tanium Patch to deploy Microsoft out-of-band updates on page 235 .
Deploy	Use the Tanium Deploy module to install, update, or remove software on endpoints, such as Google Chrome or Microsoft Office. For more information, see Deploy overview .

Interoperability with other Tanium products

Patch works with other Tanium products to provide additional features and reporting.

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Tanium™ Automate

From the Automate **Install Patch** step, you can deploy software to target endpoints. For more information, see Tanium Automate User Guide.

Tanium™ Comply

From Comply vulnerability report results, you can open Patch to view details about the patch that resolves a reported vulnerability. You can also quickly install the patch to endpoints directly from the patch details page. For more information, see vulnerability report results in Tanium Comply User Guide: Working with reports.

From the Comply remediation view, you can take a Patch remediation action and pivot into Tanium Patch to deploy that action to the endpoint. For more information, see Tanium Comply User Guide: Remediating findings.

Tanium™ End-User Notifications

With the Tanium End-User Notifications solution, you can create notification messages with your deployment to Windows endpoints. You might want to create notifications for the following reasons:

- Notify the user that the endpoint is about to begin a deployment. You can also give the user the option to postpone the deployment.
- After a deployment is complete, notify the user that the endpoint needs to restart. You can also give the user the option to postpone the restart operation.

For more information, see Tanium End-User Notifications User Guide.

Tanium™ Endpoint Configuration

With the Tanium Endpoint Configuration solution, you can enable approvals for endpoint configuration changes. For more information, see Tanium Endpoint Configuration User Guide.

Tanium™ Reporting

If you have Tanium Reporting 1.12 or later, Patch uses Tanium Reporting to create the charts on the Patch **Overview** page. For more information, see Tanium Reporting.

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Gaining organizational effectiveness with Patch

The four key organizational governance steps to maximizing the value that is delivered by Patch are as follows:

- Develop a dedicated change management process. For more information, see Change management on page 25.
- Define distinct roles and responsibilities. For more information, see RACI chart on page 26.
- Validate cross-functional alignment. For more information, see Organizational alignment on page 29.
- Track operational maturity. For more information, see Operational metrics on page 30.

Change management

Develop a tailored, dedicated change management process for patch management, taking into account the new capabilities provided by Tanium.

- Update SLAs with elevated expectations, from patch identification to patch deployment. For example, if you are an organization that typically patches critical OS vulnerabilities within 15 days with legacy tooling, transition to a five-day SLA.
- Identify internal and external dependencies to your patch management process (example: contractors who are responsible for a subset of IT estate).
- Designate change or maintenance windows for various patch management scenarios (example: emergency patching versus general maintenance patching).
- Create a Tanium steering group (TSG) for patching activities, to expedite reviews and approvals of processes that align with SLAs.

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RACI chart

A RACI chart identifies the team or resource who is Responsible, Accountable, Consulted, and Informed, and serves as a guideline to describe the key activities across the security, risk/compliance, and operations teams. Every organization has specific business processes and IT organization demands. The following table represents Tanium's point of view for how organizations should align functional resources against patch management. Use the following table as a baseline example.

Task	IT Security	IT Operations	IT Risk/ Compliance	Executive	Rationale
Standard patch notification For more information, see Standard patch workflow on page 28 .	I	A/R	I	-	Standard patch cycles, such as Patch Tuesday, are owned by the operations team and have predefined notifications so that the security and risk/compliance teams are informed.
Zero-day/ threat intel notification For more information, see Zero-day patch workflow on page 28 .	A/R	I	I	C	Zero-days have a high security impact. The security team is accountable for informing the operations and risk/compliance teams, and consulting with the executive team.
Vulnerability scan patch notification	A	I	R	C	The risk/compliance team identifies vulnerabilities based on tooling and notifies the security team. The security team is accountable

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Task	IT Security	IT Operations	IT Risk/ Compliance	Executive	Rationale
For more information, see Vulnerability scan patch workflow on page 29 .					and informs the operations team of the known threat.
Risk exposure scan	C	C	A/R	I	The risk/compliance team owns the tools that run the scan to understand risk and consults with the security and operations teams.
Deploy patches to test environment for user acceptance testing (UAT)	I	A/R	I	-	The operations team informs the security and risk/compliance teams when patching is completed so they can verify results.
Verification of remediation in test environment	C	C	A/R	-	The risk/compliance team owns the tools to verify that the systems are no longer vulnerable, and consults with the security and operations teams on the results.
Deploy patches to production environment	I	A/R	I	-	The operations team informs the security and risk/compliance teams when patching is completed so they can verify the results.
Verification of remediation in production	C	C	A/R	-	The risk/compliance team owns the tools to verify that the systems are no longer vulnerable, and consults with the security and operations teams on the results.

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Task	IT Security	IT Operations	IT Risk/ Compliance	Executive	Rationale
environment					
Track actions taken and escalation requests	C	A	R	I	The risk/compliance team is responsible for the vulnerabilities in the environment, informs the executive team, and consults with the security team. The operations team is accountable for taking any actions based on the escalation.
Reporting metrics/ dashboard of remediation	A	A/R	I	I	The operations team is responsible and accountable for remediation reporting, consults with the security team on any questions, and informs the risk/compliance and executive team.
Reporting metrics/ dashboard of risk	C	C	A/R	I	The risk/compliance team is responsible and accountable for risk reporting, consults with the security and operations teams on any questions, and informs the executive team.

Figure 1. Standard patch workflow (click image to enlarge)

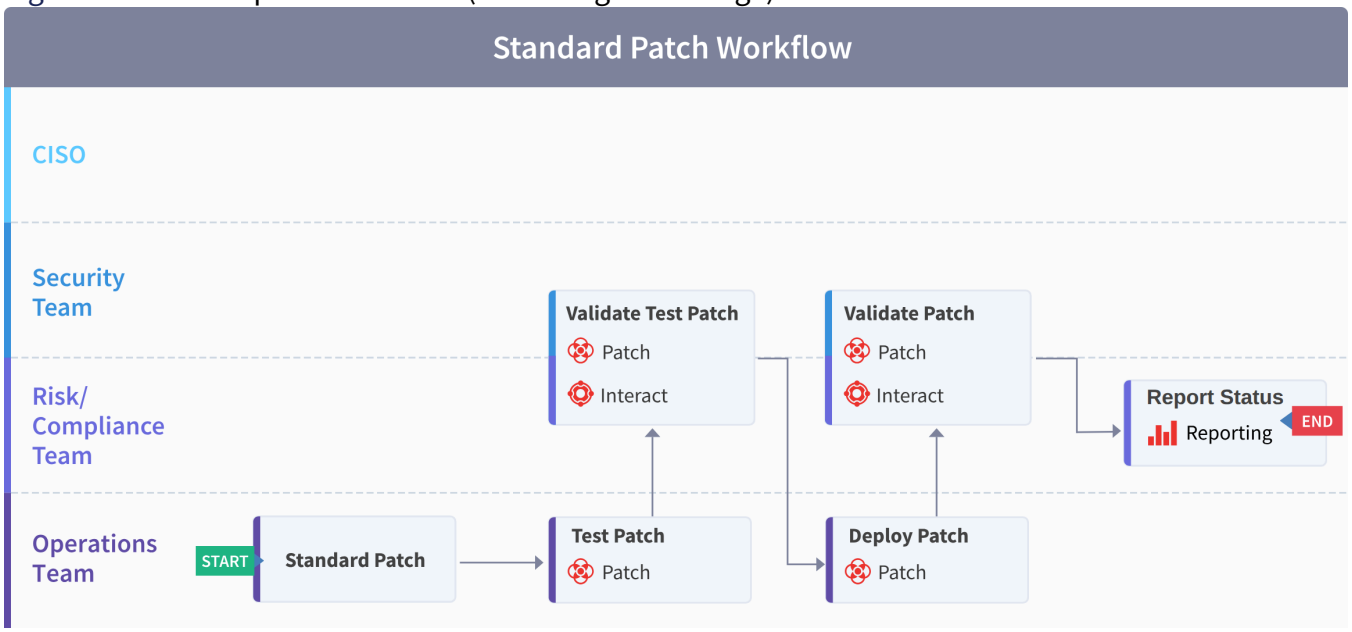

Figure 2. Zero-day patch workflow (click image to enlarge)

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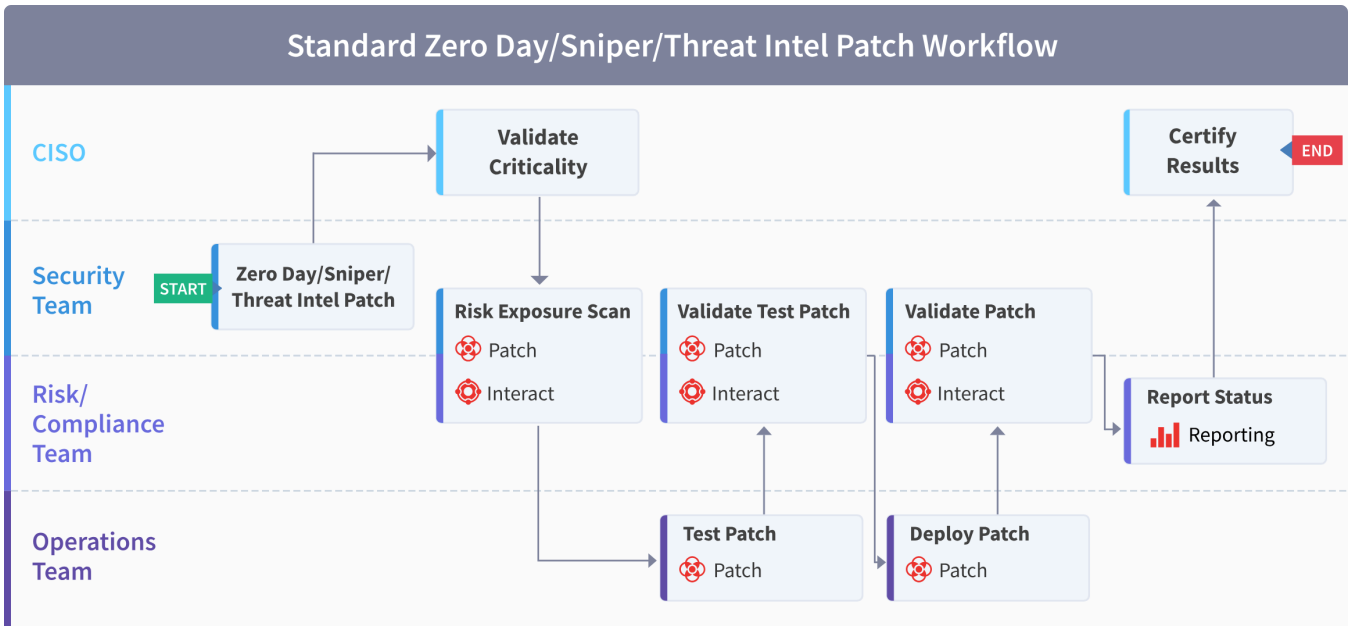
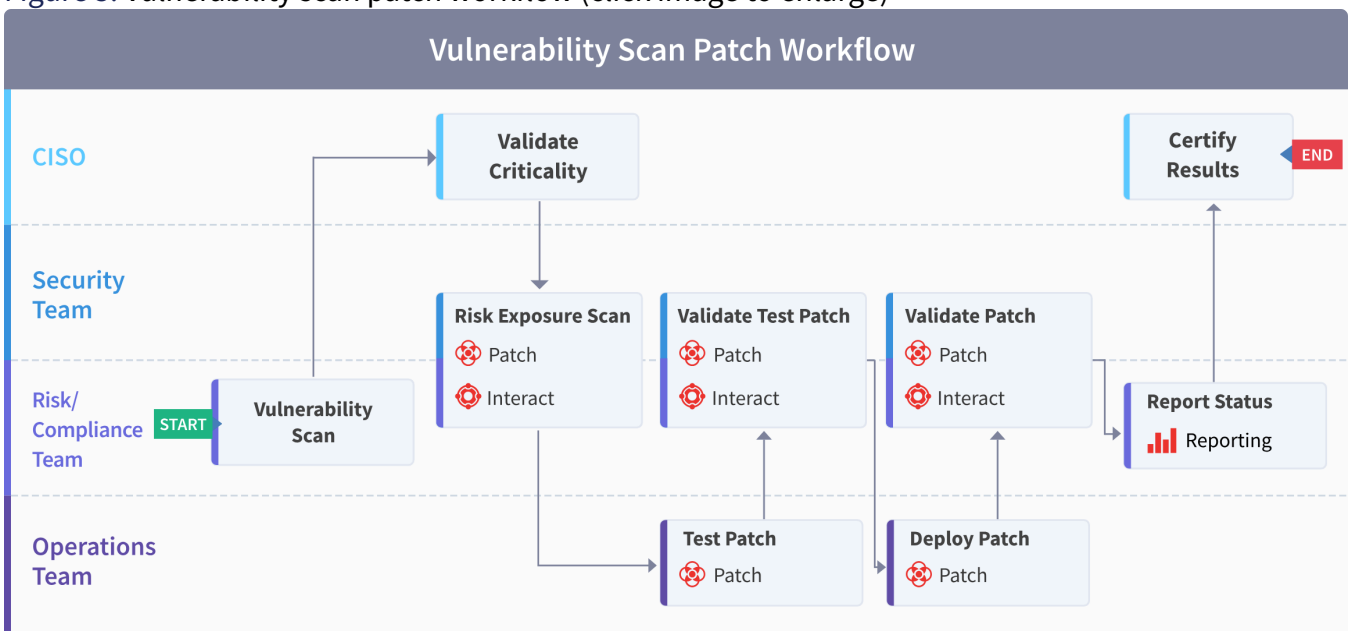


Figure 3. Vulnerability scan patch workflow (click image to enlarge)



Organizational alignment

Successful organizations use Tanium across functional silos as a common platform for high-fidelity endpoint data and unified endpoint management. Tanium provides a common data schema that enables security, operations, and risk/compliance teams to assure that they are acting on a common set of facts that are delivered by a unified platform.

In the absence of cross-functional alignment, functional silos often spend time and effort in litigating data quality instead of making decisions to improve patch management.

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Operational metrics

Patch maturity

Managing a patching program successfully includes operationalization of the technology and measuring success through key benchmarking metrics. The four key processes to measure and guide operational maturity of your Tanium Patch program are as follows:

Process	Description
Usage	How and when Tanium Patch is used in your organization
Automation	How automated Tanium Patch is, across endpoints
Functional integration	How integrated Tanium Patch is, across IT security, IT operations, and IT risk/compliance teams
Reporting	How automated Tanium Patch is and who the audience of patch reporting is

Benchmark metrics for Windows and Linux endpoints

In addition to the key patch processes, the four key benchmark metrics that align to the operational maturity of the Tanium Patch program to achieve maximum value and success are as follows:

Executive Metrics	Patch Coverage	Endpoints Missing Critical or Important Patches Released Over 30 Days Ago	Workstations - Mean Time to Patch [1]	Servers - Mean Time to Patch
Description	Number of endpoints in each of these categories: • **Optimal**: Endpoints where Patch is operational	Percentage of endpoints that are missing critical or important patches released more than 30	Average number of days between patch release date and patch application for workstations. Application	Average number of days between patch release date and patch application for servers. Application includes

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Executive Metrics	Patch Coverage	Endpoints Missing Critical or Important Patches Released Over 30 Days Ago	Workstations - Mean Time to Patch [1]	Servers - Mean Time to Patch
	• **Needs Attention**: Endpoints that do not have the Patch tools installed, are not targeted by a scan configuration, or do not have a supported version of the Tanium Client installed • **Unsupported**: Endpoints with an operating system version that is not supported by Patch	days ago.	includes installing the patch and restarting the workstation, if required. Calculation only considers installed patches and excludes missing patches.	installing the patch and restarting the workstation, if required.
Instrumentation	Number of endpoints with a patch scan age less than three days divided by total endpoints that are supported by Patch.	Number of endpoints that require critical or important patches that were released over 30 days ago divided by the number of endpoints with a scan configuration.	Number of days it takes for workstations to be fully patched and restarted after a patch is released, divided by the number of patches installed by Tanium. Calculation excludes patches installed by means other than Tanium Patch.	Number of days it takes for servers to be fully patched and restarted after a patch is released, divided by the number of patches installed by Tanium.
Why this metric matters	If you are not scanning all endpoints, then you are at risk. That risk must be highlighted and mitigated	The sooner you know about an endpoint having an outstanding patch, the sooner you	If it takes you too long to deploy a patch and validate that it was applied, then you are at	If it takes you too long to deploy a patch and validate that it was applied, then you are at

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Executive Metrics	Patch Coverage	Endpoints Missing Critical or Important Patches Released Over 30 Days Ago	Workstations - Mean Time to Patch [1]	Servers - Mean Time to Patch
	through other means (example: network isolation).	can deploy the patch or mitigate the risk until the patch is available.	risk of being exploited by the vulnerabilities that are addressed by that patch.	risk of being exploited by the vulnerabilities that are addressed by that patch.

[1] For Windows endpoints, the Mean Time to Patch sensor uses the OS installation date rather than patch release date for patches released before the OS was installed.

Use the following table to determine the maturity level for Tanium Patch in your organization.

		Level 1 (Initializing)	Level 2 (Progressing)	Level 3 (Intermediate)	Level 4 (Mature)	Level 5 (Optimized)
Process	Usage	Patch configured	Patch used by exception (zero day or subset of environment)	Patch used to audit efficacy of legacy tooling	Patch used as default tooling for patch management; Legacy tooling used to audit patch efficacy	Patch used as default tooling for patch management
	Automation	Manual	Manual	Partially automated (>50% of patch deployment process automated)	Partially automated (>75% of patch deployment process automated)	Fully automated (>90% of patch deployment process automated)
	Functional integration	Functionally siloed	Consult with or take direction	Consult with or provide direction	Connect, Reporting, and	Connect, Reporting, and

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		Level 1 (Initializing)	Level 2 (Progressing)	Level 3 (Intermediate)	Level 4 (Mature)	Level 5 (Optimized)
			from peers in enterprise vulnerability management, and threat management	for peers in enterprise vulnerability management, threat management, and asset management	Asset integrated into enterprise vulnerability management, threat management, and asset management tools	Asset integrated into enterprise vulnerability management, threat management, and asset management tools
	Reporting	Manual; Reporting for Operators only	Manual; Reporting for Operators and peer group only	Automated; Reporting for Operators and peer group only	Automated; Reporting tailored to stakeholders ranging from Operator to Executive	Automated; Reporting tailored to stakeholders ranging from Operator to Executive
(Windows and Linux) Metrics	Patch Coverage	< 93%	93-94%	95-96%	97-98%	99-100%
	Endpoints Missing Critical or Important Patches Released Over 30 Days Ago	> 15%	11-15%	6-10%	2-5%	0-1%
	Workstations - Mean Time to Patch	> 30 days	26-30 days	21-25 days	15-20 days	0-14 days
	Servers - Mean Time	> 60 days	46-60 days	31-45 days	21-30 days	0-20 days

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		Level 1 (Initializing)	Level 2 (Progressing)	Level 3 (Intermediate)	Level 4 (Mature)	Level 5 (Optimized)
	to Patch					

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Patch requirements

Review the requirements before you install and use Patch.

Core platform dependencies

Make sure that your environment meets the following requirements:

- Tanium license that includes Patch. For more information about how to get Patch, see Tanium Solutions & Bundles.
- Tanium™ Core Platform servers:

  To support smart card authentication, including common access cards (CAC), see Tanium Core Platform User Guide for Windows Deployments: Configuring smart card authentication in a Windows deployment.
- Tanium™ Client:

  Any supported version of Tanium Client. For more information, see Client version and host system requirements. If you use a Client version that is not listed, certain product features might not be available, or stability issues can occur that can only be resolved by upgrading to one of the listed Client versions.

Computer group dependencies

When you first sign in to Tanium Console after a fresh installation of Tanium Server, the server automatically imports the computer groups that Patch requires for managing endpoints:

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- `All Alma Linux 8`
- `All Alma Linux 9`
- `All Alma Linux 10`
- `All Amazon`
- `All Debian`
- `All Debian 8`
- `All Debian 9`
- `All Debian 10`
- `All Debian 11`
- `All Debian 12`
- `All Debian 13`
- `All CentOS 6`
- `All CentOS 7`
- `All CentOS 8`
- `All OpenSUSE 15`

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- `All OpenSUSE 16`
- `All Oracle 6`
- `All Oracle 7`
- `All Oracle 8`
- `All Oracle 9`
- `All Oracle 10`
- `All Red Hat 6`
- `All Red Hat 7`
- `All Red Hat 8`
- `All Red Hat 9`
- `All Red Hat 10`
- `All Rocky Linux 8`
- `All Rocky Linux 9`
- `All Rocky Linux 10`
- `All SLES 11`

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- `All SLES 12`
- `All SLES 15`
- `All SLES 16`
- `All SUSE`
- `All Ubuntu 14.04 - amd64`
- `All Ubuntu 14.04 - i386`
- `All Ubuntu 14.04 - arm64`
- `All Ubuntu 16.04 - amd64`
- `All Ubuntu 16.04 - i386`
- `All Ubuntu 16.04 - arm64`
- `All Ubuntu 18.04 - amd64`
- `All Ubuntu 18.04 - i386`
- `All Ubuntu 18.04 - arm64`
- `All Ubuntu 20.04 - amd64`
- `All Ubuntu 20.04 - i386`

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- `All Ubuntu 20.04 - arm64`
- `All Ubuntu 22.04 - amd64`
- `All Ubuntu 22.04 - i386`
- `All Ubuntu 22.04 - arm64`
- `All Ubuntu 24.04 - amd64`
- `All Ubuntu 24.04 - i386`
- `All Ubuntu 24.04 - arm64`
- `All Windows`
- `All Windows Servers`
- `Patch Supported Systems`

For earlier versions of the Tanium Server, or after upgrading from an earlier version, you must manually create the computer groups. For more information, see Tanium Console User Guide: Create a computer group.

Solution dependencies

Other Tanium solutions are required for Patch to function (required dependencies) or for specific Patch features to work (feature-specific dependencies). The installation method that you select determines if the Tanium Server automatically imports dependencies or if you must manually import them.

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Note: Some Patch dependencies have their own dependencies, which you can see in the lists of required and feature-specific dependencies below. Where a dependency links to its own user guide, that link opens the guide for the latest version of the solution, not necessarily the minimum version that Patch requires.

Tanium recommended installation

If you select **Tanium Recommended Installation** when you import Patch, the Tanium Server automatically imports all your licensed solutions at the same time. For more information, see Tanium Console User Guide: Import all modules and services.

Import specific solutions

If you select only Patch to import, the Tanium Server automatically imports the latest available versions of any required dependencies that are missing. If some required dependencies are already imported but their versions are earlier than the minimum required for Patch, the server automatically updates those dependencies to the latest available versions.

Required dependencies

Patch has the following required dependencies:

- Tanium™ Endpoint Configuration
- Tanium™ Data Service (TDS)
- Tanium™ End-User Notifications

Feature-specific dependencies

If you select only Patch to import, you must manually import or update its feature-specific dependencies regardless of Tanium Console or

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Tanium Core Platform versions.

Patch has the following feature-specific dependencies:

- Tanium™ Reporting. Review charts on the **Overview** page.
    - Tanium™ Blob Service
    - Reporting Content

Client extensions and endpoint tools

Tanium Endpoint Configuration installs Client Extensions and other tools for endpoints. Client extensions perform tasks that are common to certain Tanium solutions. Each Client Extension and tool might have recommended security exclusions to allow them to run without interference. For a list of all Client Extensions and tools, see Reference: Client extensions used for Tanium solutions.



Note: The change management feature of Endpoint Configuration might affect the version of each endpoint tool installed on endpoints.

Tanium Server and Module Server computer resources

Patch is installed and runs as a service on the Module Server host computer. The impact on the Module Server is minimal and depends on usage. You might need to tune the Tanium Server to set bandwidth limits for your environment.

You can configure global throttles from **Administration** > **Configuration** > **Bandwidth Throttles**.

The Tanium Server needs an additional 500 GB of disk space as Tanium Patch downloads and distributes updates regularly. The Tanium

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Server stores these update packages within the Downloads directory.

> **Note:** If the UUP proxy feature is enabled, UUP might use up to 200 GB of the required 500 GB. The actual amount of disk space used depends on the size of the Windows update files. For more information, see Enable UUP Proxy on page 91.

For more information about other computer resources, see Tanium Core Platform User Guide for Windows Deployments: Reference: Host system resource guidelines and Tanium Appliance Deployment Guide: Reference: Tanium Appliance Specifications.

Endpoints

Supported operating systems

The following endpoint operating systems are supported with Patch.

Specific version requirements depend on the version of Patch and components that you are using. For more information about Tanium Client versions, see Tanium Client Management User Guide: Client version and host system requirements.

Operating System	Version	Notes
Microsoft Windows Server	Windows Server 2012 or later	• Windows Server Core not supported for End-User Notifications functionality. • Windows Server 2012 R2 requires Microsoft KB2919394 or KB2919355 for End-User Self Service functionality.
Microsoft Windows Workstation	Windows 10 or later	• Patch supports Windows 11 endpoints with Arm processors. • For information about Windows 10 Home and Windows 11 Home support, see Available Patch scan methods

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Operating System	Version	Notes
		for Windows endpoints on page 12.
Microsoft Windows Server (Legacy)	Windows Server 2008 R2 Service Pack 1 [1]	• Windows Server Core not supported for End-User Notifications functionality. • Windows Server 2008 R2 Service Pack 1 requires Microsoft KB2758857. • Windows Server 2012 R2 requires Microsoft KB2919394 or KB2919355 for End-User Self Service functionality.
Microsoft Windows Workstation (Legacy)	Windows 7 Service Pack 1 [1] Windows 8.1 [1]	• Windows 7 Service Pack 1 requires Microsoft KB2758857. • Windows 8.1 requires Microsoft KB2919394 or KB2919355 for End-User Self Service functionality.
Linux	AlmaLinux 8.x, 9.x, 10.x	
	Amazon Linux 1 [1], 2, 2023	• Requires Yum version 3.2.29-22.el6 or later for systems using OS-based Linux distributions. • For deployments to Amazon Linux 2023 endpoints, you can only **Install All Updates** or **Install All Security Updates**. You cannot deploy using the **Choose Patch List** or **Manually Select Patches** options.
	CentOS 6.x [1], 7.x [1], 8.x [1]	• CentOS 6.x and 7.x require Yum version 3.2.29-22.el6 or later for systems using OS-based Linux distributions. • Cent OS 8.x requires DNF.
	Debian 8.x, 9.x, 10.x, 11.x, 12.x, 13.x	• Requires APT.
	openSUSE Linux 12.x [1], 15.x, 16.x	• Requires Zypper.
	Oracle Linux 6.x [1], 7.x, 8.x, 9.x, 10.x	• Oracle Linux 6.x and 7.x require Yum version 3.2.29-22.el6 or later for systems using OS-based Linux distributions.

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Operating System	Version	Notes
		• Oracle Linux 8.x and later requires DNF.
	Red Hat Enterprise Linux 6.x [1], 7.x, 8.x, 9.x, 10.x	• Requires Yum version 3.2.29-22.el6 or later for systems using OS-based Linux distributions. • Red Hat endpoints must be registered to a Red Hat subscription. For more information, see Linux scan techniques on page 126. • Red Hat Enterprise Linux 8.x and 9.x requires DNF.
	Rocky Linux 8.x, 9.x, 10.x	• Rocky Linux 8.x, 9.x, and 10.x requires DNF.
	SUSE Linux Enterprise Server 11.x Service Pack 3 or later, 12.x, 15.x	• Requires Zypper.
	Ubuntu 14.04, 16.04, 18.04, 20.04, 22.04, 24.04, 26.04	• Requires APT.

[1] This operating system version has reached end of life. Tanium cannot guarantee Tanium Patch on operating system versions that have reached end of life.

Resource requirements

- The utilities that Patch uses for scanning use increased RAM for up to several minutes during endpoint scans. If an endpoint must also run other processes that use significant RAM during Patch scans, it might require more RAM than the minimum 2 GB. For more information, see Tanium Client Management User Guide: Hardware requirements.
- Endpoints must have at least 5 GB available in free disk space. For more information, see Tanium Client Management User Guide: Hardware requirements.

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- Linux endpoints often use restricted volumes. The Tanium Client stores the repository scanning logic in the local Tanium Client directory. Package managers (for example, Yum, DNF, Zypper, and Apt) cache repository data in the /var partition. In most cases, the cache does not exceed 500 MB. If you use lean partitioning or have a high count of configured repositories, evaluate the available disk space and partition configurations to ensure /var has sufficient free space.
- On Tanium Console **Administration** > **Configuration** > **Settings** > **Advanced Settings** page, set the Tanium Client cache limit (**ClientCacheLimitInMB**) to 2048 MB. For more information, see Configure advanced settings on page 74 and Tanium Console User Guide: Managing Tanium Core Platform settings.
- If VDI is used in your environment, see the Tanium Client Management User Guide: Preparing the Tanium Client on a virtual desktop infrastructure (VDI) instance.

Third-party software

Patch requires that Windows endpoints have Windows Update Agent. If you are controlling all patch deployments through Tanium, disable the Windows Update Agent automatic functions at the domain level.

Host and network security requirements

Specific ports and processes are needed to run Patch.

Ports

The following ports are required for Patch communication.

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Source	Destination	Port	Protocol	Purpose
Module Server	Module Server (loopback)	17454	TCP	Internal purposes; not externally accessible

Best Practice: Configure firewall policies to open ports for Tanium traffic with TCP-based rules instead of application identity-based rules. For example, on a Palo Alto Networks firewall, configure the rules with service objects or service groups instead of application objects or application groups.

Security exclusions

If antivirus (AV) or other security software is in use in the environment to monitor and block unknown host system processes, Tanium requires that a security administrator create exclusions to allow the Tanium processes to run without interference. This software can include security applications that are included with an endpoint operating system, such as fapolicyd on some Linux distributions, or Microsoft Defender on Windows. The configuration of these exclusions varies depending on the security software.

For more information about security exclusions to define across Tanium, see Reference: Endpoint security exclusions. For Windows-based Tanium Core Platform deployments, see Tanium Core Platform Server security exclusions.

Note: If the required exclusions are not configured, or if Tanium suspects interference from AV or security software, Tanium might require you to remove or disable the AV or security software temporarily for the purposes of troubleshooting and restore it once troubleshooting is complete.

The Tanium Client uses the Windows Update offline scan file, Wsusscn2.cab, to assess computers for installed or missing operating system and application security patches. If your endpoint security solutions scan archive files, refer to the Microsoft KB for information on

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how to configure those tools to interact appropriately with the Wsusscn2.cab file.

For Windows endpoints, review and follow the Microsoft antivirus security exclusion recommendations for enterprise computers. For more information, see Microsoft Support: Virus scanning recommendations for Enterprise computers that are running currently supported versions of Windows (KB822158).

Patch security exclusions for Tanium Core Platform servers (Windows deployments only)

Target Device	Notes	Exclusion Type	Exclusion
Module Server		Process	*<Module Server>* \services\patch-service\node.exe
	Required when Endpoint Configuration is installed	Process	*<Module Server>* \services\endpoint-configuration-service\TaniumEndpointConfigService.exe

Patch security exclusions for endpoints

Endpoint OS	Notes	Exclusion Type	Exclusion
Windows		Process	*<Tanium Client>* \TaniumCX.exe
		File	*<Tanium Client>* \TaniumClientExtensions.dll
		File	*<Tanium Client>* \TaniumClientExtensions.dll.sig

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Endpoint OS	Notes	Exclusion Type	Exclusion
		File	*<Tanium Client>* \extensions\TaniumSoftwareManager.dll
		File	*<Tanium Client>* \extensions\TaniumSoftwareManager.dll.sig
		File	*<Tanium Client>* \Patch\lib\tanium-patch.min.vbs
		File	*<Tanium Client>* \Patch\scans\Wsusscn2.cab
		Process	*<Tanium Client>* \Patch\tools\active-user-sessions.exe
		File	*<Tanium Client>* \Patch\tools\run-patch-manager.min.vbs
		Process	*<Tanium Client>* \Patch\tools\TaniumExecWrapper.exe
		Process	*<Tanium Client>* \Patch\tools\TaniumFileInfo.exe
		Process	*<Tanium Client>* \Patch\tools\TaniumUpdateSearcher.exe
		Folder	*<Tanium Client>* \python312
		Process	*<Tanium Client>* \python312\TPython.exe
		Process	*<Tanium Client>* \Tools\Patch\7za.exe
		Folder	*<Tanium Client>* \TPython312
		File	*<Tanium Client>* \TPython\TPython.bat

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Endpoint OS	Notes	Exclusion Type	Exclusion
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumEndUser.dll
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumEndUser.dll.cfg
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumEndUser.dll.sig
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumExtras.dll
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumExtras.dll.cfg

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Endpoint OS	Notes	Exclusion Type	Exclusion
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumExtras.dll.sig
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumPatch.dll
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumPatch.dll.cfg
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\TaniumPatch.dll.sig
	Endpoints with Toolset version 2.20 or later	Folder	*<Tanium Client>* \extensions\patch

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Endpoint OS	Notes	Exclusion Type	Exclusion
	Endpoints with Toolset version 2.20 or later	Process	*<Tanium Client>* \extensions\patch\TaniumPatchEngine.exe
	Endpoints with Toolset version 2.20 or later	File	*<Tanium Client>* \extensions\patch\TaniumPatchEngine.sig
	Exclude from on-access or real-time scans	Folder	*<Tanium Client>*
Linux		File	*<Tanium Client>* /extensions/libTaniumSoftwareManager.so
		File	*<Tanium Client>* /extensions/libTaniumSoftwareManager.so.sig
		File	*<Tanium Client>* /libTaniumClientExtensions.so
		File	*<Tanium Client>* /libTaniumClientExtensions.so.sig
		Folder	*<Tanium Client>* /python312
		Process	*<Tanium Client>* /python312/bin/pybin

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Endpoint OS	Notes	Exclusion Type	Exclusion
		Process	*<Tanium Client>* /python312/python
		Folder	*<Tanium Client>* /TPython312
		Process	*<Tanium Client>* /TPython/TPython

Third-party internet URLs

If security software is deployed in the environment to monitor and block unknown URLs, your security administrator must allow access to Internet URLs on page 53 on the Tanium Server, Tanium Module Server, or endpoints, depending on the operating system of the endpoints and your Patch configuration. The complete list might vary based on your environment.

- Windows endpoints:
    - The Tanium Server needs access to the URLs if Patch is scanning Windows endpoints. For more information, see Windows scan techniques on page 123.
    - The Tanium Module Server needs access to www.microsoft.com when Patch uses the Tanium Scan technique. For more information, see Windows scan techniques on page 123.
    - The Windows endpoints need access to the URLs if you are using direct patch downloads. For more information, see Enable direct patch downloads from Microsoft on page 92.
- Linux endpoints:
    - The Tanium Server needs access to the URLs used by a scan configuration that uses the Tanium Scan technique. For more

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information, see Linux scan techniques on page 126.

- The Linux endpoints need access to the URLs used by a scan configuration that uses the Repository Scan technique. For more information, see Linux scan techniques on page 126.

Tip: For a complete list of URLs needed in your environment, in Interact ask the question `Get Patch Repositories from all machines with Is Linux equals True`. Review the URLs listed in the **Base URL** column.

Internet URLs to allow

Operating System	Source (Requestor)	URL
Windows	• Endpoints using direct download[1] • Windows 11, version 22H2 or later endpoints if not using Tanium architecture to deliver cumulative updates • Tanium Server[2]	*.delivery.mp.microsoft.com
		*.prod.do.dsp.mp.microsoft.com
		*.update.microsoft.com
		*.windowsupdate.com
		*.windowsupdate.microsoft.com
		http://crl.microsoft.com
		http://emdl.ws.microsoft.com
		http://go.microsoft.com/fwlink/?linkid=74689
		http://ntservicepack.microsoft.com
		http://windowsupdate.microsoft.com
		http://wustat.windows.com
		https://download.microsoft.com
		https://sws.update.microsoft.com

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Operating System	Source (Requestor)	URL
Windows	Tanium Module Server	https://sws.update.microsoft.com
		*.microsoft.com if using the Tanium Scan technique. For more information, see Windows scan techniques on page 123 .
Linux	• Tanium Server[3] • Tanium Module Server[4] • Endpoints[5]	https://vault.centos.org/
		https://mirror.centos.org
		https://yum.oracle.com
		https://cdn.redhat.com
		https://download.opensuse.org
		https://deb.debian.org
		https://security.debian.org
		https://archive.ubuntu.com
		https://ports.ubuntu.com
		https://security.ubuntu.com
		https://dl.rockylinux.org
		https://repo.almalinux.org
		https://dl.suse.com
		https://dl-ipv4.suse.com
		https://public-dl.suse.com
		https://public-dl-ipv4.suse.com
		https://updates.suse.com

1 Enable direct patch downloads from Microsoft on page 92 .

2 Needed if Patch is scanning Windows endpoints.

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Operating System	Source (Requestor)	URL

[3] Needed if using a scan configuration that uses the Tanium Scan technique.

[4] Needed if using repository snapshots.

[5] Needed if using a scan configuration that uses the Repository Scan on page 126 .

User role requirements

Predefined roles grant the following permissions, which are required to use Patch functionality:

- Table 7. Patch solution permissions on page 56
- Table 8. Provided Patch administration and platform content permissions on page 66: The solution permissions automatically provide some of these permissions.

To review a summary of the predefined roles, see Set up Patch users on page 85.

Some Patch solution permissions provide permissions that are associated with other solutions. Furthermore, all the platform content permissions and some solution permissions apply to content sets that might contain content for other solutions in addition to Patch. If you create custom roles for Patch users, be sure to assign all the solution permissions and content set permissions that are required for Patch functionality. If you are not sure which permissions are required for a custom role, view the permissions of the predefined roles. For more information, see the following sections of the Tanium Console User Guide:

- RBAC overview (provides an overview of roles, permissions, and content sets)
- Provided role permissions
- View effective role permissions

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- Configure a custom role

Note: Do not assign the Patch **Service Account** and Patch **Service Account - All Content Sets** roles to users. These roles are for internal purposes only.

Patch solution permissions

Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Linux Patch Access to the Linux Patch content	✓ USER	✓ USER	✓ USER	✓ USER	✗	✓ USER	✓ USER	✓ USER	✓ SHOW	✓ SHOW	✓ SHOW
Patch INITIALIZE: Set up Patch activities for the granted content sets SHOW: View the Patch workbench	✓ INITIALIZE SHOW	✓ SHOW	✓ SHOW	✓ SHOW	✗	✓ INITIALIZE SHOW	✓ SHOW	✓ INITIALIZE [2] SHOW	✓ SHOW	✓ SHOW	✓ SHOW

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Patch Automatic Deployment READ: View automatic deployments WRITE: Create automatic deployments	✓ READ WRITE DELETE	✗	✗	✗	✗	✓ READ WRITE	✓ READ	✓ READ WRITE	✓ READ WRITE	✓ READ WRITE	✓ READ WRITE
Patch Automatic Deployment Configuration READ: View automatic deployment configurations WRITE: Create automatic deployment configurations	✓ READ WRITE DELETE	✗	✗	✗	✗	✓ READ WRITE DELETE	✓ READ	✓ READ WRITE DELETE	✓ READ WRITE DELETE	✓ READ WRITE DELETE	✓ READ

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
DELETE: Delete automatic deployment configurations											
Patch Block List Create, modify, and delete block lists for the granted content sets	✓ 2,3 READ WRITE EXECUTE DELETE	✓ 2 READ WRITE DELETE	✓ 2 READ	✓ 2 READ	✗	✓ 2 READ WRITE EXECUTE DELETE	✓ 2 READ	✓ 2 READ WRITE EXECUTE DELETE	✗	✗	✗
Patch Deployment Create, modify, and delete deployments for the granted content sets	✓ 2,3 READ WRITE EXECUTE DELETE	✓ 2 READ	✓ 2 READ WRITE EXECUTE DELETE	✓ 2 READ EXECUTE DELETE	✗	✓ 2 READ WRITE EXECUTE DELETE	✓ 2 READ	✓ 2 READ WRITE EXECUTE DELETE	✓ READ WRITE EXECUTE DELETE	✓ READ	✓ READ WRITE DELETE

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Patch Deployment Override Restricted Create, modify, and delete deployments for the granted content sets, but **cannot override maintenance windows or block lists**	✗	✗	✗	✓ WRITE	✗	✗	✗	✗	✗	✗	✗
Patch Deployment Override Block List Create deployments that can override block lists	✓ WRITE	✗	✓ WRITE	✗	✗	✓ WRITE	✗	✓ WRITE	✓ WRITE	✗	✓ WRITE

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Patch Deployment Override Maintenance Window Create deployments that can override maintenance windows	✓ WRITE	✗	✓ WRITE	✗	✗	✓ WRITE	✗	✓ WRITE	✓ WRITE	✗	✓ WRITE
Patch Deployment Plan WRITE: Access to ring deployment plans	✓ WRITE	✗	✗	✗	✗	✓ WRITE	✗	✓ WRITE	✓ WRITE	✓ WRITE	✓ WRITE
Patch Endpoint Configuration Approve changes to Patch endpoint configurations	✗	✗	✗	✗	✓ APPROVER	✗	✗	✗	✗	✗	✗

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Patch Maintenance Window Create, modify, and delete enforcements in maintenance windows for the granted content sets	✓ 2,3 READ WRITE EXECUTE DELETE	✓ 2 READ WRITE DELETE	✓ 2 READ	✓ 2 READ	✗	✓ 2 READ WRITE EXECUTE DELETE	✓ 2 READ	✓ 2 READ WRITE EXECUTE DELETE	✗	✗	✗
Patch MDM Configuration Create, modify, and delete MDM settings and enforcements	✓ READ WRITE DELETE	✗	✗	✗	✗	✗	✗	✓ READ WRITE DELETE	✗	✗	✗
Patch MDM Deployment Create, modify, and delete MDM	✓ READ WRITE	✗	✗	✗	✗	✗	✗	✓ READ WRITE	✗	✗	✗

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
deployments	DELETE							DELETE			
Patch MDM Enforcement Create, modify, and delete MDM enforcements	✓ READ WRITE DELETE	✗	✗	✗	✗	✗	✗	✓ READ WRITE DELETE	✗	✗	✗
Patch Operator Settings Write access to a subset of platform settings in the Patch module	✓ WRITE	✗	✗	✗	✗	✓ WRITE	✗	✗	✗	✗	✗
Patch Patchlist Create, modify, and delete enforcements in patch lists for the	✓ 2,3 READ WRITE EXECUTE	✓ 2 READ WRITE EXECUTE	✓ 2 READ	✓ 2 READ	✗	✓ 2 READ WRITE EXECUTE	✓ 2 READ	✓ 2 READ WRITE EXECUTE	✓ READ	✓ READ	✓ READ WRITE DELETE

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
granted content sets	DELETE	DELETE				DELETE		DELETE			
Patch Profile Create, modify, and delete profiles	✓ READ WRITE EXECUTE DELETE	✗	✗	✗	✗	✓ WRITE EXECUTE DELETE	✓ READ	✓ WRITE EXECUTE DELETE	✗	✗	✗
Patch Repository Create, modify, and delete repositories	✓ READ WRITE EXECUTE DELETE	✓ READ	✗	✗	✗	✓ READ WRITE EXECUTE	✓ READ	✓ READ EXECUTE	✗	✗	✗
Patch Repository Snapshot Create, edit, and	✓ READ	✓ READ	✗	✗	✗	✓ READ	✓ READ	✓ READ	✗	✗	✗

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
delete repository snapshots	WRITE DELETE	WRITE DELETE				WRITE DELETE		WRITE DELETE			
Patch Scan Configuration Create, modify, and delete scan configurations	✓ READ WRITE EXECUTE DELETE	✓ READ WRITE DELETE	✗	✗	✗	✓ READ WRITE EXECUTE DELETE	✓ READ	✓ READ WRITE EXECUTE DELETE	✗	✗	✗
Patch Settings Write access to all Patch settings	✓ READ WRITE	✓ READ	✓ READ	✓ READ	✗	✓ READ	✓ READ	✓ READ	✗	✗	✗
Patch Solution Install or uninstall Patch	✓ UPGRADE	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗

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Permission	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver [1]	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Patch Statistics Access to the Patch statistics logs	✓ LOGS	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Windows Patch Access to the Windows Patch content	✓ USER	✓ USER	✓ USER	✓ USER	✗	✓ USER	✓ USER	✓ USER	✓ SHOW	✓ SHOW	✓ SHOW

[1] The permissions for this role provide solution permissions for other solutions. To view the provided permissions, see View effective role permissions .

[2] Grants access to content in the Patch Content Set content set.

[3] Grants access to content in the Patch Service Objects content set.

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Provided Patch administration and platform content permissions

Permission	Permission Type	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Action Group	Administration	READ	READ	READ	READ		READ	READ	READ	READ	READ	READ
Allowed Urls	Administration	READ WRITE										
Action	Platform Content	READ WRITE	WRITE	READ WRITE	READ WRITE		READ WRITE		READ WRITE	READ WRITE	READ WRITE	READ WRITE
Deployment Plan	Platform Content	READ WRITE	READ	READ	READ		READ WRITE	READ	READ WRITE	READ WRITE	READ WRITE	READ
Filter Group	Platform											

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Permission	Permission Type	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
	Content	READ	READ	READ	READ		READ	READ	READ	READ	READ	READ
Own Action	Platform Content	✓ READ	✓ READ	✓ READ	✓ READ	✗	✓ READ	✗	✓ READ	✓ READ	✓ READ	✓ READ
Package	Platform Content	✓ READ WRITE	✓ READ	✓ READ WRITE	✓ READ WRITE	✗	✓ READ WRITE	✗	✓ READ WRITE	✓ READ	✓ READ	✓ READ WRITE
Plugin	Platform Content	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE	✓ READ EXECUTE
Progression Criteria Set	Platform Content	✓ READ WRITE	✓ READ	✓ READ	✓ READ	✗	✓ READ WRITE	✓ READ	✓ READ WRITE	✓ READ WRITE	✓ READ WRITE	✓ READ

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Permission	Permission Type	Patch Administrator [1]	Patch Configuration Author [1]	Patch Deployment Author [1]	Patch Deployment Author Override Restricted [1]	Patch Endpoint Configuration Approver	Patch Operator [1]	Patch Read Only User [1]	Patch Super User [1]	Patch Automatic Deployment Configuration Operator [1]	Patch Automatic Deployment Configuration Operator Restricted [1]	Patch Automatic Deployment Operator [1]
Ring Set	Platform Content	READ	READ	READ	READ		READ WRITE	READ	READ WRITE	READ	READ	READ
Saved Question	Platform Content	READ WRITE	READ	READ	READ		READ WRITE	READ	READ WRITE	READ	READ	READ
Sensor	Platform Content	READ	READ	READ	READ		READ	READ	READ	READ	READ	READ

[1] The permissions for this role provide solution permissions for other solutions. To view the provided permissions, see View effective role permissions .

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Installing Patch

Use the **Solutions** page to install Patch and choose either automatic or manual configuration:

About this task

- **Automatic configuration with default settings**: Patch is installed with any required dependencies and other selected products. After installation, the Tanium Server automatically configures the recommended default settings. This option is the best practice for most deployments. For more information about the automatic configuration for Patch, see Import Patch with default settings on page 69.

- **Manual configuration with custom settings**: After installing Patch, you must manually configure required settings. Select this option only if Patch requires settings that differ from the recommended default settings. For more information, see Import Patch with custom settings on page 71.

Before you begin

- Read the Tanium Patch release notes.

- Review the Patch requirements on page 35.

- If you are upgrading from a previous version, see Upgrade Patch on page 71.

Import Patch with default settings

About this task

You can set the Patch action group to target the **No Computers** filter group by enabling restricted targeting before importing Patch. This option enables you to control Patch tools deployment through scheduled actions that are created during the import and that target the Patch action group. For example, you might want to test Patch tools on a subset of endpoints before deploying the Patch tools to all endpoints. In this case, you can manually deploy the Patch tools to an action group that you configured to target only the subset. To configure an action group, see Tanium Console User Guide: Managing action groups. To enable or disable restricted targeting, see Tanium Console User

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Guide: Tools deployment and restricted targeting.

To import Patch and configure default settings, be sure to select the **Apply All Tanium recommended configurations** checkbox while performing the steps in Tanium Console User Guide: Import all modules and services. After the import, verify that the correct version is installed: see Verify Patch version on page 72.

Default settings for Patch

When you import Patch with automatic configuration, the following default settings for managing Windows and Linux endpoints are configured:

Setting	Default value
Action group	• Restricted targeting disabled (default): `Patch Supported Systems` computer group • Restricted targeting enabled: `No Computers` computer group
Advanced settings	The following advanced setting is configured for optimal delivery of larger payloads: • `ClientCacheLimitInMB` = 2048 For more information, see Configure platform settings on page 74 .
Patch computer groups	Computer groups that Patch requires are imported. For more information, see Computer group dependencies .
Patch scans	• Tanium Scan for Windows is configured and synchronized. • Default scan configurations are created for Windows and Linux and enforced by the recommended computer group. **Note:** Tanium Scan does not include any Red Hat repositories because authentication for cdn.redhat.com must first be configured. For more information, see (Red Hat endpoints) Configure Tanium Server to use certificate authentication on page 98 .
Patch lists	The following patch lists are automatically created: • **[Patch Baseline Deployment] - Windows** • **[Tanium Patch Baseline Reporting] - Windows** • **[Tanium Patch Baseline Reporting] - Linux** • **All Patches** • **[Tanium Patch Recommended Updates] - Windows**

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Setting	Default value
	For more information, see Default patch lists on page 137 .
Patch block lists	• The **[Global Block List] - Windows** block list is created and targets the `Patch Supported Systems` computer group. This block list excludes **Security Only** patches on Windows systems. For more information, see Microsoft update and servicing details on page 17. • A default block list is created for Linux but is not targeted.
Patch deployment templates	Default deployment templates are created for Windows and Linux.
Patch maintenance windows	• A **[Patch Tuesday] - Windows** default maintenance window is created for Patch Tuesday and is not enforced on any computer groups. • Default maintenance windows are created for Windows and Linux to block patch installations and reboots without first enabling another maintenance window. These maintenance windows are not enforced to any computer groups.

Import Patch with custom settings

About this task

To import Patch without automatically configuring default settings, be sure to clear the **Apply All Tanium recommended configurations** checkbox while performing the steps in Tanium Console User Guide: Import or update specific solutions. After the import, verify that the correct version is installed: see Verify Patch version on page 72.

To organize computer groups, see Organize computer groups for Windows and Linux endpoints on page 79.

To configure the Patch action group, see Configuring Patch on page 73.

Manage solution dependencies

Other Tanium solutions are required for Patch to function (required dependencies) or for specific Patch features to work (feature-specific dependencies).

Upgrade Patch

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For the steps to upgrade Patch, see Tanium Console User Guide: Managing Tanium solutions. After the upgrade, verify that the correct version is installed: see Verify Patch version on page 72.

Verify Patch version

After you import or upgrade Patch , verify that the correct version is installed.

1. Refresh your browser.
2. From the Main menu, go to **Modules** > **Patch** to open the **Overview** page.
3. To show version information, click Info .

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Configuring Patch

Configure Tanium Patch to ensure that you can effectively and accurately deploy patches to your targeted endpoints. Configurations include setting action groups, defining scan methods, and enabling features.

About this task

If you did not install Patch with the **Apply All Tanium recommended configurations**, you must enable and configure certain features.

Restricted targeting

About this task

You can set the Patch action group to target the **No Computers** filter group by enabling restricted targeting before importing Patch. This option enables you to control Patch tools deployment through scheduled actions that are created during the import and that target the Patch action group. For example, you might want to test Patch tools on a subset of endpoints before deploying the Patch tools to all endpoints. In this case, you can manually deploy the Patch tools to an action group that you configured to target only the subset. To configure an action group, see Tanium Console User Guide: Managing action groups. To enable or disable restricted targeting, see Tanium Console User Guide: Tools deployment and restricted targeting.

Default settings for Patch

When you import Patch with automatic configuration, the following default settings for managing Windows and Linux endpoints are configured:

Setting	Default value
Action group	• Restricted targeting disabled (default): `Patch Supported Systems` computer group • Restricted targeting enabled: `No Computers` computer group
Advanced settings	The following advanced setting is configured for optimal delivery of larger payloads: • `ClientCacheLimitInMB` = 2048

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Setting	Default value
	For more information, see Configure platform settings on page 74 .
Patch computer groups	Computer groups that Patch requires are imported. For more information, see Computer group dependencies .
Patch scans	• Tanium Scan for Windows is configured and synchronized. • Default scan configurations are created for Windows and Linux and enforced by the recommended computer group. **Note:** Tanium Scan does not include any Red Hat repositories because authentication for cdn.redhat.com must first be configured. For more information, see (Red Hat endpoints) Configure Tanium Server to use certificate authentication on page 98 .
Patch lists	The following patch lists are automatically created: • **[Patch Baseline Deployment] - Windows** • **[Tanium Patch Baseline Reporting] - Windows** • **[Tanium Patch Baseline Reporting] - Linux** • **All Patches** • **[Tanium Patch Recommended Updates] - Windows** For more information, see Default patch lists on page 137 .
Patch block lists	• The **[Global Block List] - Windows** block list is created and targets the `Patch Supported Systems` computer group. This block list excludes **Security Only** patches on Windows systems. For more information, see Microsoft update and servicing details on page 17. • A default block list is created for Linux but is not targeted.
Patch deployment templates	Default deployment templates are created for Windows and Linux.
Patch maintenance windows	• A **[Patch Tuesday] - Windows** default maintenance window is created for Patch Tuesday and is not enforced on any computer groups. • Default maintenance windows are created for Windows and Linux to block patch installations and reboots without first enabling another maintenance window. These maintenance windows are not enforced to any computer groups.

Configure advanced settings

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About this task

You can configure the Tanium platform for optimal delivery of larger payloads, which are typically associated with patching activity.

1. From the Main menu, go to **Administration** > **Configuration** > **Settings** > **Advanced Settings**.
2. To increase the client cache size, click **Add Setting**, provide the following information, and click **Save**. **Setting Type**: `Client` **Platform Setting Name**: `ClientCacheLimitInMB` **Value Type**: `Numeric` **Value** : `2048`

Result

Note: Changes to platform settings can take up to five hours to propagate to clients.

Configure Tanium End-User Notifications for Windows endpoints

With the Tanium End-User Notifications solution, you can create a notification message with your deployment to Windows endpoints.

About this task

You might want to create notifications for the following reasons:

- Notify the user that the endpoint is about to begin a deployment. You can also give the user the option to postpone the deployment.
- After a deployment is complete, notify the user that the endpoint needs to restart. You can also give the user the option to postpone the restart operation.

For more information, see Tanium End-User Notifications User Guide: End-User Notifications overview.

Disable Windows Update restart prompts

About this task

The Windows Update Agent automatically prompts users to restart their machine when an update is

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installed from any user or source. The following Windows Local/Group Policies should be configured to allow Tanium End-User Notifications to control endpoint restarts.

1. In the Windows Local Group Policy Editor, go to **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Windows Update**.
2. Enable the **No auto-restart for scheduled Automatic Updates installations** parameter.
3. Disable the **Re-prompt for restart with scheduled installations** parameter.

Install and configure Tanium Endpoint Configuration

About this task

If you enabled configuration approvals, the following configuration changes must be approved in Endpoint Configuration before they deploy to endpoints:

- Creating, updating, or deleting patch lists
- Adding or removing enforcements
- Removing all enforcements
- Updating scan configuration priorities
- Creating deployments
- Stopping deployments
- Adding targets to deployments
- User-initiated actions, such as initializing endpoints, uploading custom field files, enabling Linux

Manage solution configurations with Tanium Endpoint Configuration

Tanium Endpoint Configuration delivers configuration information and required tools for Tanium Solutions to endpoints. Endpoint Configuration consolidates the configuration actions that traditionally accompany additional Tanium functionality and eliminates the potential for timing errors that occur between when a solution configuration is made and the time that configuration reaches an endpoint. Managing configuration in this way greatly reduces the time to install,

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configure, and use Tanium functionality, and improves the flexibility to target specific configurations to groups of endpoints.

Endpoint tools are bundled together in a versioned toolset. Each toolset contains a specific version of each tool. The Endpoint Configuration Toolset Solution provides upgrades to the toolset, and it imports upgraded versions of the entire toolset as needed by upgraded or newly installed solutions.

Important:

When you upgrade Patch, the change management feature enables you to perform a staged rollout of the endpoint tools associated with the new version of Patch. Patch remains compatible with earlier versions of the endpoint tools and so continues to function with endpoints in rings that have not yet received the latest tools. However, any functionality added in the upgrade of Patch might not be available on these endpoints until they receive the upgraded tools.

In some cases, multiple solutions install the same endpoint tool, but upgraded endpoint tools remain compatible with all associated solutions. For example, both Tanium™ Threat Response and Tanium™ Reveal install and use index-cx. When you upgrade Threat Response, it might install version x.6.yyyy of index-cx, superseding version x.5.zzzz that Reveal previously installed. The index-cx upgrade from Threat Response does not affect the Index-related functionality of Reveal on the upgraded endpoints. For more information about the change management feature, see Tanium Endpoint Configuration User Guide: Managing endpoint tool upgrade rollouts.

Note: For information about how to install Endpoint Configuration, see Installing Endpoint Configuration.

Optionally, you can use Endpoint Configuration to require approval of configuration changes. When configuration approvals are enabled, Endpoint Configuration does not deploy a configuration change to endpoints until a user with approval permission approves the change. For information about the roles and permissions that are required to approve configuration changes for Patch, see User role requirements. For more information about how to enable and use configuration approvals in Endpoint Configuration, see Managing approvals.

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Important:

For solutions to perform configuration changes or tool deployment through Endpoint Configuration on endpoints with action locks turned on, you must enable the **Manifest Package Ignore Action Lock** and **Deploy Client Configuration and Support Package Ignore Action Lock** settings. To access these settings, from the Endpoint Configuration **Overview** page, click Settings and select **Global**. For more information about action locks, see Managing action locks.

For more information about Endpoint Configuration, see Tanium Endpoint Configuration User Guide.

Configure Patch global settings

Configure the Patch action group for Windows and Linux endpoints

About this task

Use the Patch action group to define which managed endpoints are the targets for Patch deployments. Edit the computer groups in the Patch action group to specify which endpoints the deployments target.

Importing the Patch module automatically creates an action group to target specific endpoints. If you did not use automatic configuration or you enabled restricted targeting when you imported Patch, the action group targets **No Computers**.

If you used automatic configuration and restricted targeting was disabled when you imported Patch, configuring the Patch action group is optional.

Select the computer groups to include in the Patch action group.

Best Practice: Clear the selection for **No Computers** and make sure that all operating systems that are supported by Patch are included in the Patch action group.

1. From the Main menu, go to **Administration** > **Actions** > **Action Groups**.
2. Click Patch.

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3. Select the computer groups that you want to include in the action group and click **Save**. If you select multiple computer groups, choose an operator (AND or OR) to combine the groups.

Next steps

[Initialize Patch on Windows and Linux endpoints on page 109](#).

Organize computer groups for Windows and Linux endpoints

One way to apply Windows and Linux patches and view deployment results is by computer group. Create relevant computer groups to organize your endpoints. Some options include:

- Endpoint type, such as servers or employee workstations
- Endpoint location, such as by country or time zone
- Endpoint priority, such as business-critical machines
- Endpoint configuration needs, such as VDI machines

Best Practice: Organize computer groups by operating system generation for useful visibility and scan configuration targeting.

Computer group	Filter	Purpose
All Windows [1]	Is Windows equals True	• Visibility • Scan configuration targeting
All Windows Servers [1]	Windows OS Type equals Windows Server	• Visibility • Scan configuration targeting
All Windows Servers - Physical	Windows OS Type contains windows and Is Virtual equals no	Scan configuration targeting
All Windows Servers - Virtual	Windows OS Type contains windows and Is Virtual equals yes	Scan configuration targeting

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Computer group	Filter	Purpose
All Windows Workstations	Windows OS Type equals Windows Workstation	Scan configuration targeting
All Windows Workstations - Physical	Windows OS Type contains windows workstation and Is Virtual equals no	Scan configuration targeting
All Windows Workstations - Virtual	Windows OS Type contains windows workstation and Is Virtual equals yes	Scan configuration targeting
All CentOS 6 [1]	Operating System Generation equals CentOS 6	• Visibility • Scan configuration targeting
All CentOS 7 [1]	Operating System Generation equals CentOS 7	• Visibility • Scan configuration targeting
All CentOS 8 [1]	Operating System Generation equals CentOS 8	• Visibility • Scan configuration targeting
All Red Hat 6 [1]	Operating System Generation equals Red Hat Enterprise Linux 6	• Visibility • Scan configuration targeting
All Red Hat 7 [1]	Operating System Generation equals Red Hat Enterprise Linux 7	• Visibility • Scan configuration targeting
All Red Hat 8 [1]	Operating System Generation equals Red Hat Enterprise Linux 8	• Visibility • Scan configuration targeting
All Red Hat 9 [1]	Operating System Generation equals Red Hat Enterprise Linux 9	• Visibility • Scan configuration targeting

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Computer group	Filter	Purpose
All Oracle 6 [1]	Operating System Generation equals Oracle Linux Server 6	• Visibility • Scan configuration targeting
All Oracle 7 [1]	Operating System Generation equals Oracle Linux Server 7	• Visibility • Scan configuration targeting
All Oracle 8 [1]	Operating System Generation equals Oracle Linux Server 8	• Visibility • Scan configuration targeting
All Oracle 9 [1]	Operating System Generation equals Oracle Linux Server 9	• Visibility • Scan configuration targeting
All Amazon [1]	Operating System Generation equals Amazon Linux	• Visibility • Scan configuration targeting
All Amazon Linux 1	Operating System Generation equals Amazon Linux 1	• Visibility • Scan configuration targeting
All Amazon Linux 2	Operating System Generation equals Amazon Linux 2	• Visibility • Scan configuration targeting
All SUSE [1]	Operating System contains SUSE	• Visibility • Scan configuration targeting
All SLES 11 [1]	Operating System Generation contains SUSE Linux Enterprise Server 11	• Visibility • Scan configuration targeting

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Computer group	Filter	Purpose
All SLES 12 [1]	Operating System Generation contains SUSE Linux Enterprise Server 12	• Visibility • Scan configuration targeting
All SLES 15 [1]	Operating System Generation contains SUSE Linux Enterprise Server 15	• Visibility • Scan configuration targeting
All Ubuntu	Operating System Generation contains Ubuntu	• Visibility • Scan configuration targeting
All Ubuntu 14.04 - amd64	Operating System Generation matches Ubuntu 14.04 and CPU Architecture matches amd64|x86_64	• Visibility • Scan configuration targeting
All Ubuntu 14.04 - i386	Operating System Generation matches Ubuntu 14.04 and CPU Architecture matches x86|i386	• Visibility • Scan configuration targeting
All Ubuntu 14.04 - arm64	Operating System Generation matches Ubuntu 14.04 and CPU Architecture matches arm64|aarch64	• Visibility • Scan configuration targeting
All Ubuntu 16.04 - amd64	Operating System Generation matches Ubuntu 16.04 and CPU Architecture matches amd64|x86_64	• Visibility • Scan configuration targeting
All Ubuntu 16.04 - i386	Operating System Generation matches Ubuntu 16.04 and CPU Architecture matches x86|i386	• Visibility • Scan configuration targeting
All Ubuntu 16.04 - arm64	Operating System Generation matches Ubuntu 16.04 and CPU Architecture matches arm64|aarch64	• Visibility • Scan configuration targeting

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Computer group	Filter	Purpose
All Ubuntu 18.04 - amd64	Operating System Generation matches Ubuntu 18.04 and CPU Architecture matches amd64|x86_64	• Visibility • Scan configuration targeting
All Ubuntu 18.04 - i386	Operating System Generation matches Ubuntu 18.04 and CPU Architecture matches x86|i386	• Visibility • Scan configuration targeting
All Ubuntu 18.04 - arm64	Operating System Generation matches Ubuntu 18.04 and CPU Architecture matches arm64|aarch64	• Visibility • Scan configuration targeting
All Ubuntu 20.04 - amd64	Operating System Generation matches Ubuntu 20.04 and CPU Architecture matches amd64|x86_64	• Visibility • Scan configuration targeting
All Ubuntu 20.04 - i386	Operating System Generation matches Ubuntu 20.04 and CPU Architecture matches x86|i386	• Visibility • Scan configuration targeting
All Ubuntu 20.04 - arm64	Operating System Generation matches Ubuntu 20.04 and CPU Architecture matches arm64|aarch64	• Visibility • Scan configuration targeting
All Ubuntu 22.04 - amd64	Operating System Generation matches Ubuntu 22.04 and CPU Architecture matches amd64|x86_64	• Visibility • Scan configuration targeting
All Ubuntu 22.04 - i386	Operating System Generation matches Ubuntu 22.04 and CPU Architecture matches x86|i386	• Visibility • Scan configuration targeting
All Ubuntu 22.04 - arm64	Operating System Generation matches Ubuntu 22.04 and CPU Architecture matches arm64|aarch64	• Visibility • Scan configuration targeting

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Computer group	Filter	Purpose
All Ubuntu 24.04 - amd64	Operating System Generation matches Ubuntu 24.04 and CPU Architecture matches amd64|x86_64	• Visibility • Scan configuration targeting
All Ubuntu 24.04 - i386	Operating System Generation matches Ubuntu 24.04 and CPU Architecture matches x86|i386	• Visibility • Scan configuration targeting
All Ubuntu 24.04 - arm64	Operating System Generation matches Ubuntu 24.04 and CPU Architecture matches arm64|aarch64	• Visibility • Scan configuration targeting
All Debian	Operating System Generation contains Debian	• Visibility • Scan configuration targeting
All Debian 8	Operating System Generation contains Debian 8	• Visibility • Scan configuration targeting
All Debian 9	Operating System Generation contains Debian 9	• Visibility • Scan configuration targeting
All Debian 10	Operating System Generation contains Debian 10	• Visibility • Scan configuration targeting
All Debian 11	Operating System Generation contains Debian 11	• Visibility • Scan configuration targeting
All Debian 12	Operating System Generation contains Debian 12	• Visibility • Scan configuration targeting

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Computer group	Filter	Purpose
Tanium Scan Supported Windows	Windows OS Major Version > 6.0 and Tanium Client Version >= 7.2.314.3211	• Visibility • Scan configuration targeting
All Linux [1]	Operating System contains Linux	• Visibility • Scan configuration targeting
Patch Supported Systems [1]	Patch - Supported Scan Types matches ".*(Repo|Tanium|CAB|Online).*"	• Visibility • Patch action group

[1] Patch creates this computer group if you select the **Apply All Tanium recommended configurations** option during installation on Tanium Core Platform 7.4.2 or later.

Set up Patch users

You can use the following set of predefined user roles to set up Patch users.

To review specific permissions for each role, see User role requirements on page 55.

Important: On installation, Patch creates a Patch user to automatically manage the Patch service account. Do not edit or delete the Patch user.

For more information about assigning user roles, see Tanium Core Platform User Guide: Manage role assignments for a user.

Patch Administrator

Assign the **Patch Administrator** role to users who manage the configuration and deployment of Patch functionality to endpoints. This role can perform the following tasks:

- Configure all Patch settings
- Manage block lists, deployments, maintenance windows, patch lists, repositories, and scan configurations

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- View the Patch statistics logs
- View all configurations, graphs, and reporting data in Patch

Patch Automatic Deployment Configuration Operator

Assign the **Patch Automatic Deployment Configuration Operator** role to users who manage the configuration of automatic deployments. This role can perform the following tasks:

- Create, edit, or delete automatic deployment configurations
- View automatic deployments
- Create and delete ring deployment plans

Patch Automatic Deployment Configuration Operator Restricted

Assign the **Patch Automatic Deployment Configuration Operator** role to allow users to manage the configuration of automatic deployments, but do not allow these users to override maintenance windows or block lists. This role can perform the following tasks:

- Create, edit, or delete automatic deployment configurations

  Note: This user cannot create automatic deployment configurations that override maintenance windows or block lists.

- View automatic deployments
- Create and delete ring deployment plans

Patch Automatic Deployment Operator

Assign the **Patch Automatic Deployment Operator** role to users who manage automatic deployments. This role can perform the following tasks:

- View automatic deployments
- Override rule triggers to start automatic deployments
- View, create, and delete manual deployments

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- View ring deployment plans

Patch Configuration Author

Assign the **Patch Configuration Author** role to users who manage Patch configurations. This role can perform the following tasks:

- Manage block lists, maintenance windows, patch lists, and repository snapshots
- View deployments and repositories
- View Patch settings
- View all configurations, graphs, and reporting data in Patch

Patch Deployment Author

Assign the **Patch Deployment Author** role to users who manage Patch deployments. This role can perform the following tasks:

- Manage deployments
- View block lists, maintenance windows, and patch lists
- Configure deployments to override block lists and maintenance windows
- View Patch settings
- View all configurations, graphs, and reporting data in Patch

Patch Deployment Author Override Restricted

Assign the **Patch Deployment Author Override Restricted** role to allow users to manage Patch deployments, but do not allow these users to override maintenance windows or block lists. This role can perform the following tasks:

- Manage deployments
- View block lists, maintenance windows, and patch lists
- View Patch settings
- View all configurations, graphs, and reporting data in Patch

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Patch Endpoint Configuration Approver

Assign the **Patch Endpoint Configuration Approver** role to a user who approves or rejects Patch configuration items in Tanium Endpoint Configuration. This role approves, rejects, or dismisses changes that target endpoints where Patch is installed.

Patch Operator

Assign the **Patch Operator** role to users who manage the configuration and deployment of Patch functionality to endpoints. This role can perform the following tasks:

- Manage block lists, deployments, maintenance windows, patchlists, repositories, and scan configurations
- View all configurations, graphs, and reporting data in Patch

Patch Read Only User

Assign the **Patch Read Only User** role to users who need visibility into Patch data. This role can view all configurations, graphs, and reporting data in Patch.

Patch Super User

Assign the **Patch Super User** role to users who manage the configuration and deployment of Patch functionality to endpoints. This role can perform the following tasks:

- Manage block lists, deployments, maintenance windows, patchlists, repositories, and scan configurations
- View all configurations, graphs, and reporting data in Patch



Note: Do not assign the Patch **Service Account** and Patch **Service Account - All Content Sets** roles to users. These roles are for internal purposes only.

Enable and configure Windows features

About this task

Before you can use the following Patch features for Windows endpoints, you must enable or

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configure them:

- Enable and configure Tanium Scan for Windows on page 89
- Configure WSUS server allowed URLs on page 90
- Enable UUP Proxy on page 91
- Enable manual synchronization on page 92
- Enable direct patch downloads from Microsoft on page 92

Enable and configure Tanium Scan for Windows

About this task

If you want to use Tanium Scan on page 123, configure the Tanium Scan settings.

1. From the Main menu, go to **Modules** > **Patch > Scan Management**.
2. Click **Tanium Scan for Windows** and then click **Edit**.
3. Select **Enable Tanium Scan for Windows** (if not already selected) and select a scan source.
4. In the **Tanium Scan Source** section, select where to retrieve information about available software patches.
    - **Microsoft Update Direct**: Synchronize update metadata and detection rules directly from Microsoft. Do not select this option if you have air-gapped environments.
    - **Local WSUS Server**: Synchronize update metadata and detection rules from a local WSUS server.
        a. Enter the **URL** and the **Content Download Port**. The content download port is the port from which the Tanium Server can download patch installation files. The Tanium Server then delivers the files as part of a Patch deployment.

        The default port may be 8530 or 80, depending on the WSUS server version. You can configure the WSUS server to use a custom port.

        b. Choose a PEM file containing the certificate authority for the WSUS server. The certificate should be the Base64-encoded ASCII, certificate chain format.

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5. Click **Synchronize Now** to perform the required initial synchronization.
6. If you want to synchronize after Microsoft releases many significant patches, select **Enable Schedule Synchronization**.
7. Use the arrows to select products to include in scans.

   Best Practice: Synchronize all products, regardless of which products are present in the environment. Selectively choosing products can cause gaps in critical or important patches.
8. Use the arrows to select update classifications to include in scans.

   Best Practice: Select **Critical Updates**, **Security Updates**, **Service Packs**, and **Update Rollups**.
9. Click **Submit**.

   Best Practice: Click **Synchronize Now** after you make any changes.
10. If you selected **Local WSUS Server** in the Tanium Scan Source option, then complete the steps in Configure WSUS server allowed URLs on page 90.
11. If you have endpoints running Windows 11 version 22H2 or later, see Enable UUP Proxy on page 91.

Configure WSUS server allowed URLs

About this task

If you enabled the **Local WSUS Server** option in Tanium Scan for Windows, add the server URL in the Patch settings to allow the Tanium Server to connect to the WSUS server.

WSUS_ALLOWED_URLS

1. Add the WSUS Server URL.
   a. From the Main menu, go to **Modules** > **Patch> Overview** and click Settings **> Configuration Settings** if needed.
   b. In the **WSUS Server Configuration** section, enter the URL and click **Submit**. A regular expression for the URL is generated and added.

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c. Click **View Allowed URLs**, or go to **Administration** > **Permissions** > **Allowed URLs** to view the entry that was added.

2. On the WSUS server, change the following settings:
   a. Set the intranet URL for detecting updates and the statistics server to `http://<WSUS server URL>:<port>`.
   b. Disable the **Configure Automatic Updates** setting.

Enable UUP Proxy

About this task

Starting with Windows 11 version 22H2 endpoints, Microsoft uses the Unified Update Platform (UUP) to deliver cumulative updates. If you configured Tanium Scan for Windows and want to use Tanium architecture to patch these endpoints, enable the UUP proxy. For some environments, the UUP proxy might be enabled by default. When enabled, patches are synchronized to the Tanium Server and then the Windows endpoints are patched using Tanium architecture.

Note: UUP might use up to 200 GB of the minimum required 500 GB disk space on the Tanium Server. The actual amount of disk space used depends on the size of the Windows update files.

Note: When UUP Proxy is not enabled, direct download is automatically enabled as the default patch delivery method for these endpoints. For more information see Enable direct patch downloads from Microsoft on page 92.

Complete the following steps to enable the UUP proxy:

1. From the Main menu, go to **Modules** > **Patch > Overview** and click Settings **> Configuration Settings** if needed.
2. In the **UUP Settings** section, select **Enable UUP Proxy**.
3. Click **Save**.
4. If you are using a local WSUS server to deliver patch data, see Enable manual synchronization on page 92.

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Enable manual synchronization

About this task

Manual synchronization is only applicable when using Tanium Scan on page 89 on Windows 11 version 22H2 or later endpoints.

> **Note:** In airgap environments, manual synchronization is enabled by default.

If you are using a local WSUS server to deliver patch data to endpoints managed using Tanium Client, then enable **Manual Synchronization**. When **Manual Synchronization** is enabled, you need to manually run a synchronization job to synchronize the patches. If you do not enable **Manual Synchronization**, you might encounter synchronization failures when Tanium tries to automatically synchronize patches that are not yet approved on the WSUS server.

Complete the following steps to enable manual synchronization:

1. From the Main menu, go to **Modules** > **Patch > Overview** and click Settings **> Configuration Settings** if needed.
2. In the **UUP Settings** section, select **Enable Manual Synchronization**.
3. Click **Save**.

Result

To manually start a synchronization after you prepare or approve patches for Windows version 11 22H2 or later, see Manually synchronize patches on page 148.

Enable direct patch downloads from Microsoft

About this task

For Windows scan configurations, you can enable *isolated endpoints* to download patch files directly from Microsoft instead of the Tanium Server to free network resources. An isolated endpoint is a Tanium Client that has no peer Tanium Clients. To download patches directly from Microsoft, an isolated endpoint must be connected to a user-configured list of Tanium Zone Servers or IP address ranges for split-tunnel VPN clients.

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This option reduces the impact on network resources. If the direct download fails, the endpoint downloads patches from the Tanium Server.

Cautions and considerations

Endpoints must be in a list of virtual private network (VPN) subnets or allowed Zone Servers that you configure. Configure VPN ranges only where clients have a direct path to the Microsoft URLs that are listed in Third-party internet URLs on page 52. The following configurations are recommended:

- Define the IP address ranges that are used by endpoints that connect to Tanium over a split-tunnel VPN. Use for split-tunnel VPN ranges with a separate route to download patches from the Internet. Isolated endpoints within the defined ranges attempt to download patches directly from Microsoft.
- Define the public IP addresses or Internet-resolvable fully qualified domain names of Internet-facing Zone Servers. Isolated Tanium Clients that are connected to these Zone Servers attempt to download patches directly from Microsoft.

Do not specify the following VPNs or Zone Servers:

- Split-tunnel VPNs where endpoints still send traffic bound for Microsoft URLs through the internal corporate network
- Full-tunnel VPNs
- Zone Servers that are used in an internal security zone

Clients that use WSUS scan configurations leverage the location that is defined by WSUS. Unless the WSUS server is configured to download patches from Microsoft instead of storing them locally, do not enable direct downloads for a WSUS Scan configuration. For more information about how to specify where updates are stored, see Microsoft article Update storage options.

1. From the Main menu, go to **Modules** > **Patch > Overview** and click Settings **> Configuration Settings** if needed.
2. In the **Patch Direct Downloads** section, specify network information:
    a. Select **VPN Networks**, **Zone Servers**, or both.
    b. Add one or more networks or servers, or, if previously created, choose from the list.
3. Click **Save**.

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Next steps



Important: To enable remote endpoints to download patches directly from Microsoft, you must also enable direct downloads in each scan configuration. For more information, see Create a scan configuration on page 128.

TRACKING DIRECT DOWNLOAD STATUS

About this task

Review current and past patch downloads directly from Microsoft over the Internet.

1. In Interact, ask the `Get Patch - Direct Downloads Statuses from all machines` question.
2. Choose the time period in hours; for example, downloads in the last three hours.
3. Choose whether to include in-progress downloads in the results.
4. Choose whether to include failed downloads in the results.
5. Click **Ask Question**.

Result

The results grid shows a row for each download attempt and its status.

Enable and configure Linux features

Before you can use the following Patch features for Linux endpoints, you must enable and configure them:

About this task

- Migration of OS-based Linux configurations to Enhanced Linux configurations on page 95
- Enable Patch for Enhanced Linux configurations on page 96
- Add and target Linux repositories on page 96
- (Red Hat endpoints) Configure Tanium Server to use certificate authentication on page 98

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- Manage Linux repository snapshots on page 105

Migration of OS-based Linux configurations to Enhanced Linux configurations

After you enable support for Enhanced Linux distributions, Patch migrates any existing OS-based Linux configurations (scan configurations, patch lists, block lists, maintenance windows, and deployment templates) for Red Hat, CentOS, Ubuntu, Oracle, and Amazon to use Enhanced Linux distributions.

Targeting for migrated configurations continue to be filtered to the existing OS-based Linux configurations, so that the same endpoints remain targeted after migration. Migration does not add targeting for unenforced objects, nor does it create a configuration that supports multiple operating systems. You must create a configuration that supports multiple operating systems after migration.

Patch does not select a default deployment template for the new Linux platform. If you want to define a default deployment template, you define it after the automated portion of the migration completes.

LINUX ENDPOINT BEHAVIOR CHANGES

Linux endpoint behavior depends on your current configuration:

- If this is a new Patch module installation, Patch enables Enhanced Linux Support by default.
- If this is an existing Patch module installation, where Patch for Linux endpoints has never been enabled, Linux configurations remain disabled until you enable Enhanced Linux Support.
- If this is an existing Patch module installation, where Patch for Linux endpoints has been enabled, your OS-based Linux configurations remain the same until you enable Enhanced Linux Support.

After you migrate to Enhanced Linux Support, Patch no longer separates operating system selections for Linux. Instead, it creates a single category for all Linux operating systems. Scan configurations can have repositories for multiple Linux operating systems. You can add targets to repositories to ensure they are only used with the proper OS/version targets included in the scan configuration targets. If an endpoint does not meet the criteria for any repositories in a scan configuration, Patch continues to the next targeted scan configuration.

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Enable Patch for Enhanced Linux configurations

About this task

Before you begin, ensure that you meet the prerequisites listed in Core platform dependencies on page 35.

Note: If this is a new Patch module installation, no action is required.

If this is an upgraded Patch module installation, complete the following steps:

1. From the Main menu, go to **Modules** > **Patch > Overview** page and click Settings.
2. In the **Operating Systems** tab, select **Enhanced Linux Support** and click **Save**.

   Important: After you enable this option, you cannot disable it.
3. Review the **Migration of Linux Configurations** message and click **Acknowledge and Begin Migration**.
4. (Optional) Click **Set Default Template** to set a default deployment template for Enhanced Linux Support.

Add and target Linux repositories

About this task

To patch Linux endpoints, you must first add repositories that apply to those endpoints, and then use the repositories to target computer groups that contain the endpoints. SUSE Linux Enterprise Server (SLES) repositories use URLs that are unique for each customer, so the process for adding those repositories differs from other versions of Linux.

Important: Before you begin patching SLES endpoints, make sure that at least one endpoint for each OS version that you want to support in Patch is registered with SUSE.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Repositories**.

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2. Click **Add Repository**.

> **Tip:**
> You can also click Edit  to edit existing repositories.

3. Add a name, and then select whether the repository contains RPM or DEB packages.
4. For RPM repositories, specify the following options as needed:
   a. Add a URL for the repository.

> **Tip:**
>
> If you are adding a SLES repository, use the following steps to more easily identify the names and URLs for the repositories that your endpoints use.
>
> i. In a separate browser tab, go to **Modules** > **Interact**.
>
> ii. Ask the following question:
>
> ```
> Get Patch - Repositories from all machines with
> Operating System Generation contains SUSE
> ```
>
> For more information, see Tanium Interact User Guide: Asking questions.
>
> iii. For the repository that you want to add, hover over the **Name** cell, click Options , and then click Copy  .
>
> iv. In the original browser tab, in the **Add Repository** dialog, paste the cell contents into the **Name** field, and then select **RPM** from the **Type** dropdown list.
>
> v. In the browser tab with the question results, hover over the **Base URL** cell, click Options , and then click Copy  .
>
> vi. In the original browser tab, in the **Add Repository** dialog, paste the cell contents into the **URL** field.

   b. (Optional) Enable **GPG Check** and **Repo GPG Check** to confirm authenticity by verifying GPG signatures.

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> **CAUTION:** Red Hat operating systems do not support **Repo GPG Check**. If you specify that option in a Red Hat repository configuration, Tanium scans will not run.

5. For DEB repositories, specify the following options as needed:
    a. Add a URL for the repository.
    b. Specify the distribution and components for the release. You can add up to five components for the repository.
    c. (Optional) Enable **GPG Check** to confirm authenticity by verifying GPG signatures.
    d. In the **Release file signing** section, select **InRelease** if the release file is signed inline, or select **Release.gpg** if the release file has an accompanying GPG file.
    e. In the **GPG Key** section, select an option to confirm package authenticity and then enter additional information as needed.
6. Click **Submit**.
7. Expand the repository that you just created, and then click **Select Computer Groups**.
8. Select the computer groups that will use the repository, and then click **Save**.
9. (Optional) Create snapshots of repositories. For more information, see Manage Linux repository snapshots on page 105.

(Red Hat endpoints) Configure Tanium Server to use certificate authentication

About this task

To use Tanium Scan for Linux on Red Hat Linux endpoints, you must configure the Tanium Server (version 7.5.3.1249 and later) to use certificate authentication for downloads from the Red Hat Content Delivery Network (CDN), add the repositories to the Tanium Console, and edit the scan management technique to include the repositories.

1. Review the information and complete the steps in Knowledge Article: Create a Red Hat certificate for Tanium downloads (login required). The steps include confirming Red Hat Customer Portal configuration settings, obtaining certificates and a private key from an endpoint directly registered to the Red Hat CDN, and configuring the certificates in Tanium Console.
2. In the Tanium Console, add the repositories. For more information, see Add and target Linux repositories on page 96.
3. Edit the **[Tanium Scan] - Linux** scan management technique to include the Red Hat

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repositories. For more information, see Edit a scan configuration on page 135.

(Red Hat endpoints) Configure TDownloader to use certificate authentication (Tanium Server version 7.5.2.3552 and earlier)

About this task

Click to expand.

To use Tanium Scan with Red Hat's patch content on Red Hat Linux endpoints, you must configure Tanium Downloader (TDownloader) to use certificate authentication for downloads from Red Hat's Content Delivery Network (CDN) or an internal Red Hat Satellite server. Obtain a valid client certificate and private key from the Red Hat Customer Portal or from the Satellite server. After you have acquired the client authentication certificate, complete the appropriate steps to configure the Tanium Server.

CONFIGURE TDOWNLOADER ON TANIUM SERVER (APPLIANCE)

About this task

If you are using an internal repository secured by a self-signed or an internal CA-signed certificate, Contact Tanium Support on page 235 to configure the Tanium Servers to trust this certificate.

> **Note:** In an active-active configuration, you must perform the following steps on both Tanium Servers.

1. Upload the SSL client private key and client certificate to your Tanium Appliance. Use SFTP with the `tancopy` account and copy the files to the /incoming folder.
2. Using the TanOS menu, verify that the Tanium Server can reach cdn.redhat.com or the Red Hat Satellite server by name:
    a. Enter `3` to go to the Tanium Support menu.
    b. Enter `4` to go to the Run Network Diagnostics menu.
    c. Enter `1` to select the Ping Remote System option.
3. Add the CA root certificate for the Red Hat CDN:
    a. Enter `2` to go to the Tanium Operations menu.
    b. Enter `2` to go to the Tanium Configuration Settings menu.

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c. Enter `13` to go to the Control RedHat CA Cert menu.
d. Enter `1` to select the redhat-uep.pem option.
e. Enter `2` to install the redhat-uep.pem certificate.

4. Add the Red Hat Entitlement client certificate and key:
   a. Enter `2` to go to the Tanium Operations menu.
   b. Enter `2` to go to the Tanium Configuration Settings menu.
   c. Enter `4` to select the Add Tanium Server TDL Auth Cert option.
   d. Enter the URL (https://cdn.redhat.com or the Red Hat Satellite server), client certificate file name, and the SSL client private key file name at each prompt.
   e. At the #Line Content display, enter `R` to return to the previous menu.

Result

For more information about authentication certificates, see Tanium Appliance User Guide: Manage additional authentication certificates.

CONFIGURE TDOWNLOADER ON TANIUM SERVER (WINDOWS)

1. Copy the SSL client private key, client certificate, and satellite server certificate to your Tanium Server.
2. Ensure that the Tanium Server can reach cdn.redhat.com or the Red Hat Satellite server by name. **Example:** `ping cdn.redhat.com`
3. On each Tanium Server, configure TDownloader to use certificate authentication for downloads to the Red Hat Satellite server. **Example:** `cmd-prompt>TDownloader.exe add-auth-cert --url https://cdn.redhat.com --cert C:\client-certificate.pem --key C:\client-key.pem` where:
   - `https://cdn.redhat.com` is the URL prefix for the satellite server download URLs
   - C:\client-certficate.pem is the client certificate
   - C:\client-key.pem is the client certificate private key
4. Check the TDownloader config to see that your certificate has been configured.

```
cmd-prompt>TDownloader.exe config listKeys:- Auth:
    - Auth.0:
      - Auth.0.Certificate: -----BEGIN CERTIFICATE-----MIIFPTCCBCWgAwIBAgIIbY/
mIdQbgMowDQYJKoZIhvcNAQEFBQAwgYwxCzAJBgNVBAYTAlVTMRcwFQYDVQQIDA5Ob3J0aCBDYXJvbGluYTEQ
MA4GA1UEBwwHUmFsZWlnaDEQMA4GA1UECgwHS2F0ZWxsbzEUMBIGA1UECwwLU29tZU9yZ1VuaXQxKjAoBgNVB
```

```
AMMIXJoZWxwYXRjaHNhdGVsbGl0ZTAxLnByb2RxYS5sb2NhbDAeFw0xODA0MjAwNDAwMDBaFw0xOTA0MjAwMz
U5NTlaMEYxGTAXBgNVBAoMEHRhbml1bV9wYXRjaF9kZXYxKTAnBgNVBAMTIDBjYjk4NjcyZjBhNTQ0MDJhNzI
zYmNjOGI5ODFjYTg3MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAtXPySC20fPzMreenmX+4mUhS
s/cdArQZOeeKliCdXI7Q/ZW0ZrhsgmMZTL+BNbZKUp72e0L3GF3yj0wx/
8LWRLVCS9AaZdbXmJRK7B5mwpQaLtfuE93bJIkmBbzKA49jiwFdDE0J6v+wj0NgBZ3hr0NHV2O1hAwar2xkzz
9fCTwyAR6d2I9Dpcfua8nH0ybO5kR8v1Epp70vw9/uMmGM3PCeYFX81ll3wxStbHj/DznUzQ/
vFE0SZxLXh9LyWy9Nq+obLaFeDxJ0DT7iXotwVqWsQow/upQ60vuYpAT57JM5tkrP+rKcct+TVVJNS/
QmJC3yOwZWf8rIISRH4cb+GQIDAQABo4IB5jCCAeIwEQYJYIZIAYb4QgEBBAQDAgWgMAsGA1UdDwQEAwIEsDC
BwQYDVR0jBIG5MIG2gBRNdbtnITo9NxbcUdarkRIJv464dqGBkqSBjzCBjDELMAkGA1UEBhMCVVMxFzAVBgNV
BAgMDk5vcnRoIENhcm9saW5hMRAwDgYDVQQHDAdSYWxlaWdoMRAwDgYDVQQKDAdLYXRlbGxvMRQwEgYDVQQLD
AtTb21lT3JnVW5pdDEqMCgGA1UEAwwhcmhlbHBhdGNoc2F0ZWxsaXRlMDEucHJvZHFhLmxvY2FsggkAx2ndp2
OhmcYwHQYDVR0OBBYEFHX7IDsUYNAZdI5dBxckm5a8y60aMBMGA1UdJQQMMAoGCCsGAQUFBwMCMBIGCSsGAQQ
BkggJBgQFDAMzLjMwFAYJKwYBBAGSCAkIBAcMBUJhc2ljMIGdBgkrBgEEAZIICQcEgY8EgYx42i2MMQrDMBAE
9zFukyYgfyJdHmDO8oIEis7cXYz9e8ck1UwxjNM2GsbXj1bYsFQP6BpVuzRk7cEeSP8kYYRL3EK1OZ51NrED6
f5ASK+f97RK5DIt3KAO7mHiGIyN4rwGw/
wVsVxwAp4aKvUSzZXb1epTaC96MJ25BX5rmuccvyYlbSe9CpomkcWhADANBgkqhkiG9w0BAQUFAAOCAQEAubx
qAqH/IQqIODQwaX9xNrIuJp3qWIUFjxZ1Vby4lEg2xmwfBtvNKminJBWNwOMZjq40xrEz0C2sxqkr/
npvcbI4MMdQX1rdxMwsntgUZK8ApRR/
pPwyxqAoa8IjahVBHNdFoA4+BBjcLcvzA1PBPReiXo0GS2gQQAb8U7d/
jBTG1gm3ZpJFBxv7NBM9tEey3DwzP5LWPnZZmstRrlfx7sb5J/
2zLvWuMG+dMJ5jkgUKTuNdccdBP9PEVrAKiDuoLCl4UqnP0YzMJd+e9KtxFC1QCICFUQLhZ/
QVAhh8hIw0jSxIcGN+KVJF52BGdzUxvoidfqtMsjc/8NSTRk+T/g==-----END CERTIFICATE------
Auth.0.PrivateKey: (protected)- Auth.0.URL:
https://rhelpatchsatellite01.prodqa.local- LogVerbosityLevel: 41- ProxyPassword:-
ProxyPort:- ProxyServer:- ProxyType: NONE- ProxyUserid:- TrustedCertPath: C:\Program
Files\Tanium\Tanium Server\Certs\installedcacert.crt- TrustedHostList:
localhost,tanium.local,win-2012-r2
```

5. To configure TDownloader to work with the Red Hat CDN, use a text editor to append the PEM-encoded certificate for cdn.redhat.com to the end of the certificate file as referenced by the TrustedCertPath value from the previous step (Example: C:\Program Files\Tanium\Tanium Server\Certs\installedcacert.crt).

```
-----BEGIN CERTIFICATE-----
MIIG/TCCBOWgAwIBAgIBNzANBgkqhkiG9w0BAQUFADCBsTELMAkGA1UEBhMCVVMx
FzAVBgNVBAgMDk5vcnRoIENhcm9saW5hMRYwFAYDVQQKDA1SZWQgSGF0LCBJbmMu
MRgwFgYDVQQLDA9SZWQgSGF0IE5ldHdvcmsxMTAvBgNVBAMMKFJlZCBIYXQgRW50
```

```
aXRsZW1lbnQgT3BlcmF0aW9ucyBBdXRob3JpdHkxJDAiBgkqhkiG9w0BCQEWFWNh
LXN1cHBvcnRAcmVkaGF0LmNvbTAeFw0xMDEwMDQxMzI3NDhaFw0zMDA5MjkxMzI3
NDhaMIGuMQswCQYDVQQGEwJVUzEXMBUGA1UECAwOTm9ydGggQ2Fyb2xpbmExFjAU
BgNVBAoMDVJlZCBIYXQsIEluYy4xGDAWBgNVBAsMD1JlZCBIYXQgTmV0d29yazEu
MCwGA1UEAwwlUmVkIEhhdCBFbnRpdGxlbWVudCBQcm9kdWN0IEF1dGhvcml0eTEk
MCIGCSqGSIb3DQEJARYVY2Etc3VwcG9ydEByZWRoYXQuY29tMIICIjANBgkqhkiG
9w0BAQEFAAOCAg8AMIICCgKCAgEA2QurMeAVnCHVsuZNQzciWMdpd4LAVk2eGugN
0cxmBpzoVI8lIsJOmJkpOAuFOQMX9CBr8RuQyg4r1/OH/rfhm6FgGIw8TGKZoWC/
1B9teZqTiM85k6/1GRNxdk6dUK77HVO0PMIKtNBHRxIsXcRzJ1q+u5WPBes9pEVG
nbidTNUkknrSIdynTJcqAI/I0VAsqLqX87XJSzXKvRilE+p/fLHmVTAffl1Cn/Dy
KULxna7ooyrKKnfqeQ5dK8aMr1ASQ1wphWohLjegly9V0amEi+HHWnOL8toxJy8v
WUTUzzAvZ4ZTtTV26xGetZZWEaNyv7YCv2AexjcBQ2x+ejrFJrVNo9jizHS06HK8
UgHVDKhmVcAe2/5yrJCjKDLwg1FJfjKwhzhLYdNVCejpy8CHQndwO0EX1hHv/AfP
RTAmr5qPhHFD+uuIrYrSLUpgMLmWa9dinJcGeKlA1KJvG5emGMM3k64Xr7dJToXo
5loGyZ6lvKPIKLmfeXMRW/4+BqyzwbO1i4aIHAZcSPDFGKWwuvF0iVUYUUVxw0nv
qPZA4roq5+j/YSz0q5XGVgiIt34htlvunLp/ICGYJBR6zEHcB9aZGJdDcJvoYZjw
7Gphw6lFF6Ta4imoyhGECWKjd1ips3opcN+DlU0yCUrcIXVIXAnkTwu5ocOgAkxr
f/6FjqcCAwEAAaOCAR8wggEbMB0GA1UdDgQWBBSW/bscQED/QIStsh8LJsHDam/W
fDCB5QYDVR0jBIHdMIHagBTESXhWRZ0eLGFgw2ZLWAU3LwMie6GBtqSBszCBsDEL
MAkGA1UEBhMCVVMxFzAVBgNVBAgMDk5vcnRoIENhcm9saW5hMRAwDgYDVQQHDAdS
YWxlaWdoMRYwFAYDVQQKDA1SZWQgSGF0LCBJbmMuMRgwFgYDVQQLDA9SZWQgSGF0
IE5ldHdvcmsxHjAcBgNVBAMMFUVudGl0bGVtZW50IE1hc3RlciBDQTEkMCIGCSqG
SIb3DQEJARYVY2Etc3VwcG9ydEByZWRoYXQuY29tggkAkYrPyoUAAAAwEgYDVR0T
AQH/BAgwBgEB/wIBADANBgkqhkiG9w0BAQUFAAOCAgEArWBznYWKpY4LqAzhOSop
t30D2/UlCSr50l33uUCNYD4D4nTr/pyX3AR6P3JcOCz0t22pVCg8D3DZc5VlzY7y
P5RD3KbLxFNJTloclMG0n6aIN7baA4b8zwkduMQvKZnA/YNR5xE7V7J2WJHCEBBB
Z+ZFwGpGsoZpPZP4hHLVke3xHm6A5F5SzP1Ug0T9W80VLK4jtgyGs8l1R7rXiOIt
Nik8317KGq7DU8TI2Rw/9Gc8FKNfUYcVD7uC/MMQXJTRvkADmNLtZM63nhzpg1Hr
hA6U5YcDCBKsPA43/wsPOONYtrAlToD5hJhU+1Rhmwcw3qvWBO3NkdilqGFOTc2K
50PQrqoRTCZFS41nv2WqZFfbvSq4dZRJl8xpB4LAHSspsMrbr9WZHX5fbggf6ixw
S9KDqQbM7asP0FEKBFXJV1rE8P/oSK6yVWQyigTsNcdGR4AUzDsTO9udcwoM2Ed4
XdakVkF+dXm9ZBwv5UBf5ITSyMXL3qlusIOblJVGUQizumoq0LiSnjwbkxh2XHhd
XD/B/qax7FnaNg+TfujR/kk3kF1OpqWx/wC/qPR+zho1+35Al31gZOfNIn/sReoM
tcci9LFHGvijIy4VUDQK8HmGjIxJPrIIe1nB5BkiGyjwn00D5q+BwYVst1C68Rwx
iRZpyzOZmeineJvhrJZ4Tvs=
-----END CERTIFICATE-----
```

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```
-----BEGIN CERTIFICATE-----
MIIHZTCCBU2gAwIBAgIJAJGKz8qFAAAAMA0GCSqGSIb3DQEBBQUAMIGwMQswCQYD
VQQGEwJVUzEXMBUGA1UECAwOTm9ydGggQ2Fyb2xpbmExEDAOBgNVBAcMB1JhbGVp
Z2gxFjAUBgNVBAoMDVJlZCBIYXQsIEluYy4xGDAWBgNVBAsMD1JlZCBIYXQgTmV0
d29yazEeMBwGA1UEAwwVRW50aXRsZW1lbnQgTWFzdGVyIENBMSQwIgYJKoZIhvcN
AQkBFhVjYS1zdXBwb3J0QHJlZGhhdC5jb20wHhcNMTAwMzE4MTEyNDU0WhcNMzAw
MzEzMTEyNDU0WjCBsTELMAkGA1UEBhMCVVMxFzAVBgNVBAgMDk5vcnRoIENhcm9s
aW5hMRYwFAYDVQQKDA1SZWQgSGF0LCBJbmMuMRgwFgYDVQQLDA9SZWQgSGF0IE5l
dHdvcmsxMTAvBgNVBAMMKFJlZCBIYXQgRW50aXRsZW1lbnQgT3BlcmF0aW9ucyBB
dXRob3JpdHkxJDAiBgkqhkiG9w0BCQEWFWNhLXN1cHBvcnRAcmVkaGF0LmNvbTCC
AiIwDQYJKoZIhvcNAQEBBQADggIPADCCAgoCggIBALsmiohDnNvIpBMZVJR5pbP6
GrE5B4doUmvTeR4XJ5C66uvFTwuGTVigNXAL+0UWf9r2AwxKEPCy65h7fLbyK4W7
/xEZPVsamQYDHpyBwlkPkJ3WhHneqQWC8bKkv8Iqu08V+86biCDDAh6uP0SiAz7a
NGaLEnOe5L9WNfsYyNwrG+2AfiLy/1LUtmmg5dc6Ln7R+uv0PZJ5J2iUbiT6lMz3
v73zAxuEjiDNurZzxzHSSEYzw0W1eO6zM4F26gcOuH2BHemPMjHi+c1OnheaafDE
HQJTNgECz5Xe7WGdZwOyn9a8GtMvm0PAhGVyp7RAWxxfoU1B794cBb66IKKjliJQ
5DKoqyxD9qJbMF8U4Kd1ZIVB0Iy2WEaaqCFMIi3xtlWVUNku5x21ewMmJvwjnWZA
tUeKQUFwIXqSjuOoZDu80H6NQb+4dnRSjWlx/m7HPk75m0zErshpB2HSKUnrs4wR
i7GsWDDcqBus7eLMwUZPvDNVcLQu/2Y4DUHNbJbn7+DwEqi5D0heC+dyY8iS45gp
I/yhVvq/GfKL+dqjaNaE4CorJJA5qJ9f383Ol/aub+aJeBahCBNuVa2daA9Bo3BA
dnL7KkILPFyCcEhQITnu70Qn9sQlwYcRoYF2LWAm9DtLrBT0Y0w7wQHh8vNhwEQ7
k5G87WpwzcC8y6ePR0vFAgMBAAGjggF9MIIBeTAdBgNVHQ4EFgQUxEl4VkWdHixh
YMNmS1gFNy8DInswgeUGA1UdIwSB3TCB2oAUiEumRcRG7I/Wz6b2Gs8mPJDMfxeh
gbakgbMwgbAxCzAJBgNVBAYTAlVTMRcwFQYDVQQIDA5Ob3J0aCBDYXJvbGluYTEQ
MA4GA1UEBwwHUmFsZWlnaDEWMBQGA1UECgwNUmVkIEhhdCwgSW5jLjEYMBYGA1UE
CwwPUmVkIEhhdCBOZXR3b3JrMR4wHAYDVQQDDBVFbnRpdGxlbWVudCBNYXN0ZXIg
Q0ExJDAiBgkqhkiG9w0BCQEWFWNhLXN1cHBvcnRAcmVkaGF0LmNvbYIJAOb+Qigl
yeZeMAwGA1UdEwQFMAMBAf8wCwYDVR0PBAQDAgEGMBEGCWCGSAGG+EIBAQQEAwIB
BjAgBgNVHREEGTAXgRVjYS1zdXBwb3J0QHJlZGhhdC5jb20wIAYDVR0SBBkwF4EV
Y2Etc3VwcG9ydEByZWRoYXQuY29tMA0GCSqGSIb3DQEBBQUAA4ICAQBbTSz+UIXP
AVIT0ZVL1flCHR113aj2j3UBZkaoDkSxtEfa1nqysmN0llpqh4NVBL3anEFYxokL
hQ2PB8mmuD5EuWaNxnXTc4Sr5dsOcjkFiU197lybaJK7w4OzQ2Qg/X/t4+R78cfM
ZK/qHpjuyT3NyHHvCug/WzkvU09pRr2aVHI+fn68u18TRzPJNKvegR4YeA3vsyQW
BgEc8sU7KrAvikFJ3mCTpAk+6SRgbGFLyZE637Qrzy2DDBw0V020dkTkC6YnEsZg
HwZWVmLtCgLlnimx6SRft+6zrXVHWZxod1GT/af7vizpmhrXt/Nu5Se7dpOhPayo
NwYCFNmfZeL4W/foSKNfaizZcc+tiNABRtT+tplfniv/yjr7sBAsFPhJqQB8CfsQ
```

```
8BVvKkHtixygyo+EO+NEotZGw3cn+/7soo9B1bWXk3PFSwEr+KwINACFGv2zcGLI
oeP4iK6DHZImWEV4tgMrQyXatEyPh2axPWU3SjY/fr1Ub5gEt+WpCtyYIN4ObBaN
eL3NPfTj79/VFZ22PhUInmGY/VK/ymvl/dkWyWi8zD8Aq55ofZ33FvQ46dcLp1pV
KWApIVqO27uhL6YxXDFi6n7RXACEIVz6JqDh5fGmOH1F+vfumZKzW78LlVD2QY15
rmCh0i9+AUCiUsNyYdJbSZDPiFPBwlwUoQ==
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIHZDCCBUygAwIBAgIJAOb+QiglyeZeMA0GCSqGSIb3DQEBBQUAMIGwMQswCQYD
VQQGEwJVUzEXMBUGA1UECAwOTm9ydGggQ2Fyb2xpbmExEDAOBgNVBAcMB1JhbGVp
Z2gxFjAUBgNVBAoMDVJlZCBIYXQsIEluYy4xGDAWBgNVBAsMD1JlZCBIYXQgTmV0
d29yazEeMBwGA1UEAwwVRW50aXRsZW1lbnQgTWFzdGVyIENBMSQwIgYJKoZIhvcN
AQkBFhVjYS1zdXBwb3J0QHJlZGhhdC5jb20wHhcNMTAwMzE3MTkwMDQ0WhcNMzAw
MzEyMTkwMDQ0WjCBsDELMAkGA1UEBhMCVVMxFzAVBgNVBAgMDk5vcnRoIENhcm9s
aW5hMRAwDgYDVQQHDAdSYWxlaWdoMRYwFAYDVQQKDA1SZWQgSGF0LCBJbmMuMRgw
FgYDVQQLDA9SZWQgSGF0IE5ldHdvcmsxHjAcBgNVBAMMFUVudGl0bGVtZW50IE1h
c3RlciBDQTEkMCIGCSqGSIb3DQEJARYVY2Etc3VwcG9ydEByZWRoYXQuY29tMIIC
IjANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEA2Z+mW7OYcBcGxWS+RSKG2GJ2
csMXiGGfEp36vKVsIvypmNS60SkicKENMYREalbdSjrgfXxPJygZWsVWJ5lHPfBV
o3WkFrFHTIXd/R6LxnaHD1m8Cx3GwEeuSlE/ASjc1ePtMnsHH7xqZ9wdl85b1C8O
scgO7fwuM192kvv/veI/BogIqUQugtG6szXpV8dp4ml029LXFoNIy2lfFoa2wKYw
MiUHwtYgAz7TDY63e8qGhd5PoqTv9XKQogo2ze9sF9y/npZjliNy5qf6bFE+24oW
E8pGsp3zqz8h5mvw4v+tfIx5uj7dwjDteFrrWD1tcT7UmNrBDWXjKMG81zchq3h4
etgF0iwMHEuYuixiJWNzKrLNVQbDmcLGNOvyJfq60tM8AUAd72OUQzivBegnWMit
CLcT5viCT1AIkYXt7l5zc/duQWLeAAR2FmpZFylSukknzzeiZpPclRziYTboDYHq
revM97eER1xsfoSYp4mJkBHfdlqMnf3CWPcNgru8NbEPeUGMI6+C0YvknPlqDDtU
ojfl4qNdf6nWL+YNXpR1YGKgWGWgTU6uaG8Sc6qGfAoLHh6oGwbuz102j84OgjAJ
DGv/S86svmZWSqZ5UoJOIEqFYrONcOSgztZ5tU+gP4fwRIkTRbTEWSgudVREOXhs
bfN1YGP7HYvS0OiBKZUCAwEAAaOCAX0wggF5MB0GA1UdDgQWBBSIS6ZFxEbsj9bP
pvYazyY8kMx/FzCB5QYDVR0jBIHdMIHagBSIS6ZFxEbsj9bPpvYazyY8kMx/F6GB
tqSBszCBsDELMAkGA1UEBhMCVVMxFzAVBgNVBAgMDk5vcnRoIENhcm9saW5hMRAw
DgYDVQQHDAdSYWxlaWdoMRYwFAYDVQQKDA1SZWQgSGF0LCBJbmMuMRgwFgYDVQQL
DA9SZWQgSGF0IE5ldHdvcmsxHjAcBgNVBAMMFUVudGl0bGVtZW50IE1hc3RlciBD
QTEkMCIGCSqGSIb3DQEJARYVY2Etc3VwcG9ydEByZWRoYXQuY29tggkA5v5CKCXJ
5l4wDAYDVR0TBAUwAwEB/zALBgNVHQ8EBAMCAQYwEQYJYIZIAYb4QgEBBAQDAgEG
MCAGA1UdEQQZMBeBFWNhLXN1cHBvcnRAcmVkaGF0LmNvbTAgBgNVHRIEGTAXgRVj
YS1zdXBwb3J0QHJlZGhhdC5jb20wDQYJKoZIhvcNAQEFBQADggIBAJ1hEdNBDTRr
```

```
6kI6W6stoogSUwjuiWPDY8DptwGhdpyIfbCoxvBR7F52DlwyXOpCunogfKMRklnE
gH1Wt66RYkgNuJcenKHAhR5xgSLoPCOVF9rDjMunyyBuxjIbctM21R7BswVpsEIE
OpV5nlJ6wkHsrn0/E+Zk5UJdCzM+Fp4hqHtEn/c97nvRspQcpWeDg6oUvaJSZTGM
8yFpzR90X8ZO4rOgpoERukvYutUfJUzZuDyS3LLc6ysamemH93rZXr52zc4B+C9G
Em8zemDgIPaH42ce3C3TdVysiq/yk+ir7pxW8toeavFv75l1UojFSjND+Q2AlNQn
pYkmRznbD5TZ3yDuPFQG2xYKnMPACepGgKZPyErtOIljQKCdgcvb9EqNdZaJFz1+
/iWKYBL077Y0CKwb+HGIDeYdzrYxbEd95YuVU0aStnf2Yii2tLcpQtK9cC2+DXjL
Yf3kQs4xzH4ZejhG9wzv8PGXOS8wHYnfVNA3+fclDEQ1mEBKWHHmenGI6QKZUP8f
g0SQ3PNRnSZu8R+rhABOEuVFIBRlaYijg2Pxe0NgL9FlHsNyRfo6EUrB2QFRKACW
3Mo6pZyDjQt7O8J7l9B9IIURoJ1niwygf7VSJTMl2w3fFleNJlZTGgdXw0V+5g+9
Kg6Ay0rrsi4nw1JHue2GvdjdfVOaWSWC
-----END CERTIFICATE-----
```

Next steps

(Red Hat) Edit the **[Tanium Scan] - Linux** scan management technique to include the Red Hat repositories. For more information, see Edit a scan configuration on page 135.

Manage Linux repository snapshots

You can create, rename, or delete snapshots.

Before you begin

Repository snapshots have the following requirements:

- Minimum Patch version:
    - For deployments to Red Hat and CentOS Linux endpoints, Patch 2.4.1.
    - For deployments to Oracle Linux endpoints, Patch 2.4.3.
    - For deployments to SUSE endpoints, Patch 3.2.160.
- The Patch process must be running on all Linux endpoints. For more information, see Patch process is not running on Linux endpoints on page 218.
- Patch must be enabled for Linux endpoints. For more information, see Enable Patch for Enhanced Linux configurations on page 96.

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- You must use the Tanium Scan for Linux scan method. For more information, see Tanium Scan on page 127.
- You must create a scan configuration with the **Use repository snapshots for deployment** option enabled. For more information, see Create a scan configuration on page 128.
- For Red Hat endpoints, you must set up certificate authentication. For more information, see (Red Hat endpoints) Configure Tanium Server to use certificate authentication on page 98 or (Red Hat endpoints) Configure TDownloader to use certificate authentication (Tanium Server version 7.5.2.3552 and earlier) on page 99.
- To create snapshots for repositories that use variables, ensure that at least one endpoint has that operating system distribution and version deployed and that the endpoint has the Patch tools installed. To verify whether Patch tools is installed, see Linux: Could not get results on page 246.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Repositories**.
2. To create a snapshot, select a repository and then click **Create Snapshot**. Name the snapshot and click **Confirm**.
3. To rename a snapshot, expand a repository and then click Rename Snapshot  . Provide a new name and click **Confirm**.
4. To permanently remove unneeded snapshots, click Delete Snapshot  .
5. To remove failed snapshots across all repositories; for example, those for which the environment was not properly set up, click **Delete Failed Snapshots**.

Export a Linux repository

About this task

You can facilitate the migration of patch content by exporting repositories. The exported file includes all settings and definitions, except for repository snapshots. This is particularly useful in progressive deployment models where patches must be moved from a testing environment to a production environment.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Repositories**.

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2. Select a repository and then click **Export**.

Result

The JSON file is available in your downloads folder.

Import a Linux repository

About this task

You can import an exported repository into a new environment.

> **Note:** You cannot import a repository with the same name as an existing repository.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Repositories**.
2. Click **Import Repository** and then click **Choose File**.
3. Browse to the list in .JSON extension and then click **Import**.

Configure Patch behavior on action-locked endpoints

About this task

Patch behavior on action-locked endpoints differ based on the operating system and whether the patch-cx client extension is running. For more information, see (Windows) Determine whether patch-cx client extension is running on an endpoint on page 210.

(All operating systems) Endpoints that are not running patch-cx

By default, for endpoints with action lock enabled, Patch applicability scans and Patch deployments are disabled. You can change the Patch behavior to either ignore action lock settings or allow applicability scanning only.

1. Turn off action lock. For more information, see Tanium Console User Guide: Managing action locks.

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2. From the Main menu, go to **Modules** > **Patch > Overview** and click Settings **>** **Configuration Settings** if needed.

3. In the **Action Lock Behavior** section, select an option. For best results, select either **Applicability Scanning Only** or **Ignore Action Lock** to ensure the accuracy of workbench data. The default setting is **Disable Applicability Scanning and Deployments**.

4. Turn on action lock. For more information, see Tanium Console User Guide: Managing action locks.

(Windows only) Endpoints that are running patch-cx

On Windows endpoints that are running patch-cx, Patch ignores the action lock setting. If action lock is enabled, applicability scans and patch deployments continue to work as usual. On other operating systems, action lock behavior does not change in 2.20 and is the same as earlier Toolset versions.

Best Practice:

- If you want to use Patch for scanning only and not for deployments, do not target the endpoints for deployment.
- If you do not want Patch to scan a set of endpoints, edit the scan configurations to target only the endpoints that you want to scan.

For emergency override scenarios (break-glass situations) where you need to disable applicability scanning or deployments, complete the following steps:

1. In Interact, ask a question to target the Windows endpoints on which you want to disable scanning or deployments.

2. Select the endpoints from the results and click **Deploy Action**.

3. For **Deployment Package**, select **Modify Tanium Client Setting** and configure the following settings:

    - To disable Patch applicability scanning and Patch deployments:

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- **RegType**: **REG_DWORD**
- **ValueName**: `DisableExtension_patch`
- **ValueData**: `1`

Tip: To delete the setting and return the system to the default configuration, set ValueData to `remove`.

- To enable Patch applicability scanning only and disable Patch deployments:
  - **RegType**: **REG_DWORD**
  - **ValueName**: `CX.patch.EnableDeployments`
  - **ValueData**: `0`

Tip: To delete the setting and return the system to the default configuration, set ValueData to `remove`.

4. Click **Show Preview To Continue**, review the list of targeted endpoints, and then click **Deploy Action**.

Initialize Patch on Windows and Linux endpoints

About this task

Patch installs a set of tools on each Windows and Linux endpoint that you have targeted. Initializing or reinitializing Patch is a common troubleshooting step.



Important: Patch does not work on endpoints with action locks turned on. Be sure action locks are turned off on endpoints that you want to target with Patch. For more information, see Tanium Console User Guide: Managing action locks.

1. From the Main menu, go to **Modules** > **Patch > Overview**, click Help ? and then click

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Support if needed.

2. Click **Initialize Endpoints** to start the Patch service and begin distributing these tools to your endpoints.

Select a language

Select one of the supported languages for the Patch workbench and Patch user guide, as described in Tanium Console User Guide: Reference: Language support.

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Downloading Windows patches in an air-gapped environment

When your Tanium Server is in an air-gapped environment, the server cannot download patches from the Internet. Instead, you must configure Tanium Patch to install patches from an alternate location. You have two options:

- Patch air-gapped environments using Tanium Scan for Windows on page 111
- Patch air-gapped environments using Offline CAB on page 114

> **Note:** Offline CAB supports patching Windows versions earlier than Windows 11 version 22H2. For endpoints on Windows 11 version 22H2 or later, use Patch air-gapped environments using Tanium Scan for Windows on page 111.

Before you begin

- If you want to configure a UNC share on a Tanium Appliance, you must add an authentication user for TDownloader as described in the Tanium Appliance User Guide: Add an authentication user for TDownloader.
- Review your firewall configuration to confirm that the necessary ports are open for remote sources. For more information, see Tanium Console User Guide: Manage remote systems.

Patch air-gapped environments using Tanium Scan for Windows

If you are using the Tanium Scan for Windows scan method, you must configure Tanium Scan to retrieve patches from a local WSUS server.

1. Ensure that your local WSUS server is configured to store updates locally. For more information, see Microsoft Documentation: Choose a WSUS storage strategy.
2. Configure Tanium Scan for Windows.
    a. From the Main menu, go to **Modules** > **Patch > Scan Management**.

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b. Click **Tanium Scan for Windows** and then click **Edit**.

c. Select **Enable Tanium Scan for Windows** (if not already selected) and select a scan source.

d. In the **Tanium Scan Source** section, select **Local WSUS Server** to retrieve patches from a local WSUS server.

- Enter the **URL** and the **Content Download Port**. The content download port is the port from which the Tanium Server can download patch installation files. The Tanium Server then delivers the files as part of a Patch deployment.

  The default port may be 8530 or 80, depending on the WSUS server version. You can configure the WSUS server to use a custom port.

- Choose a PEM file containing the certificate authority for the WSUS server. The certificate should be the Base64-encoded ASCII, certificate chain format.

e. If you want to synchronize after Microsoft releases many significant patches, select **Enable Schedule Synchronization**.

f. Use the arrows to select products to include in scans.



Best Practice: Synchronize all products, regardless of which products are present in the environment. Selectively choosing products can cause gaps in critical or important patches.

g. Use the arrows to select update classifications to include in scans.



Best Practice: Select **Critical Updates**, **Security Updates**, **Service Packs**, and **Update Rollups**.

h. Click **Submit**.

3. Configure WSUS server allowed URLs. For steps, see Configure WSUS server allowed URLs on page 90.

4. Create a scan configuration that uses Tanium Scan.

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a. From the Main menu, go to **Modules > Patch > Scan Management**.

b. Click **Create Scan Configuration**.

c. Enter a name and description for the configuration.

d. For the **Platform**, select **Windows**.

e. For the **Configuration Technique**, select **Tanium Scan**.

f. In the **Frequency** field, enter a number and a time parameter.

> **Best Practice:** Set this value to less than three days to improve the Patch coverage metric.

g. (Optional) Select **Enable Random Scan Delay** and enter a time to distribute the network activity.

The default is 120 minutes.

> **Tip:** For VDI environments, set a longer scan delay, such as 480 minutes or higher, depending on the density and hardware performance of your VDI environment, to reduce the impact of the scan on the host system.

h. (Optional) Select **Scan only within defined window** to define the scan window options, such as browser time or local time on the endpoint, how often the window repeats, and override options. For more information, see Scan windows on page 131.

> **Note:** The scan window specifies when a scan can start. If you enabled **Random Scan Delay**, scans can potentially start as late as the specified delay after the end of the scan window. For example, if a scan attempts to start one minute before the end of the scan window, but receives the full random scan delay of 120 minutes, the scan does not start until after that 120 minutes and continues to run until completion, even though the scan window is already closed.

i. Click **Create Scan Configuration**.

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j. In the **Targeting** section, click **Select Computer Groups** to add one or more computer groups.

5. On the WSUS server, stage and approve the patches.

6. For patches that are applicable to Windows 11 version 22H2 or later endpoints, manually synchronize the patches. For more information, see Manually synchronize patches on page 148.

7. Manually deploying patches on page 154.

Patch air-gapped environments using Offline CAB

If you are using the Offline CAB scan method, you must configure Patch to install patches from an alternate file location on an authorized local server that is accessible to the endpoints within the air-gapped environment.

1. Create a scan configuration with the **Offline CAB** configuration technique. For more information, see Create a scan configuration on page 128.

2. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Airgap Configuration**.

3. Define the alternate location for patch files on the local network.

   a. Select **Enable Settings for Airgap - Windows**.

   b. Provide an **Alternate Patch File Location** where all air-gapped files are staged and then click **Save**.

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Important:

- The network location that you specify must be accessible by the Tanium Server. To use a UNC path or a credential-protected URL, configure the settings based on the Tanium Server version and operating system.
  - **Tanium Server 7.5.3.3503 and later:** You must configure a downloads authentication entry for the UNC path or credential-protected URL. For information about configuring a downloads authentication entry, see Tanium Console User Guide: Managing remote authentication.
  - **(TanOS) Tanium Server earlier than 7.5.3.3503:** You must configure credentials in the TanOS Tanium Operations menu. For information, see Tanium Appliance User Guide: Add an authentication user for TDownloader
  - **(Windows) Tanium Server earlier than 7.5.3.3503:** You must configure the Tanium Server service account to run as a Windows user with sufficient permissions. For information, see Tanium Appliance User Guide: Add an authentication user for TDownloader
- Tanium does not support hidden or administrative shares.

c. From the Main menu, go to **Administration** > **Permissions** > **Allowed URLs** to verify that the configured alternate Patch file location is listed.

4. In the **Download Airgap Utility** section, click **Download Utility** to download the airgap-downloader.exe utility.

   Note: You must run this utility on a Windows computer that can access the internet.

5. In the **Generate Download Manifest** section, select the **Include CAB File** and **Include MS-CVEs.dat File** options and then use the filters to create a list of patches to use in the air-gapped environment. For example, you can filter on a specific patch list, or you can filter only

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for Windows patches released during the past month that are applicable and have not been superseded.

6. In the list that you generate, select individual patches to include, or hold the Shift key and then select multiple patches.

7. Click **Download Manifest** to generate a file that contains a list of URLs for patch files that you will download and use to patch the air-gapped endpoints.

   A urls.txt file is downloaded to your computer. For example:

   ```
   http://download.windowsupdate.com/microsoftupdate/v6/wsusscan/wsusscn2.cab
   https://content.tanium.com/files/hosted_dats/MS-CVEs.dat
   https://content.tanium.com/files/windows-patch/wsusscn2.json
   ```

8. Use the urls.txt file that you generated from the Tanium Server to download files from a computer that is connected to the internet.

   a. Copy the urls.txt and airgap-downloader.exe files to a computer that is connected to the internet and open a command prompt to that directory.

   b. To download the package files from sources contained in urls.txt, run:

      ```
      airgap-downloader.exe download_files --no_rename
      ```

      Note: If the urls.txt and airgap-downloader.exe files are not in the same directory, you must also include the `--urls_source` option.

      The command downloads the files in the list and generates a results.zip archive that contains:

      - The downloaded files
      - A manifest results.txt

   c. Extract the contents of the results.zip file to the root of the alternate Patch file location that you defined on the local network.

Verify the Offline Cab configuration

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About this task

To verify that Offline Cab for airgap was configured correctly, you can confirm the following:

1. Verify that the Tanium Server has the staged files:
    a. From the Main menu, go to **Administration** > **Content** > **Packages**.
    b. Select the **Patch - External File References - Windows** package and click Edit Selected .
    c. In the **Files** section, click **wsusscn2.cab** and verify that the **SHA-256** field has a non-empty hash value.
    d. Click **MS-CVEs.dat** and verify that the **SHA-256** field has a non-empty hash value.
2. Verify that the Windows endpoints can scan against the staged files:
    a. From the Main menu, go to **Modules** > **Patch**.
    b. In the **Scan Source Details** section, verify that the hash value in the **Microsoft Offline CAB File Information** matches the value in step 1c.

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Downloading Linux patches in an air-gapped environments

About this task

When your Tanium Server is in an air-gapped environment, the server cannot download patches from the Internet. Instead, you must download patches to your local repository and configure Tanium Patch to scan and download using the repository.



CAUTION:

Do not click **Initialize Endpoints** from the **Help** > **Support** page. Otherwise, all the changes that you make to the external packages in the following procedure are deleted. Also, do not send requests to the following routes:

- POST /v1/jobs/all
- POST /v1/jobs/sync-external-file-references

Download Linux CVE metadata

About this task

Use the Download Airgap Utility to download Linux CVE metadata. The Tanium Server uses this data to parse advisory details, CVE mappings, and package versions that resolve vulnerabilities.

1. From the Main menu, go to **Modules** > **Patch** > **Scan Management** and then click **Airgap Configuration**.
2. Download the Airgap Downloader utility. This utility is primarily used for Windows air-gapped environments but you can also use the utility to download Linux CVE metadata.
    - If you previously enabled **Airgap Configuration**, click **Download Utility** to download the airgap-downloader.exe utility.

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- If you do not see the **Download Utility** button, complete the following steps:

    a. Select **Enable Offline CAB** file.

    b. In the **Alternate Patch File Location** field, enter a dummy URL. This alternate location is used for Windows air-gapped environments and does not apply to Linux air-gapped environments. However, you still need to provide a value to continue to the next step.

    c. Click **Save**. The **Download Airgap Utility** section appears.

    d. Click **Download Utility**.

3. Populate a text file with the file addresses of the Linux patch metadata.
    a. Create a urls.txt file.
    b. From the Main menu, go to **Administration** > **Content** > **Packages**.
    c. Search for and select **Patch - External File References – Linux**.
    d. For each file that you want to include, copy the **File Address** field to the urls.txt text file; one address per line.

4. Download the Linux patch metadata.
    a. Copy the urls.txt and airgap-downloader.exe files to a Windows computer that can access the Internet.
    b. Open a command prompt to that directory.
    c. Run the following command to download the package files from sources contained in urls.txt:
    `airgap-downloader.exe download_files --no_rename`

    > **Note:** If the urls.txt and airgap-downloader.exe files are not in the same directory, you must also include the --urls_source option.

    The command downloads the files that are defined in the urls.txt and generates a results.zip archive that contains the following contents:

    - The downloaded files
    - A manifest results.txt

    d. Copy and extract the contents of the results.zip file to an air-gapped computer that can access the Tanium Console. For example, you can copy the contents to a flash

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drive, insert the drive into the air-gapped computer that is running the Tanium Server, and then transfer the files.

Modify the Patch - External File References – Linux package

About this task

By default, the **Patch - External File References – Linux** package contains external URL references to all the Linux patch metadata. Modify the **File Address** field for all the files in the package so that the fields do not point to an external URL.

1. On the air-gapped computer where you extracted the results.zip file, open Tanium Console.
2. From the Main menu, go to **Administration** > **Content** > **Packages**.
3. Search for and select **Patch - External File References – Linux**.
4. Click **Edit Mode**.
5. In the **Files** section, click Delete for every file.
6. Click **Add File** > **Local Files** and then click **Browse for Files**.
7. Select the Linux files that were extracted from the results.zip. After you upload the files, notice that the **File Address** field includes the file name only and does not include an external URL.
8. Click **Save**.

Recreate the Required Files - Linux configuration

About this task

Recreate the **Required Files – Linux** configuration to initialize the use of the updated **Patch - External File References – Linux** package.

1. From the Main menu, go to **Shared Services** > **Endpoint Configuration** > **Configurations**.
2. Search for and select **Required Files – Linux**.
3. Click **Delete**.

Result

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After a few minutes the file is recreated.

Add local repositories

About this task

Add your locally hosted repositories that the Tanium Server can contact and then target the computer groups with the air-gapped endpoints. Tanium Patch uses these repositories to scan for and download packages that you can use to patch Linux endpoints. For more information, see Add and target Linux repositories on page 96.

Configure scans for air-gapped environments

About this task

Create a scan configuration to target Linux endpoints that are air-gapped and ensure that these endpoints are not targeted by other scan configurations.

1. From the Main menu, go to **Modules** > **Patch** > **Scan Management** > **Scan Configurations**.
2. Click **Create Scan Configuration** and complete the fields with the following settings.
    - **Configuration Technique**: Select **Tanium Scan**.
    - **Repositories**: Add the local repositories that you previously configured.
3. Click **Create Scan Configuration**. The configuration is created, and the Scan Configuration details page appears.
4. In the **Targeting** section, click **Select Computer Groups** and target the group of air-gapped Linux endpoints.
5. Unenforce the default **[Tanium Scan] - Linux** scan configuration from Linux endpoints that are air-gapped.
    a. From the Main menu, go to**Modules** > **Patch** > **Scan Management** > **Scan Configurations**.
    b. Select **[Tanium Scan] - Linux**.
    c. In the **Targeting** section, remove the computer groups that include air-gapped Linux endpoints.

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What to do next

Verify that you are getting scan results from endpoints and then create patch deployments as needed.

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Enforcing scan configurations

About this task

Manage your scan configurations to select how and when scans are enforced. The list of available Windows and Linux patches comes from scanning the endpoints in your network. The *scan configuration* determines a scanning technique and frequency. A scan configuration is *enforced* by targeting computer groups.

For Windows endpoints, the available scanning techniques include the offline CAB file, online Microsoft Windows Update, Windows Server Update Services (WSUS) Scan, and Tanium Scan.

For Windows scan configurations, you can enable *isolated endpoints* to download patch files directly from Microsoft instead of the Tanium Server to free network resources. An isolated endpoint is a Tanium Client that has no peer Tanium Clients. To download patches directly from Microsoft, an isolated endpoint must be connected to a user-configured list of Tanium Zone Servers or IP address ranges for split-tunnel VPN clients. For more information, see Enable direct patch downloads from Microsoft on page 92.

For Linux endpoints, the available scanning techniques include Repository Scan and Tanium Scan.

Windows scan techniques

Tanium Scan

Important: If you are using Tanium Scan for Windows with a local WSUS server, you must approve updates on the WSUS server.

Important: Do not set the IgnoreWindowsUpdateGroupPolicies configuration service provider (CSP) policy on endpoints that use Tanium Scan for Windows. This policy prevents Windows from correctly using the internal WSUS server hosted by Tanium, resulting in issues with Tanium Scan.

Tanium Scan for Windows allows Patch to assess all Microsoft Products (excluding Microsoft 365

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Apps, Office 2019, and Office LTSC) and Update Classifications (excluding Drivers, Definition Updates, and Upgrades) on supported Windows 10 or later endpoints. The Patch service on the Module Server is configured to synchronize update metadata and detection rules directly from Microsoft. Alternatively, it can be configured to synchronize from WSUS in airgap scenarios where WSUS is available and already has approved and downloaded patches.

After the update metadata and detection rules are synchronized, the Patch service distributes portions of this data (in a client database file) to applicable machines on the network. The Windows Update Agent performs the scan against selected products and classifications and return data in the form of applicable and not applicable patches.

Tanium Scan for Windows is much less resource intensive than the offline CAB file scan method and provides more robust scan results. Tanium Scan does not rely on each endpoint having network access to Microsoft Update or a local WSUS server. For more information about Tanium Client requirements, see Core platform dependencies on page 35.

To enable and configure Tanium Scan for Windows, see Enable and configure Tanium Scan for Windows on page 89.

> **Note:** If you want to use Tanium architecture to deliver cumulative updates for Windows 11 version 22H2 or later endpoint, you must use Tanium Scan.

If enabled in **Configuration Settings**, the Online Microsoft Windows Update scan technique supports direct download of patches from Microsoft to isolated endpoints. For more information, see Enable direct patch downloads from Microsoft on page 92.

Offline CAB File

The Windows Cabinet (CAB) file is stored locally by the Tanium Client and contains security updates, update rollups, and service packs for all products in the Microsoft Update Catalog, including Windows and Office. On the **Patch Overview** page, the latest status of the offline CAB file is available. The active CAB file is the most recent, verified file published by Microsoft. Patch uses only the active CAB file for scan configurations. A rejected CAB is not pushed to a computer group. Patch checks for an updated CAB file every 15 minutes. You can click **Update CAB** to force a new download outside of the normal schedule.

Example CAB file status

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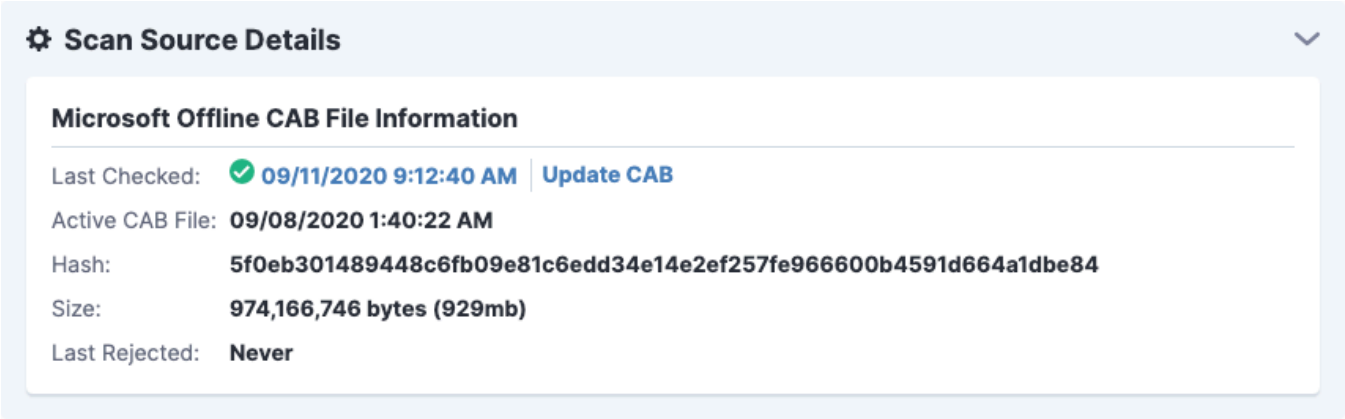

Note: **Offline CAB File** includes only Security Updates, Service Packs, and Update Rollups updates. Because other scan methods include more updates than **Offline CAB File** includes, if you change the scan configuration technique on an active deployment from **Offline CAB File** to another technique, additional patches might be installed on endpoints.

Online Microsoft Windows Update

The Online Microsoft Windows Update option creates additional network traffic between the Tanium Client and Microsoft and is for Microsoft updates in Windows operating systems only. The full range of patches in the following list are available for scanning in the Windows operating system:

- Critical patches
- Cumulative security and quality patches

  CAUTION: The Microsoft online APIs do not always provide the required URLs to download and install cumulative update patches. Use this option in situations where Tanium Patch is being used only for auditing patch compliance.

- Non-security and optional updates

If enabled in **Configuration Settings**, the Online Microsoft Windows Update scan technique supports direct download of patches from Microsoft to isolated endpoints. For more information, see Enable direct patch downloads from Microsoft on page 92.

WSUS

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Important: If you are using Microsoft System Center Configuration Manager (SCCM) with your WSUS server, do not use Tanium for WSUS scanning with the same server.

Using WSUS servers for patching activities gives the option for the full range of patch types for all products in the Microsoft Update Catalog, including Windows and Office. However, some additional configuration is required. The Tanium Client must be able to contact the WSUS server, and patches must be approved before they can be downloaded.

The guidelines about how many clients a WSUS server can support are similar to the Microsoft guidelines for SCCM: up to 150,000 clients per WSUS server. For more information, see Microsoft Docs: Size and scale numbers for System Center Configuration Manager.

If enabled in **Configuration Settings**, the Online Microsoft Windows Update scan technique supports direct download of patches from Microsoft to isolated endpoints. For more information, see Enable direct patch downloads from Microsoft on page 92.

Linux scan techniques

For Linux endpoints, the available scanning techniques include Repository Scan and Tanium Scan.

Best Practice: To simplify Linux scanning, enable **Enhanced Linux Support** in the **Patch Configuration Settings**. This setting lets you create a single scan technique that applies to multiple Linux distributions, instead of having to create separate OS-based scan techniques. For more information, see Enable Patch for Enhanced Linux configurations on page 96.

Repository Scan

Using repositories for patching activities gives the option for the full range of patch types for all updates in the repositories. However, you must configure one or more repositories, and updates must be maintained in the repositories. The Tanium Client must be able to contact the repositories for scanning as well as patch downloads.

For the Repository Scan technique, you can use all repositories from which an endpoint can pull.

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Note: When using the Repository Scan technique with Red Hat distributions, endpoints must be directly registered with Red Hat or a Red Hat Satellite server.

Tanium Scan

Best Practice: For best results, create a single scan configuration for Tanium Scan for Linux targeting the Patch Supported Systems computer group with each included repository targeted to the proper operating systems. For more information, see Red Hat Linux endpoints stuck in Waiting for Initial Scan status on page 217.

Tanium Scan for Linux can use both internal or external repositories, but only the Tanium Server needs connectivity to the repositories. The Tanium Client stores the repository scanning logic in the local Tanium Client directory. Package managers (for example, Yum, DNF, Zypper, and Apt) cache repository data in the /var partition. In most cases, the cache does not exceed 500 MB. If you use lean partitioning or have a high count of configured repositories, evaluate the available disk space and partition configurations to ensure /var has sufficient free space. If you patch from repository snapshots, ensure that the /var partition has at least two times the needed free disk space, as both the snapshot and non-snapshot repository data occupy this space.

Tanium Scan supports AlmaLinux, CentOS, Debian, openSUSE, Oracle Linux, Red Hat, Rocky Linux, SUSE, and Ubuntu distributions. With Tanium Scan for Linux, you can create and use repository snapshots for deployments. For more information, see Linux repository snapshots on page 21.

Note: When using the Tanium Scan technique with Red Hat distributions, you must use Red Hat Content Delivery Network, Red Hat Satellite 6 or later, or custom repositories. For more information, see (Red Hat endpoints) Configure Tanium Server to use certificate authentication on page 98.

TANIUM SCAN INCOMPATIBILITY WITH LIBZYPP SERVICES PLUGINS

Tanium Scan for Linux is not compatible with LibZypp Service Plugins, such as Spacewalk. LibZypp Service Plugins provide a client a list of repositories. This method conflicts with Tanium Scan being the sole source of repositories.

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If a LibZypp Service Plugin is in use when attempting to run Tanium Scan, Patch displays scan and deployment error messages as this configuration is unsupported.

To determine if there are any LibZypp Service Plugins on an endpoint, review the /usr/lib/zypp/plugins/services directory, where all LibZypp Service Plugins are listed. If the /usr/lib/zypp/plugins/services directory is not empty, Tanium Scan is not supported.

You cannot disable LibZypp Service Plugins during a Tanium Scan. If possible, uninstall the plugin and create repositories using Tanium. If the plugin package cannot be uninstalled, use Repository Scan instead of Tanium Scan.

Create a scan configuration

About this task

You can create multiple scan configurations and add computer group enforcements as needed.

Best Practice: Any endpoint that is supported by Patch should be targeted by at least one scan configuration.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Create Scan Configuration**.
2. Provide a name, an optional description, and select an operating system.
3. Choose the scan configuration options.
    a. (Windows and Linux) Select a **Configuration Technique** and applicable options.

    CAUTION: For Red Hat, Ubuntu, and SUSE Linux Enterprise Server (SLES) endpoints, if you choose **Repository Scan**, you must also select **Use repositories configured on endpoint**.

    (Windows) If you choose **Offline CAB File**, select **Download and scan immediately upon new CAB release** to ensure that the endpoints are scanned when a new CAB file is published. Similarly, if you choose **Tanium Scan**, select **Scan when new patches are available** to ensure that the endpoints are scanned when a new patch is released. Selecting either of these settings overrides the frequency settings, but scans still wait for the scan window, if configured.

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Best Practice:

- (Windows endpoints) Choose **Tanium Scan**. If you use other products that use WSUS technology on the same endpoints, such as SCCM, select **Enable Managed Compatibility** to enable an additional scan to ensure compatibility.
- (CentOS, Debian, Oracle Linux, Red Hat, SUSE, and Ubuntu endpoints) To use repository snapshots for Linux deployments, choose **Tanium Scan**.
- (Amazon endpoints) You must use **Repository Scan**.

(Optional, Windows) If you choose **WSUS**, select **Enable audit only mode** if you want Tanium to scan for all patches synchronized in WSUS, including patches that are not available to be installed because they are unapproved. This setting lets you use a WSUS server to audit systems for missing patches. If you do not select this option, then Tanium will scan only for approved patches.

b. In the **Frequency** field, enter a number and a time parameter.

Best Practice: Set this value to less than three days to improve the Patch coverage metric.

c. (Optional) Select **Enable Random Scan Delay** and enter a time to distribute the network activity.
The default is 120 minutes.

Tip: For VDI environments, set a longer scan delay, such as 480 minutes or higher, depending on the density and hardware performance of your VDI environment, to reduce the impact of the scan on the host system.

d. (Optional, Windows) To enable remote endpoints to download patches directly from Microsoft, select **Enable Patch direct downloads from Microsoft**.

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Important:

- To download patches directly from Microsoft, you must also enable direct downloads in the **Patch Configuration Settings**. Click **View Settings for Direct Download** to access those settings. For more information, see Enable direct patch downloads from Microsoft on page 92.
- The **Enable Patch direct downloads from Microsoft** option will not appear if your administrator has disabled it.

e. (Optional, Linux) To use repository snapshots for Linux deployments, select **Deployment Snapshots** and choose the repository name and the snapshot in the **Repositories** section.

Note: If you use this feature, be aware that the snapshot files uses additional disk space in the /opt/Tanium/TaniumClient/Tools/Patch/data/repos and /var/cache directories. For example, the directories might contain repo-42 and repo-42-snapshot-1 files.

4. (Optional) Select **Scan only within defined window** to define the scan window options, such as browser time or local time on the endpoint, how often the window repeats, and override options. For more information, see Scan windows on page 131.

Note: The scan window specifies when a scan can start. If you enabled **Random Scan Delay**, scans can potentially start as late as the specified delay after the end of the scan window. For example, if a scan attempts to start one minute before the end of the scan window, but receives the full random scan delay of 120 minutes, the scan does not start until after that 120 minutes and continues to run until completion, even though the scan window is already closed.

5. Click **Create Scan Configuration**. The Scan Configuration Details page appears.
6. In the **Targeting** section, click **Edit Targeting** and then add targets. Select either or both of the following targeting methods and complete the fields.
   - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator.

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> **Note:** You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

- **Question Criteria**: Add Tanium question filters as a target. If you add multiple questions, the questions are joined by an OR operator. You must also click **Set Limiting Group** to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.

> **Important:**
> When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:
>
> `(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)`
>
> Consider the following example:
>
> - **Computer Group** = `All Laptops`
> - **Question** = `Tanium Client IP Address starts with 192.168.1`
> - **Limiting Group** = `All Windows 10, All Windows 11`
>
> With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

7. Click **Apply** to save the targeting settings.

Result

The list of available patches might appear within 15-30 minutes. Longer scan delays might result in patches appearing slowly. If no data appears after the scan delay, Contact Tanium Support on page 235. If an endpoint cannot be scanned, for example if it is offline, it is scanned at the earliest opportunity.

Scan windows

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About this task

You can set a scan window to restrict scans to a certain time of day or day of the week. For example, you can create a scan configuration to scan your endpoints daily, but restrict the scans to run during non-business hours, such as from 6:30 PM to 11:30 PM. Additionally, if some of your endpoints are offline during the scan window, you can choose the **Override** option to scan any endpoints that have a scan age older than a specified amount of time, in hours or days.

Note: A maintenance window is different from a scan window. Maintenance windows are mandatory, one-time or repeating time frames that define when Windows and Linux patches can be applied to a computer group. Scan windows are optional restrictions that define when endpoints are scanned. For more information, see Setting maintenance windows on page 184.

Best Practice: Scan windows are optional. If you decide to use them, the **Override** option should be set to less than two days to increase the Patch coverage metric.

1. In the **Scan Window** section, select **Scan only within defined window**.
2. Configure your preferences:

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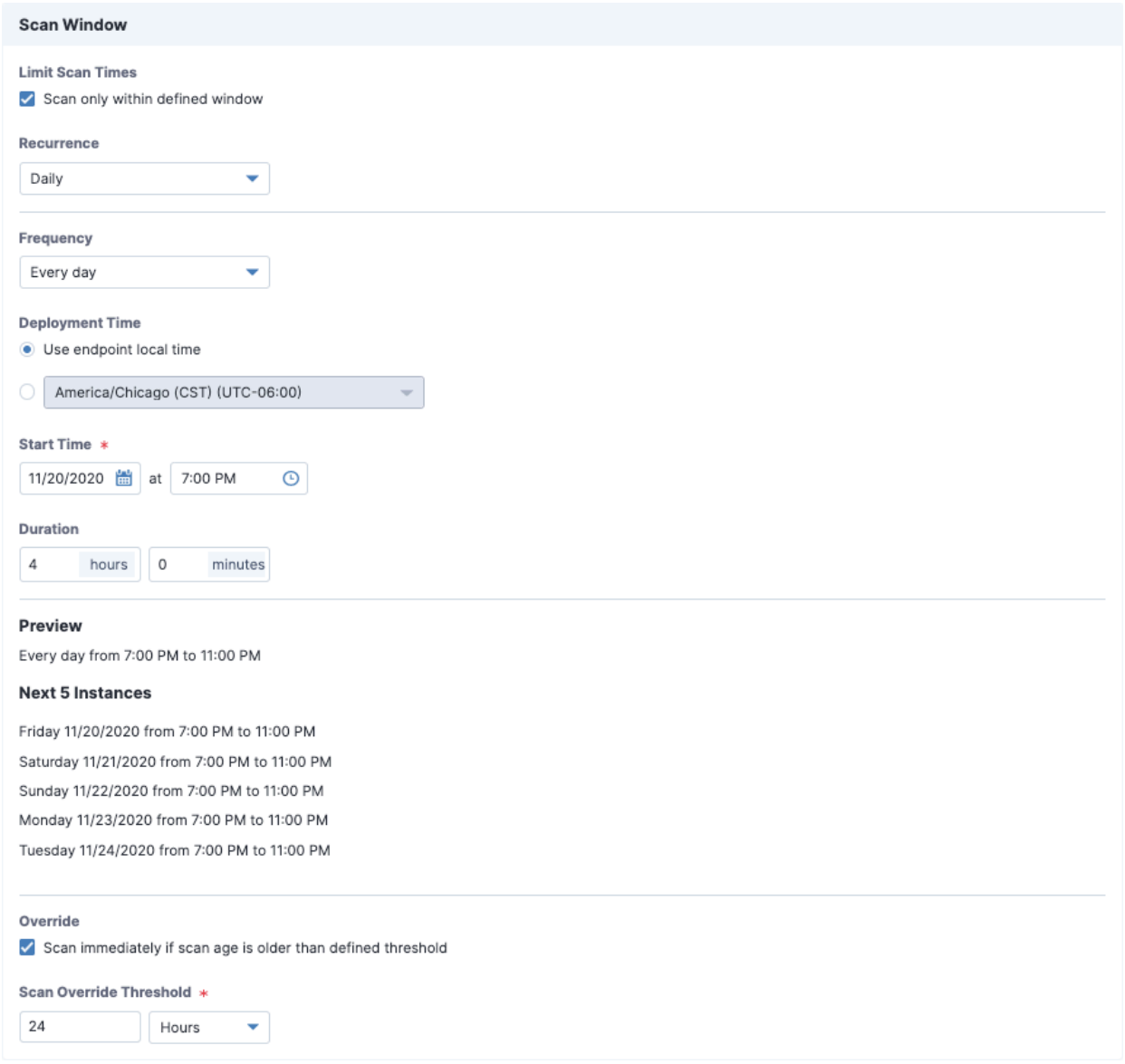

a. (Optional) Choose whether to repeat the scan window daily or weekly.
b. Set additional frequency options.
c. Select between the local time on the endpoint or UTC time.
d. Use the date and time pickers to set the start time of the window.
e. Set the duration of the scan window.
f. (Optional) Select **Scan immediately if scan age is older than defined threshold** and specify how many hours or days can elapse before triggering an immediate scan.

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Note: This setting overrides the **Scan Window** settings and can control the timing of scans on endpoints depending on the **Scan Override Threshold** and **Scan Configuration Options Frequency** values. For example, an endpoint does not complete a scan during a daily four-hour scan window, the **Scan Configuration Options Frequency** is 24 hours and the **Scan Override Threshold** value is 25 hours. After 25 hours, the **Scan Override Threshold** value forces a scan on the endpoint. During the next daily four-hour scan window, the endpoint does not scan because it has scanned within 24 hours. After 25 hours, the **Scan Override Threshold** value forces a scan again.

Best Practice: Set this value to less than two days.

View enforcement status

About this task

By reviewing a scan configuration, you can see which endpoints in the computer group contain the enforced configuration.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click the name of a scan configuration.
2. In the **Enforcements** section, click the links for any of the enforcement statuses to open the question results for each endpoint.
   The Interact results grid shows the endpoint status and the reason, if it is not enforced.

Best Practice: Investigate endpoints with scan errors that have scan results older than two days and resolve the errors for each endpoint. For more information, see Troubleshoot scan errors on Windows and Linux endpoints on page 215.

Prioritize scan configurations

About this task

You can create multiple scan configurations with multiple computer groups. The order of the configuration in the **Scan Configurations** list decides its priority. If an endpoint is in multiple

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computer groups with conflicting configurations, only the highest priority configuration in the list is applied to the endpoint.

> **Note:** The highest priority configuration has a **Priority** of `1`.

1. From the Main menu, go to **Modules** > **Patch > Scan Management**.
2. On the **Scan Configurations** tab, click **Prioritize**.
3. Move the scan configuration by dragging and dropping it into the order that you want and then click **Confirm**.

Edit a scan configuration

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click the name of a scan configuration.
2. Click **Edit** and make your changes.

   > **Note:** You cannot edit a scan configuration if the **Allow Scan Configuration Editing** option is disabled in the Patch Settings.

3. Click **Update Scan Configuration**.

Remove a scan enforcement

About this task

Removing a computer group from a scan configuration removes the enforcement.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click the name of a scan configuration.
2. In the **Targeting** section, delete the computer group.

Delete a scan configuration

About this task

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After the enforcements are removed, you can delete a scan configuration.

1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click the name of a scan configuration.
2. If the scan configuration is enforced against Computer Groups, remove all groups.
3. Click Delete .

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Managing patches

About this task

You can manage Windows and Linux patches with patch lists and block lists. *Patch lists* are groups of patches that can be applied on the targeted computer groups. *Block lists* are groups of patches that are specifically excluded from being downloaded or deployed to the targeted computer groups.

Default patch lists

Patch automatically includes the following patch lists. If a patch list is marked as **Tanium Managed** in the **Patch Lists** page, you cannot edit or delete it.

Patch list	Description
[Patch Baseline Deployment] - Windows for Windows endpoints	Includes security updates, update rollups, and service packs for Windows endpoints. This is a basic Windows patch list that you can use as a good starting point. **Note:** If you import Patch with default settings, this patch list is automatically created.
• **[Tanium Patch Baseline Reporting] - Windows** • **[Tanium Patch Baseline Reporting] - Linux**	Tanium managed. • The Windows patch list includes patches that are associated with security updates, update rollups, and service packs. • The Linux patch list includes security patches, patches with a severity that is greater than none, or patches that are associated with a CVE.
All Patches	Tanium managed. Includes all patches for all operating systems.
Tanium Patch Recommended Updates] - Windows for Windows endpoint	Tanium managed. Includes all critical, high, and important patches released 30 or more days ago. Patch updates the items in this patch list each time the list is used in a deployment.

Patch list rules

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Although you can manually select patches to include in a patch list, it is more efficient to use rules to dynamically populate lists of patches. As patches are added to the Available Patches list, Tanium assesses those patches for inclusion on a list by comparing them to rules. You can create rules from customized conditions that define which part of the patch description to examine.

Consider the following example rules and conditions:

Rule	Explanation
Condition: **Classification equals** `Security Updates` AND Condition: **Release Date is on or before** `8/12/2022`	The rule includes security updates released on or before August 12, 2022. You must update the date in this rule at a regular interval to include future security updates.
Condition: **Classification equals** `Security Updates` AND Condition: **Release Date is equal to or older than** `30 days`	The rule includes security updates released 30 or more days ago. Each time the patch list that contains this rule is used, Patch updates the security updates in the list. You do not need to update the rule at a regular interval to include future security updates.
Condition: **Classification equals** `Service Packs` AND Condition: **Release Date is equal to or older than** `14 days`	The rule waits 14 days until after a service pack is released to include it in the patch list. Each time the patch list that contains this rule is used, Patch updates the service packs in the list. You do not need to update the rule at a regular interval to include future service packs. You might use this rule to defer installation to allow time for testing.

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Best Practice:

- Include patches for the current month.
- Avoid waiting longer than two weeks after a patch release to start patching production systems.
- Expand endpoint diversity in patch testing groups to increase the chances of identifying newly-released problematic patches for deploying patches to production.

You can include the following options in rule conditions.

Rule condition options

Condition	Available options
Column	• Title • Severity **Important:** With the introduction of patch-cx on page 210, the condition **Severity does not contain** is no longer supported. If an existing patch list contains this unsupported condition, the rule is skipped and the patch list might not be what you expect. The supported equivalent is **Severity not equal to**. Update existing patch lists if required. • Release Date • Bulletins • KB Articles • CVE • Custom Field • Product • Classification
Type	• Contains • Equals • Does not contain • (Release Date only) On or after (date)

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Condition	Available options
	• (Release Date only) On or before (date) • (Release Date only) Equal to or newer than (age) • (Release Date only) Equal to or older than (age)
Expression	The search criteria used in the expression.

Create a patch list

About this task

Sort patches into manageable patch lists for use in deployments or reporting. For example, you might create a patch list that includes security updates to use in a deployment for Windows endpoints or to generate a report for the security team. Or you might have a 30-day service level agreement (SLA) on patch installation, so you create a patch list that includes the **is equal to or older than 30 days** option to track your alignment with the SLA and deploy any needed patches.

You can add individual patches to the list or populate the list dynamically with rules.



Best Practice: For testing environments, create a patch list to deploy the latest patches. For production environments, create a patch list using the options **Release Date is equal to or older than 30 days**, so you can reuse this patch list each month without making any changes.

1. From the Main menu, go to **Modules** > **Patch > Patch Lists**.
2. Click **Create Patch List**, name the list, select an operating system, and select a content set.
3. Add patches.

Adding patches dynamically	Add patches manually
a. Select **Include superseded patches when applying rules** to include these patches in your patch list.	a. Expand **Add Patches Manually**. b. Select the patches that you want. c. (Optional) Click the patch title to see the details in a new browser tab.

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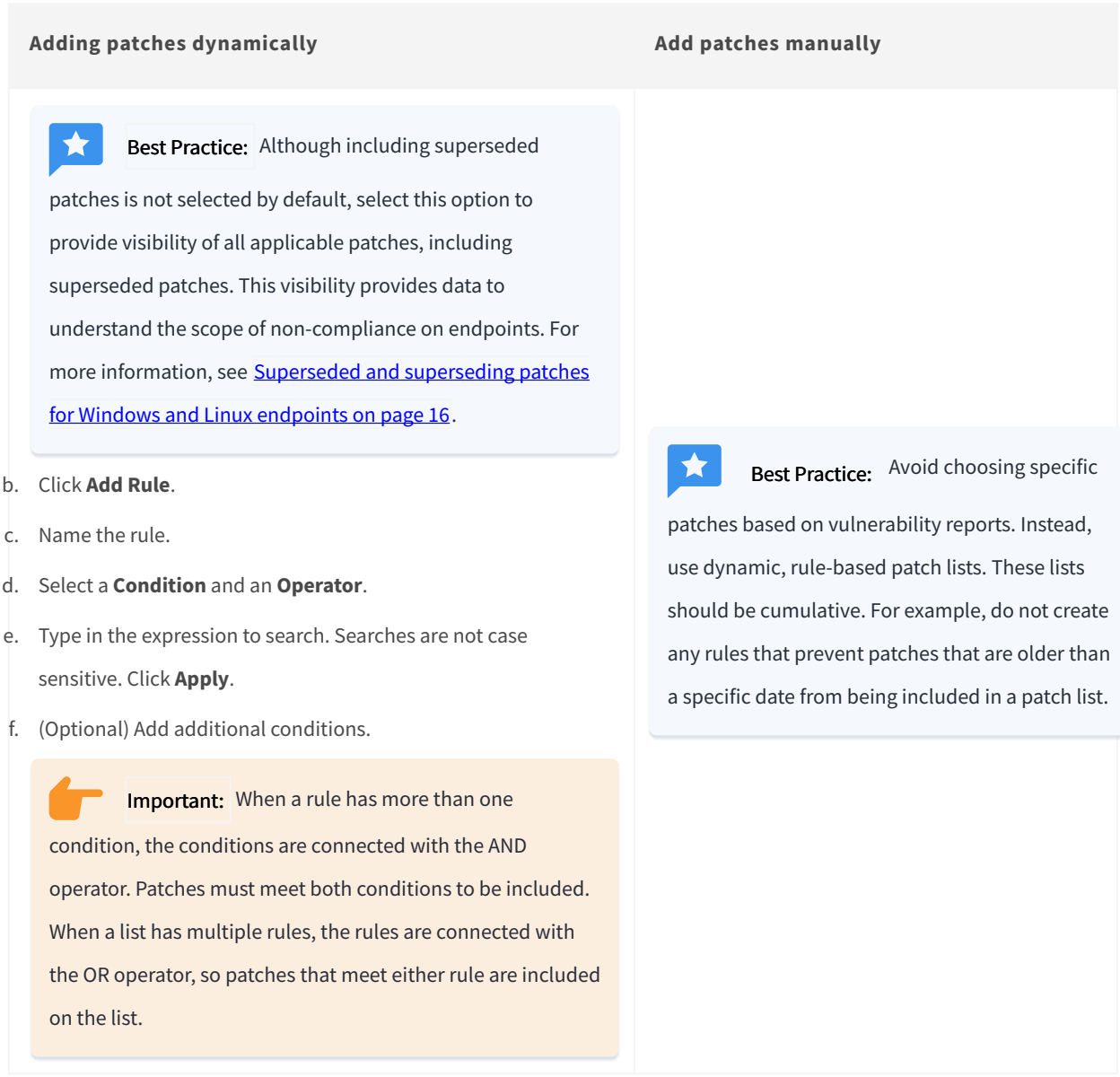
Adding patches dynamically	Add patches manually
Best Practice: Although including superseded patches is not selected by default, select this option to provide visibility of all applicable patches, including superseded patches. This visibility provides data to understand the scope of non-compliance on endpoints. For more information, see Superseded and superseding patches for Windows and Linux endpoints on page 16.	
b. Click **Add Rule**. c. Name the rule. d. Select a **Condition** and an **Operator**. e. Type in the expression to search. Searches are not case sensitive. Click **Apply**. f. (Optional) Add additional conditions. **Important:** When a rule has more than one condition, the conditions are connected with the AND operator. Patches must meet both conditions to be included. When a list has multiple rules, the rules are connected with the OR operator, so patches that meet either rule are included on the list.	**Best Practice:** Avoid choosing specific patches based on vulnerability reports. Instead, use dynamic, rule-based patch lists. These lists should be cumulative. For example, do not create any rules that prevent patches that are older than a specific date from being included in a patch list.



You can get details about the patch, visibility into the results by computer group, and the associated lists.

4. Preview the changes and then click **Create Patch List**.

Result

To distribute the patches to endpoints, see Create a deployment to install patches on page 159.

Exclude patches with block lists

About this task

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A block list is a collection of patches that are prohibited from downloading or deploying to the targeted computer groups. You can add individual patches to the list or populate the list dynamically with rules. Unlike patch lists, you do not need to create a deployment to enforce a block list. For best results, use block lists only for patches that are never deployed to one or more computer groups.

A block list excludes patches from the results of the sensors **Patch - Patch List Applicability** and **Patch - Patch List Compliance** for any patch list other than **ID 1**. You can still review applicable patch list reports through the patch list **ID 1** or the **Applicable Patches** sensor.

Tip: Block patches with the Title containing either "Quality Rollup" or "Security Only" to avoid redundant patch deployments.

1. From the Main menu, go to **Modules** > **Patch > Block Lists** and then click **Create Block List**.
2. Name the list, select an operating system, and select a content set.
3. Add patches.

Adding patches dynamically	Adding patches manually
a. Superseded patches are automatically included in block lists. b. Click **Add Rule**. c. Name the rule. d. Select a **Condition** and then an **Operator**. e. Type in the expression to search against and then click **Apply**. Searches are case-insensitive.	a. Expand **Add Patches Manually**. b. Select the patches that you want. c. (Optional) Click the patch title to see the details in a new browser tab.  **Best Practice:** If a patch is known to cause issues for a subset of endpoints, create a block list with the patch KB number and target only the computer group that contains the endpoints that are adversely affected by that patch.

   You can get details about the patch, visibility into the results by computer group, and the associated lists.

4. Preview the changes and then click **Create Block List**. The Block List Details page appears.

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5. In the **Targeting** section, click **Edit Targeting** and then add targets. Select either or both of the following targeting methods and complete the fields.
    - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator.

      > **Note:** You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

    - **Question Criteria**: Add Tanium question filters as a target. If you add multiple questions, the questions are joined by an OR operator. You must also click **Set Limiting Group** to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.

    > **Important:**
    > When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:
    >
    > `(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)`
    >
    > Consider the following example:
    >
    > - **Computer Group** = `All Laptops`
    > - **Question** = `Tanium Client IP Address starts with 192.168.1`
    > - **Limiting Group** = `All Windows 10, All Windows 11`
    >
    > With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

6. Click **Apply** to save the targeting settings.

Result

The block list is distributed to the selected endpoints, blocking those patches. However, if an

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endpoint comes online with a blocked patch already installed, the patch remains until it is uninstalled.

yum.conf exclusions for Linux endpoints

If a Linux endpoint has excluded packages in the yum.conf file, Patch honors those exclusions and will not install them.

> **Note:** Tanium Patch blocking occurs on an Advisory basis. Because a Linux Advisory consists of a list of packages that need to be installed on Linux, a non-blocked Advisory might not be installed if it includes packages that are associated with a blocked Advisory.

Create lists from the Patches view

About this task

In addition to creating a list from the Patch Lists or Block Lists page, you can also select individual patches to build lists.

1. From the Main menu, go to **Modules** > **Patch > Patches**.
2. Select one or more patches.
3. From the **More** dropdown list, select the list type.
4. Complete the list.

View confidence score of Windows patch

About this task

You can view the confidence scores of Windows patches. The confidence score rates the probability that a patch deployment will succeed in the future and will not cause post-installation downtime. For more information, see Windows patch confidence score on page 18.

Tanium does not calculate confidence scores for Linux patches. These patches have a confidence score of **N/A**.

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Note: Confidence score is available only if your Tanium instance is linked to your Tanium Account. For more information, see Tanium Account User Guide: Link an on-premises Tanium instance. It can take up to one hour for confidence scores to appear after linking your account. If you unlink your account, it can take up to five hours for confidence scores to disappear.

Note: Confidence score is not available in Tanium Cloud for U.S. Government. For more information, see Patch overview on page 11.

1. From the Main menu, go to **Modules** > **Patch > Patches**.
2. Click the patch for which you want to review the confidence score.

   Patch confidence score values

Score	Description
High	A score of 80 or higher indicates a patch had positive deployments in the sense of having high installation success and low uninstall rate.
Moderate	A score of 60 to 79 conveys caution because the patch deployments had a moderate number of installation failures and a moderate uninstall rate.
Low	A score of 59 or lower constitutes an alert due to a critical number of installation failures and a critical uninstall rate.
Calculating	The Tanium Server has not yet collected the minimum number of reported outcomes (20) that is required for a valid score.

3. In the **Confidence Score Breakdown** section, review the values for the individual metrics that Tanium uses to calculate the score.

   Figure 4. Patch confidence score



   The value of each metric indicates the affected endpoints as a percentage of all the reporting endpoints. Sample Size is the number of endpoints included in the Installation Status metric. Uninstall Rate mentions the number of endpoints included in the metric. The confidence score is the weighted average value of the following metrics:

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Patch confidence score metrics

Metric	Description
Installation Status	Percentage of endpoints that successfully deployed the Windows patch in prior deployments.
Uninstall Rate	Percentage of endpoints that have uninstalled the Windows patch after a successful installation.

Edit a list

About this task

When a user changes an existing list, the changes become a new version of the list. With some basic changes, such as adding a rule for each new month, you can refine your patch testing and roll up changes without creating a new list.

1. From the Main menu, go to **Modules** > **Patch** and click **Patch Lists** or **Block Lists**.
2. Click the list name and then click **Edit**.
3. Make your changes.
4. Preview the changes and then click **Update Patch List** or **Update Block List**.

Check patch visibility

About this task

You can get details about the patch, the installation results by computer group, and the associated lists.

1. From the Main menu, go to **Modules** > **Patch > Patches**. To see only patches that are not installed, click **Applicable** from the **Applicability** section of the **Filters**.
2. Click the patch name.

   Tip: You can also click Expand  next to the patch name to view additional information.

3. Review the sections.
   - **Summary** shows the severity and the associated lists.

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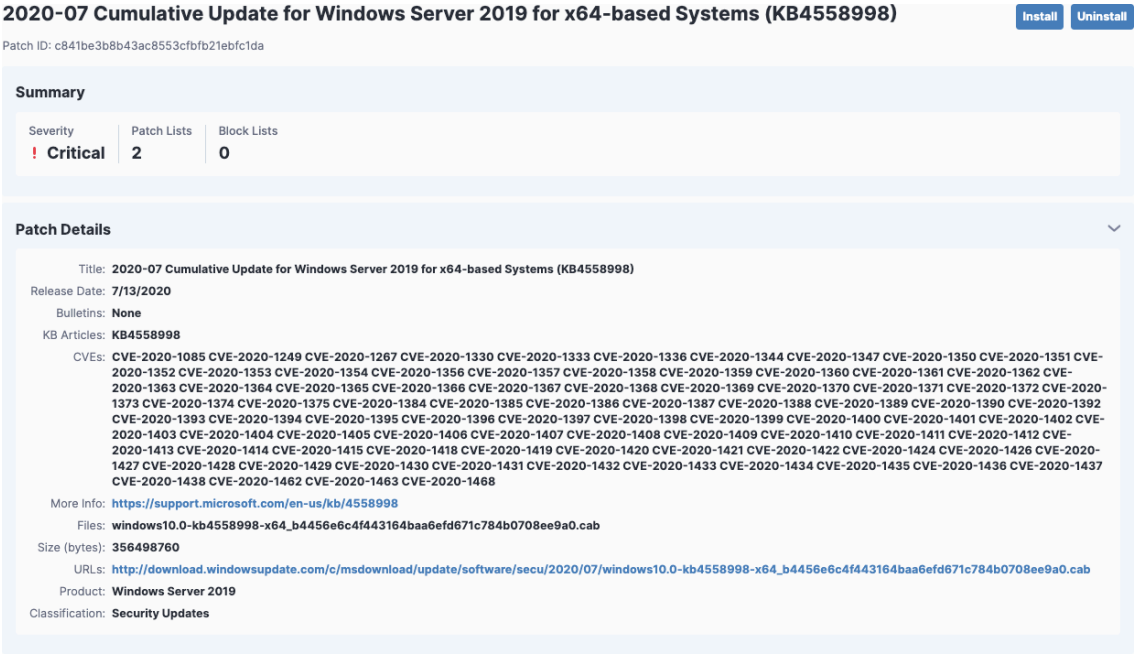
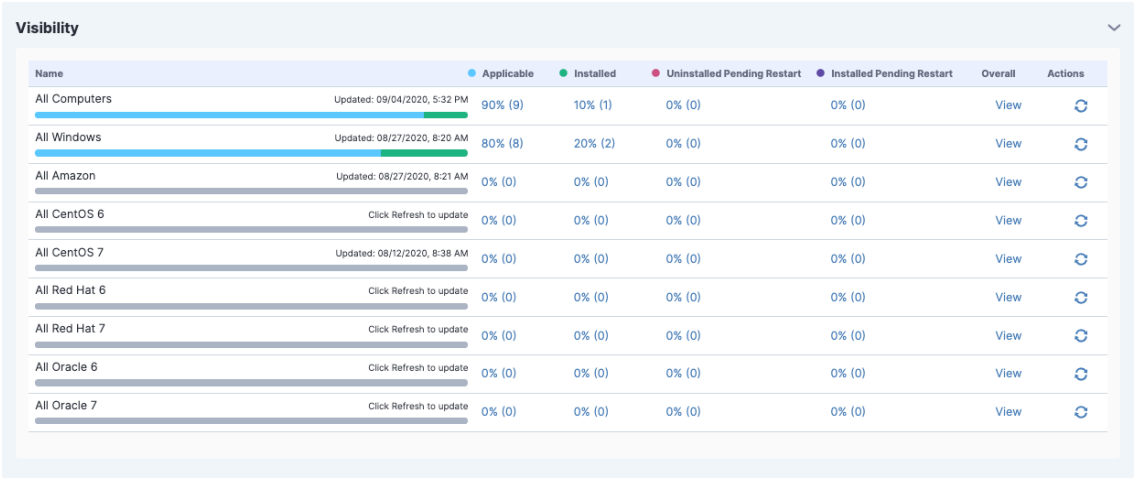
For patches targeted to endpoints on Windows 11 version 22H2 or later, the summary also shows the UUP synchronization status. For more information, see UUP Synchronization Status on page 149.

- **Patch Details** has the patch title, release date, bulletins, KB articles, CVEs, files, size, URLs, and the product and classification types.



- **Visibility** splits out the patch results by computer group. To filter the list of computer groups, update the selected computer groups in the **Computer Groups for Patch Visibility** section in the **Configuration Settings** tab of the Patch Settings. Only users with the **Patch Settings write** permission can make changes to the Patch Settings.



- **Patch Lists Including This Patch** and **Block Lists Including This Patch** are summaries that include the number of patches on the list, rules, version, and creation details.

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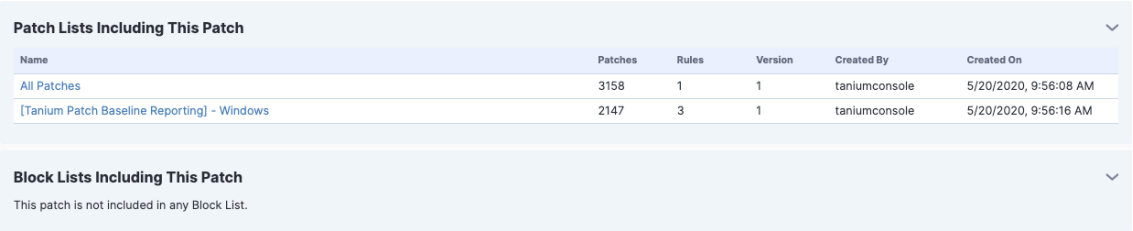

Manually synchronize patches

If you are using Enable and configure Tanium Scan for Windows on page 89 to deliver cumulative updates to Windows 11 version 22H2 or later endpoints, Tanium must first synchronize the patches to the Tanium Server. If you are using a local WSUS server, the patch files need to be approved on the WSUS server before Tanium can successfully download the necessary files.

1. On the WSUS server, approve the patches that you want to apply to the endpoints.
2. Go to the Patch workbench.
3. Ensure that the manual synchronization on page 92 option is enabled.
4. Synchronize the patches. Use the Overview page on page 148 to synchronize all patches at once or use the Patch details page on page 149 to synchronize a specific patch.

Synchronize patches from the Overview page

About this task

Use the Overview page to synchronize all patches that failed.

1. From the Main menu, go to **Modules** > **Patch > Overview**.
2. Expand the **UUP Synchronization Management** section and click **Synchronize All Patches** to synchronize all the approved patches to the Tanium Server.
3. Review the status of the patches.

> **Tip:** If Tanium encounters any synchronization errors, the errors appear immediately in the **Synchronization Errors** table. You can attempt to resolve issues and retry the failed synchronizations at any time, even if a synchronization is in progress.

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UUP Synchronization Status descriptions

UUP Synchronization Status	Description
Synchronization pending	The next synchronization job is queued.
Synchronization in progress	Patches are synchronizing to the Tanium Server .
Last synchronized on <date and time>	Synchronization completed on the specified date and time.
Last synchronized with errors on <date and time>	Synchronization failed due to errors downloading patch files or creating packages. Review the errors in the **Synchronization Errors** table.
Job failed: Sync Windows UUP Updates	Synchronization job failed. Click **Retry Job** . If the problem persists, contact Tanium Support.

4. If the **Synchronization Errors** table appears, expand the patches and review the errors. For more information about how to troubleshoot the problems, see Resolve UUP synchronization errors on page 220.
5. If the troubleshooting solution requires you to retry the synchronization, use any of the following methods:
   - In the Actions column, click Retry for the specific patch that you want to synchronize.
   - Select the patches that you want to synchronize and click **Retry** in the grid header.
   - Click **Retry All Failed Patches**.
6. After the synchronization completes successfully, deploy the synchronized patches on page 154.

> **Note:**
> Do not deploy patches that appear in the **Synchronization Errors** table.

Synchronize a patch from the Patch details page

About this task

Use the Patch details page to synchronize a specific patch.

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1. From the Main menu, go to **Modules** > **Patch > Patches**.
2. Click the name of a UUP patch. UUP patches generally contain the following characteristics:
   - Are Cumulative Updates
   - Are approximately 10GB in size
   - Contain at least one .wim file and at least one .psf file.
   - Have at least 10 files

   Tip: You can click Expand  next to the patch name to view additional information.
3. Review the **Summary** section, which shows the UUP synchronization status.

   ### UUP Synchronization Status descriptions

UUP Synchronization Status	Description
Sync required	Patch not available on Tanium Server . Click **Sync** .
Waiting for sync	The next synchronization job is queued
Synchronization in progress	Patches are synchronizing to Tanium Server .
Sync completed. <date and time>	Synchronization completed on the specified date and time.
Sync errors	Synchronization job failed. Review the error details.

4. If the **Sync errors** message appears, review the error details. For more information about how to troubleshoot the problems, see Resolve UUP synchronization errors on page 220.
5. If the troubleshooting solution requires you to retry the synchronization, click **Re-Sync**.
6. After the synchronization completes successfully, deploy the patch on page 154.

Copy a patch list

About this task

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You can copy a patch list to use as a starting point for a new patch list. You cannot copy Tanium Managed patch lists.

1. From the Main menu, go to **Modules** > **Patch > Patch Lists**.
2. Click the list to copy and click **Save As**.
3. Make any necessary changes, preview the changes, and then click **Create Patch List**.

Export a list

About this task

You can facilitate the migration of patch content by exporting lists. The exported file includes rule definitions and the IDs for any manually added patches. This is particularly useful in progressive deployment models where patches must be moved from a testing environment to a production environment.

1. From the Main menu, go to **Modules** > **Patch** and click **Patch Lists** or **Block Lists**.
2. Click the list name.
3. (Optional) Select the version.
4. Click Options and then click **Export Patch or Block List**.

Result

The JSON file is available in your downloads folder. The file name is the list identifier, the actual list name appears after import.

Import a list

About this task

You can import an exported list into a new environment. The import contains the latest version of the list and the version is set to 1 in the new environment.



Note: You cannot import a list with the same name as an existing list.

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1. From the Main menu, go to **Modules** > **Patch** and click **Patch Lists** or **Block Lists**.

   Important: Take care to only import the list as the right type.

2. Click **Import Patch List** or **Import Block List** and then click **Choose File**.
3. Browse to the list in .JSON extension and then click **Import**.

Delete a list

About this task

Deleting a list does not delete patches, it only deletes the assembled list and any previous versions.

Note: Remove computer group enforcements before deleting a block list.

1. From the Main menu, go to **Modules** > **Patch** and click **Patch Lists** or **Block Lists**.
2. Select the list name.
3. Click Delete .

Add a custom Patch field

About this task

You can add a custom field to your patches based on the KB mapping that you provide in a CSV file. You might use this custom field to override the severity of a patch.

1. From the Main menu, go to **Modules** > **Patch > Overview**, click Settings and then click **Custom Field** if needed.
2. Click **Upload CSV** for any of the OS types and add the CSV file.
3. The custom column shows up in your patch list views.

Example CSV

The following example maps the Vendor KB value to a new custom value.

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```
KB,IAVM
KB829438,1234-A-0016
KB822362,1234-A-0016
kb828037,1234-A-0017
```

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Manually deploying patches

Use deployments to download and install Windows and Linux patches on a set of target computers. You can also use deployments to uninstall Windows patches. Deployments can run once, be ongoing to maintain operational hygiene for computers that come online after being offline, or be managed by end users with the End-User Self Service Client application.

Best Practice:

- Use ongoing deployments for general patch management and manual deployments for exigent circumstances.
- Do not stagger deployments in an attempt to distribute the load on your network or Tanium. The more endpoints that are being patched simultaneously, the more efficient Tanium becomes with overall WAN usage. For bandwidth-constrained locations, you can implement site throttles. For more information, see Tanium Console User Guide: Configure site throttles.

Tip: Tanium Automate implements install deployments in playbook steps. You can configure reusable playbooks with various steps and run a playbook multiple times to streamline and simplify your business processes. For more information on building a playbook, see Tanium Automate User Guide: Building playbooks. For more information on the available playbook steps, see Tanium Automate User Guide: Reference: Steps.

Before you begin

- Organize the available patches into lists. See Create a patch list on page 140.
- If you want to notify the end users of your endpoints about the restarts that occur after patch installations, install the Tanium End-User Notifications solution. For more information, see Tanium End-User Notifications User Guide: Installing End-User Notifications and Endpoint

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restarts on page 166.

- Create maintenance windows to define periods when patches can be deployed to endpoints. For more information, see Setting maintenance windows on page 184.

Create a deployment template

About this task

You can create an install or uninstall deployment template. This template saves basic settings for a deployment that you can issue repeatedly. You can either create a deployment template from the **Deployment Templates** menu item, or you can select an option when you create a deployment to save the options as a template.

1. From the Main menu, go to **Modules** > **Patch > Deployment Templates**.
2. Click either **Create Deployment Template** > **Create Install Template** or **Create Deployment Template** > **Create Uninstall Template**.
3. Name the deployment template, select an operating system, and select a content set. For more information, see Tanium Console User Guide: Managing content sets.
4. Configure deployment options.
    - **Deployment Frequency**: You can do an ongoing deployment that does not have an end time, a single deployment with a specific start and end time, or a self service deployment to allow end users to manage the deployment in the Self Service Client application.

      Note: After patch installation starts, it continues even if you stop the deployment, the deployment ends, or the maintenance window closes.

      Note: After the deployment ends or the maintenance window closes, restarts do not occur and End-User Notification messages do not appear.
    - **Endpoint Local Time**: Use the local time on the endpoint for the deployment. If you do not select this option, then you can specify the UTC time when you create a deployment from the template.
    - If you selected an ongoing or one-time deployment, configure the Self Service

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settings.

- **Hide from Self Service Client**: Hide this deployment from the Self Service Client application, including the **Activity** and **History** sections.
- **Make available before Start Time**: Allow the end user to start this deployment in the Self Service Client application before the scheduled Start Time and outside of maintenance windows.

> **Best Practice:** For self-service deployments that are set for the future, consider enabling the option to start outside of maintenance windows to allow more time for the deployment to complete.

- **Download Immediately**: Download the patch content before the installation time.

> **Best Practice:** Select this option for future deployments. If you find that endpoints are not completing patch installations within the specified windows, schedule the deployments even further in advance.

- **Distribute Over Time**: Randomize the deployment start time on each endpoint by an amount of time up to the value that you configure. This option reduces concurrent consumption of shared compute resources in a virtual environment, network bandwidth, WSUS server load when using WSUS scan configuration technique, and repository server load when using the Repository Scan scan configuration technique.

> **Note:** Specify a **Distribute Over Time** value that is at least two hours less than the length of the deployment window and any maintenance windows. If the value exceeds deployment and maintenance windows, some endpoints will not be able to run the deployment or will deploy the patches outside of the maintenance window.

- **Override Maintenance Windows**: Ignore maintenance window restrictions.

  If you enable this setting and a user applies this template to their deployment, the setting is applied only if the user has the required **Patch Deployment Override Maintenance Window Write** permission. If the user does not have the required permission, then the setting is not applied to their deployment configuration.

- **Override Block Lists**: Ignore block lists and include patches that are blocked.

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If you enable this setting and a user applies this template to their deployment, the setting is applied only if the user has the required **Patch Deployment Override Block Lists Write** permission. If the user does not have the required permission, then the setting is not applied to their deployment configuration.

5. To warn users before a change is made to endpoints, enable **Notify user before deployment activity** and then edit the associated **Notification Options**.
    - **Duration of Notification Period**: Configure the amount of time before the notification must be accepted. The deadline is calculated by adding this value to the time that the notification is first displayed. If a user is signed in but the screen is locked, the deadline is still set as if the notification was displayed. If a user is signed in to a Windows remote desktop session but is not currently connected, the deadline is still set as if the notification was displayed. The notification is then displayed if the user reconnects.

      

      Note: Ensure that the **Duration of Notification Period** value is less than a few days. To decrease the endpoints missing critical or important patches metric, the optimal value for this setting depends on your patching cycle. For best results, set the **Duration of Notification Period** value to less than three days.
    - **Allow user to postpone**: Give the user an option to defer accepting the notification for a specified amount of time. A user cannot postpone beyond the deadline. Then specify the amount of time a user can postpone the notification. The total amount of time specified must be less than the **Duration of Notification Period** value. Note that this is only the amount of time to defer the notification from being displayed again and does not affect when the countdown to deadline appears.
    - **Allow user to minimize**: Display the notification with a title bar that includes the minimize option.
    - **Do not allow user to minimize**: Display the notification without a title bar. Do not allow user to minimize is the default.
    - **Final Countdown to Deadline**: Configure the amount of time for users to accept the notification. The notification also shows a countdown until users must accept. If users dismiss the notification and a restart is required, the notification will reappear in the last minute of the final countdown to deadline before the computer restarts.
    - **Message Content**: Provide the title and body of the notification message. Optionally,

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upload icon and body images for branding to avoid confusing users and to limit support calls.

- **Add Language**: Select additional languages and provide the translated title and body text for endpoints that are configured for other languages. To preview the additional languages, toggle the language dropdown list in the preview. You can also use the dropdown list to preview the notification in light or dark theme.
- **Show Countdown**: Display a visual indicator of the remaining time before the deadline.

6. In the **Restart** section, select whether to restart the endpoint.

   > **Note:**
   > Windows endpoints restart when this option is configured, regardless of which patches are installed. Linux endpoints restart only when installing patches that require restart, such as Linux kernel updates.

7. (Windows endpoints only) If you enabled endpoint restarts, you can enable end-user notifications about the restarts. Select **Notify User After Deployment Activity** and configure the following settings. For more information, see Endpoint restarts on page 166.

   > **Note:** For endpoints with multiple users, notifications appear for the user with the lowest active session ID. For example, when two users are logged in at the same time, User1 gets the notification but User2 does not. If User1 logs off and User3 logs in, User2 gets the notification because User2 now has the lowest active session ID.

8. Click **Save**.

Set the default deployment template

About this task

The default deployment template is applied when you create new deployments. Importing Patch with automatic configuration creates a default installation deployment template for each supported operating system. You can change the default installation template. After you create an uninstallation deployment template, you can set it as the default template.

1. From the Main menu, go to **Modules** > **Patch > Deployment Templates**.

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2. To set a default deployment template, select a deployment template and then click **Set as Default**.
3. To remove the default designation, select a deployment template and then click **Remove as Default**.

Create a deployment to install patches

About this task

Best Practice:

- Use one-time deployments with a defined start and end time instead of continuously creating new deployments and manually stopping them after the patch window ends.
- Avoid creating multiple deployments with the same patches to the same or overlapping endpoints.
- Start with older patches first.

1. From the Main menu, go to **Modules** > **Patch > Deployments** and then click **Create Deployment** > **Create Install Deployment**.

   Tip: You can also create a deployment from the **Patches** page or from the **Patch Lists** page. From the **Patches** page, select a group of patches and click **Install**; from the **Patch Lists** page, select a patch list and click **Install**. If you use either of these methods to create a deployment, then the patches or patch list that you select will already be populated in the **Deployment Details** section.

2. (Optional) Click **Apply Deployment Template** to select an existing template upon which to base this deployment.
3. In the **Deployment Overview** section, accept the default name or provide a name for the deployment, add an optional description, select an operating system, and select a content set. For more information, see Tanium Console User Guide: Managing content sets.
4. In the **Deployment Details** section, complete the following steps as needed for the operating

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system of the deployment:

- (Windows) Add one or more patch lists, including version, or add patches manually.
- (Linux) Select whether you want to **Install All Updates**; **Install All Security Updates**; **Choose Patch List**, including version; or **Manually Select Patches**.

> **Best Practice:** Avoid choosing specific patches based on vulnerability reports. Instead, use dynamic, rule-based patch lists. These lists should be cumulative. For example, do not create any rules that prevent patches that are older than a specific date from being included in a patch list.

> **CAUTION:** For deployments to Amazon Linux 2023 endpoints, you can only **Install All Updates** or **Install All Security Updates**. You cannot deploy using the **Choose Patch List** or **Manually Select Patches** options.

5. In the **Endpoints to target** section, add targeting criteria for endpoints.
   - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator.

     > **Note:** You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

   - **Question Criteria**: Add Tanium question filters as a target. If you add multiple questions, the questions are joined by an OR operator. You must also click **Set Limiting Group** to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.

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Important:

When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:

```
(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)
```

Consider the following example:

- **Computer Group** = `All Laptops`
- **Question** = `Tanium Client IP Address starts with 192.168.1`
- **Limiting Group** = `All Windows 10, All Windows 11`

With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

Tip: To target specific computer names, use the following filter builder and separate names by using the pipe (|) character. It is recommended to target fewer than 100 computer names.

```
Computer Name matches "^(computername1|computername2)$"
```

Computer names must be a fully qualified domain name that exactly matches the name registered with Tanium.

- **Enable Ring Deployment**: (Windows) If you enable this option, you can select a ring deployment plan that defines how the deployment moves through a sequence of rings. The Patch deployment specifies when a deployment starts in ring 1. The ring deployment plan then specifies how the deployment progresses through the rings. For more information, including how Tanium Patch actions work with ring criteria, see Tanium Console User Guide: Managing deployment plans and Tanium Console User Guide: Ring-based deployment.

6. Review the readiness score for your endpoints. Click the score to drill-down into Interact. For

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more information, see Endpoint readiness score on page 19.

> **Note:** The readiness score is created from cached data in Tanium Data Service (TDS).
>
> - If you use the **Question Criteria** filter, ensure that you use registered sensors in the question to get accurate readiness scores for targeted endpoints. For more information, see Tanium Interact User Guide: Register or unregister sensors for collection.
> - If you use **Computer Names**, Patch calculates readiness scores from endpoints in the selected limiting group.

7. In the **Deployment Type and Schedule** section, set the deployment schedule.
   - **Deployment Type**: Select a deployment frequency. You can select an ongoing deployment that does not have an end time, a one-time deployment with a specific start and end time, or a self service deployment to allow end users to manage the deployment in the Self Service Client application

     > **Note:** After a patch deployment starts, it continues even if you stop the deployment, the deployment ends, or the maintenance window closes.

     > **Note:** After the deployment ends or the maintenance window closes, restarts do not occur and End-User Notification messages do not appear.

   - **Deployment Time Zone**: Designate the deployment time zone for the start and end times.
   - **Start Time/End Time**: Specify the period during which the deployment will be effective.
   - **Distribute Over Time**: Randomize the deployment start time on each endpoint by an amount of time up to the value that you configure. This option reduces concurrent consumption of shared compute resources in a virtual environment, network bandwidth, WSUS server load when using WSUS scan configuration technique, and repository server load when using the Repository Scan scan configuration technique.

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> **Note:** Specify a **Distribute Over Time** value that is at least two hours less than the length of the deployment window and any maintenance windows. If the value exceeds deployment and maintenance windows, some endpoints will not be able to run the deployment or will deploy the patches outside of the maintenance window.

8. Review the **Deployment Settings** section and click Edit to make changes as needed.
   - **Download all package files immediately**: Files start downloading before the deployment start time and outside of maintenance windows. This option is available when **Enable ring deployment** is not selected.
   - **Start downloading files outside of maintenance windows**: With ring deployments, files start downloading at the deployment Start Time and outside of maintenance windows. This option is available when **Enable ring deployment** is selected.

     > **Best Practice:** For deployments that are set for the future, consider enabling the option to download outside of maintenance windows. If you find that endpoints are not completing patch installations within the specified windows, schedule the deployments even further in advance.

     > **Tip:** To schedule a download time, leave this option cleared and create a maintenance window after the start time for this deployment. With this configuration, endpoints begin downloading software at the start time for the deployment and begin installing downloaded software at the start time for the maintenance window.
   - **Override Maintenance Windows**: Ignore maintenance window restrictions.

     This setting is visible only if you have the **Patch Deployment Override Maintenance Window Write** permission.
   - **Override Block Lists**: Ignore block lists and include patches that are blocked.

     This setting is visible only if you have the **Patch Deployment Override Block Lists Write** permission.
   - If you selected an ongoing or one-time deployment, configure the Self Service settings.

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- **Hide from Self Service Client**: Hide this deployment from the Self Service Client application
- **Make available before Start Time**: Allow the end user to start this deployment in the Self Service Client application before the scheduled **Start Time** and outside of maintenance windows. This option is available when **Enable ring deployment** is not selected.
- **Allow end-users to start deployment prior to maintenance window**: Allow the end user to start this deployment in the Self Service Client application outside of maintenance windows. This option is available when **Enable ring deployment** is selected.



Best Practice: For self-service deployments that are set for the future, consider enabling the option to start outside of maintenance windows to allow more time for the deployment to complete.

- **Restart**: Select whether to restart the endpoint after deployment completes.



Note:

Windows endpoints restart when this option is configured, regardless of which patches are installed. Linux endpoints restart only when installing patches that require restart, such as Linux kernel updates.

9. (Windows endpoints only) Review the **User Notifications** section and click Edit to make changes as needed.



Note: For endpoints with multiple users, notifications appear for the user with the lowest active session ID. For example, when two users are logged in at the same time, User1 gets the notification but User2 does not. If User1 logs off and User3 logs in, User2 gets the notification because User2 now has the lowest active session ID.

- To warn users before a change is made to endpoints, enable **Notify user before deployment activity** and then edit the associated Notification Options.
  - **Duration of Notification Period**: Configure the amount of time before the notification must be accepted. The deadline is calculated by adding this

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value to the time that the notification is first displayed. If a user is signed in but the screen is locked, the deadline is still set as if the notification was displayed. If a user is signed in to a Windows remote desktop session but is not currently connected, the deadline is still set as if the notification was displayed. The notification is then displayed if the user reconnects.

> **Best Practice:** Ensure that the **Duration of Notification Period** value is less than a few days. To decrease the endpoints missing critical or important patches metric, the optimal value for this setting depends on your patching cycle. For best results, set the **Duration of Notification Period** value to less than three days.

- **Allow user to postpone**: Give the user an option to defer accepting the notification for a specified amount of time. A user cannot postpone beyond the deadline.
  Then specify the amount of time a user can postpone the notification. The total amount of time specified must be less than the **Duration of Notification Period** value. Note that this is only the amount of time to defer the notification from being displayed again and does not affect when the countdown to deadline appears.

- **Allow user to minimize**: Display the notification with a title bar that includes the minimize option.

- **Do not allow user to minimize** Display the notification without a title bar. **Do not allow user to minimize** is the default.

- **Final Countdown to Deadline**: Configure the amount of time for users to accept the notification. The notification also shows a countdown until users must accept. If users dismiss the notification and a restart is required, the notification will reappear in the last minute of the final countdown to deadline before the computer restarts.

- **Message Content**: Provide the title and body of the notification message. Optionally, upload icon and body images for branding to avoid confusing users and to limit support calls.

- **Add Language**: Select additional languages and provide the translated title and body text for endpoints that are configured for other languages. To

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preview the additional languages, toggle the language dropdown list in the preview. You can also use the dropdown list to preview the notification in light or dark theme.

- **Show Countdown**: Display a visual indicator of the remaining time before the deadline.

- If you enabled endpoint restarts and want to warn users about the restart, enable **Notify user after deployment activity** and edit the associated Notification Options. For more information about restarts, see Endpoint restarts on page 166.

10. (Optional) To create a new template based on this deployment, click **Save Settings as New Template**, specify a name for the template, and then click **Save**. For more information, see Create a deployment template on page 155.
11. Click **Preview to Continue**.
12. Review the deployment details for the applicable patches, and then click **Deploy**.

Result

To change the number of retries for each phase of a deployment, see Adjust the deployment retries on page 169.

Endpoint restarts

Patch can trigger a restart of any system after updates have been installed. You can choose between the following options for the restart:

- (Windows and Linux endpoints) Restart silently and immediately after deployment. This option is typically used for servers and production machines in conjunction with maintenance windows and change control processes.
- (Windows endpoints) Create a post-deployment notification to notify the system user about the pending restart and give the system user the option to hide the notification for a specified amount of time.

Tip: End-user notifications can be added to existing deployments by stopping, reconfiguring, and reissuing the deployment.

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Important: If your deployment is configured for a notification, but the endpoint does NOT have the End User Notifications Tools installed, the endpoint installs the updates, but does NOT restart. A status message is displayed in the Patch workbench about the missing tools.

Note: If no user is logged into an endpoint, the endpoint restarts immediately after a deployment completion even if the deployment is configured for a notification.

Create a deployment to install patches on a single endpoint

About this task

You can quickly create a deployment to install patches on a single endpoint through the Endpoint Details page in Tanium Reporting. To create a deployment, you must have the **Patch Deployment write** permission.

Note: You can also install a patch on a single endpoint by following the steps in Create a deployment to install patches on page 159.

1. Open the Endpoint Details page for the endpoint that requires a deployment. See Tanium Reporting User Guide: View endpoint details.
2. Select the **Endpoint Management** tab.
3. In the **OS Patch Applicability** section, select up to 50 patches, click **Install**, and complete the deployment.

Windows: Create a deployment to uninstall patches

You can uninstall patches that appear in scan results; however, operating system limitations prevent some patches from being uninstalled.

1. From the Main menu, go to **Modules** > **Patch > Deployments** and then click **Create Deployment** > **Create Uninstall Deployment**.
2. The settings to uninstall are similar to the options to install on page 159. The only difference

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is that to uninstall a patch, you need to **Add Patches Manually**. You cannot add a patch list.

3. After you complete all the fields, click **Save**.

Add targets to an existing deployment

About this task

You can add more targets to a deployment. For example, you can limit patch testing to a select computer group and then roll it out to more groups after it has been validated. All other deployment options remain the same and deployment results from the previous installation deployments are preserved.

> **Note:** This procedure does not apply to ring deployments. A ring deployment's targets are governed by its assigned deployment plan, which determines the endpoints targeted in each ring as the deployment progresses. Because of this, the **Edit** button is disabled for ring deployments; ring deployments can only be stopped. To change the targets or deployment plan for a ring deployment, stop the deployment and create a new one.

1. From the Main menu, go to **Modules** > **Patch > Deployments**.
2. Click the deployment name and then click **Edit**.
3. In the **Endpoints to target** section, click **Computer Groups**, **Question Criteria**, or **Computer Names**.

   > **Important:** You cannot remove targets from active deployments. To remove a target from a deployment, you must stop the deployment and create a new deployment without that target.

4. Click **Preview to Continue**.
5. Review the deployment details, and then click **Deploy**.

Stop a deployment

About this task

You can stop a patch deployment. Stopping changes the deployment end time to now. It does not

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remove patches that have already completed installation.

1. From the Main menu, go to **Modules** > **Patch > Deployments**.
2. Click the deployment name and then click **Stop**.
3. Go to the **Inactive** tab and click the deployment name to verify the status.

Reissue a deployment

About this task

You can restart a stopped deployment or reissue a one-time deployment. Reissuing a deployment creates a new deployment with the same configuration and targets.

1. From the Main menu, go to **Modules** > **Patch > Deployments** and then click **Inactive**.
2. Click the deployment name and then click **Reissue**.
3. (Optional) Make any necessary changes.
4. Click **Preview to Continue**.
5. Review the deployment details, and then click **Deploy**.

Delete old inactive deployments

About this task

You can delete stopped or ended deployments that are older than a specified interval to help improve the performance of the Patch workbench.

1. From the Main menu, go to **Modules** > **Patch > Overview**, click Settings and then click **Configuration Settings** if needed.
2. In the **Inactive Deployment Removal Settings** section, select **Enable Inactive Deployments Removal**.
3. In the **Inactive Deployment Removal Frequency** field, enter the number of days and then click **Save**. The minimum is 30 days. The maximum and default is 180 days.

Adjust the deployment retries

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About this task

You can change how many times Patch attempts a deployment status within a specified time period. For example, with the default of five retries and 24 hours, Patch tries to download patches five times before stopping for 24 hours. Patch then tries again five times in the next 24 hours, as long as there is an active or ongoing deployment and an active maintenance window.

Note: When you adjust the **Deployment Retry Settings**, Patch applies the new values to new deployments. To apply the new values to an existing deployment, re-create the deployment.

1. From the Main menu, go to **Modules** > **Patch > Overview**, click Settings and then click **Configuration Settings** if needed.
2. In the **Deployment Retry Settings** section, select the number of retries from the **Retry Limit** dropdown list.
3. In the **Reset Frequency** field, type in the number of hours and then click **Save**.

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Automatically deploying patches

Note: Patch automatic deployment configuration is supported for Windows endpoints only.

Important: If you enabled configuration approvals, automatic deployments are not supported. To use automatic deployments, you need to disable approvals. For more information, see Tanium Endpoint Configuration User Guide: Managing approvals.

A patch automatic deployment configuration defines the patch criteria (rules), patching cadence (schedule), and endpoint targets for a recurring patch deployment. Instead of manually creating individual deployments every time a new patch becomes available, you can configure a patch automatic deployment configuration. Patch evaluates the configuration on a recurring basis and creates new deployments automatically per the user-defined schedule.

For example, you can create an automation to deploy patches that have a severity level of **Important** to Windows endpoints every Sunday.

Overview

A patch automatic deployment configuration consists of the following items:

- **Targeting criteria**: The endpoints to patch.
- **Patching cadence**: The recurrence pattern that controls when to automatically create a deployment.
- **Patching criteria**: The rules that define the patches to consider for deployment.
- **Deployment plan**: The strategy for how the deployment progresses through rings.
- **Notification settings**: The notification messages to send to endpoints.

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Tip: Create multiple configurations when you want to specify different general deployment settings, target different endpoints, or use different ring deployment plans.

How patch automation works

When you first create a patch automatic deployment configuration, the system automatically creates a patch list with the same name and the first automatic deployment.

Patch lists

A patch list defines which patches are eligible for deployment. The patch criteria determine which patches to include in that patch list. Over time, new patch list versions are created as additional patches become available that match the criteria.

Automatic deployments

The first automatic deployment deploys the initial patch list. On each subsequent recurrence, if there are changes to the patches on the patch list since the last deployment, then Tanium Patch creates a new deployment.

Each deployment contains a specific version of the patch list to ensure that the set of patches remains consistent as the deployment progresses through the rings of a deployment plan. Only endpoints that are included in both the patch automatic deployment configuration and in the deployment plan receive the deployment.

Before you begin

- Create a ring deployment plan. For more information, see Tanium Console User Guide: Create a deployment plan.

  Note: To limit the chance of a user deleting a ring deployment plan, assign the ring deployment plan to a content set with limited access.

- Review the timing factors and maintenance window considerations for ring deployments. For more information, see Tanium Console User Guide: Deployment timing factors and

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maintenance windows.

- Ensure that endpoints have Endpoint Toolset version 2.32, which is required for automatic deployments. To identify endpoints that need a toolset update, see Verify endpoint tools on page 213.

- Ensure that you have the **Patch Automatic Deployment Configuration Operator** role.

Create a patch automatic deployment configuration

About this task

Create a configuration that automatically creates a patch deployment when the patching criteria are met.

1. From the Main menu, go to **Modules** > **Patch** > **Deployment Automation** > **Automatic Deployment Configurations** and click **Create Automatic Deployment Configuration**.
2. Complete the **Deployment Parameters** section.
    - **Name**: Enter a unique name for the configuration.
    - **Content Set**: Select the content set to which this configuration is available. Deployments created from this automatic deployment configuration use this content set.
    - (Optional) **Deployment Template**: Select a template to apply the settings defined in the template.
3. In the **Targets** section, select any of the following targeting methods and complete the fields as needed.
    - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator. You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

    - **Question Criteria**: Add Tanium question filters as a target. If you add multiple questions, the questions are joined by an OR operator. You must also click **Set Limiting Group** to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.

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Important:

When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:

```
(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)
```

Consider the following example:

- Computer Group = All Laptops
- Question = Tanium Client IP Address starts with 192.168.1
- Limiting Group = All Windows 10, All Windows 11

With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

Tip:

To target specific computer names, use the following filter builder and separate names by using the pipe (|) character. Tanium recommends targeting fewer than 100 computer names.

```
Computer Name matches "^(computername1|computername2)$"
```

Computer names must be a fully qualified domain name that exactly matches the name registered with Tanium.

4. Review the **Advanced Deployment Options** section and make changes as needed.
   - **Download all package files immediately**: Download the patch content as soon as it is available and ignore maintenance windows.
   - **Override Maintenance Windows**: Allow deployments to run outside of maintenance windows. This setting is visible only if you have the **Patch Deployment Override Maintenance Window Write** permission.
   - **Override Block Lists**: Include patches that are blocked. This setting is visible only if you have the **Patch Deployment Override Block Lists Write** permission.

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- **Restart after Operation**: Restart the endpoint automatically after deployment completes.
- **Hide from Self Service Client**: Hide this deployment from the Self Service Client application, including the **Activity** and **History** sections.
- **Make Available before Start Time**: Allow the end user to start this deployment in the Self Service Client application before the scheduled date and outside of maintenance windows.

5. In the **Patching Cadence** section, define the recurrence settings.
   - **Recur**: Define the recurrence interval.
   - **Deployment Time Zone**: Select a time zone to use for the deployment schedule. The auto-deployment is scheduled for around midnight (00:00) on the day of recurrence.

     For example, recur every **1** week, on **Tuesday**, following **UTC-4** means an auto-deployment is scheduled to be created every Tuesday around midnight ET. The exact time depends on a job that runs approximately once every hour to create the deployment.
   - **Enable Distribute Over Time**: Randomize the deployment start time on each endpoint by an amount of time up to the value that you configure. This option reduces network bandwidth and concurrent consumption of shared compute resources in a virtual environment.

     > **Note:** Specify a **Distribute Over Time** value that is at least two hours less than the length of any maintenance windows. If the value exceeds maintenance windows, some endpoints will not be able to run the deployment or will deploy the patches outside of the maintenance window.

6. In the **Deployment Plan** field, select the ring deployment plan to use for all deployments created from this automatic deployment configuration. Review the deployment plan type, number of rings, and progression criteria. For more details, click **Plan Details**.
   The **Patching Cadence** specifies when a deployment starts in ring 1. The ring deployment plan specifies how the deployment progresses through the subsequent rings. Endpoints must be targeted in both the automatic deployment configuration and the ring deployment plan to be included in a deployment. For more information, including how Patch actions work with ring criteria, see Tanium Console User Guide: Managing deployment plans and Tanium Console User Guide: Ring-based deployment.

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7. In the **User Notification** section, add messages to display to users on the endpoint. Post-notifications appear after the deployment completes.

8. In the **Patch Criteria** section, define the rules that determine which patches this configuration deploys.
    a. Click **Add Rule** and enter a name for the rule.
    b. Add one or more conditions. Conditions define the attributes that a patch must match to be included.
    c. To target additional sets of patches, click **Add Rule** and add conditions. The configuration deploys patches that match any one of the defined rules.

9. (Optional) To trigger exception-based deployments outside of the regular cadence, click **Enable Override** in the **Patching Schedule Override** section.
    a. In the **Override Criteria** field, define the rules that trigger an override.
    b. For **When Override Criteria is met**, select an action and configure the schedule.

Action	Schedule option	Description
Notify only	**Notify immediately**	Sends an **Override Available** notification to the **Needs Attention** tab immediately when the override criteria are met. A user must manually deploy the patches.
	Notify following schedule	Sends the notification on a defined schedule. Use this option to reduce notification frequency.
Trigger deployment	**Deploy immediately**	Automatically creates a deployment immediately when the override criteria are met, without sending a notification.
	Deploy following schedule	Automatically creates a deployment on a defined schedule when the override criteria are met.

    c. For **Schedule Content**, select which patches to include in the override deployment.
        - **Deploy all available patches**: Include all available patches from the patch list.
        - **Deploy only patches that triggered the override**: Deploy only the patches that match the override criteria.

    d. In the **Deployment Plan** field, select the ring deployment plan to use for

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deployments created from this override.

e. In the **Deployment Limit** field, enter the maximum number of deployments this configuration can create due to the override criteria. If the limit is reached, Patch does not create additional deployments until an existing active deployment completes, is stopped, or is superseded.

10. Click **Save**.

Results

After you create the automatic deployment configuration, Patch creates the initial deployment within an hour. Then, at each scheduled interval, Patch creates new auto-deployments if there are new or updated patches that meet the criteria.

Review all automatic deployment configuration activity

You can review the status and other details of deployments created from automatic deployment configurations for at least the last 30 days. If necessary, refresh the page to see the latest status.

> **Note:** You can also review an automatic deployment on the **Deployments** page. On the **Deployments** page, automatic deployments are prepended with **Auto Deployment - <ADC_Name>**, or for overrides, **Auto Deployment - Override - <ADC_Name>**. For more information, see Manually deploying patches on page 154.

1. From the Main menu, go to **Modules** > **Patch** > **Deployment Automation** > **Activity**.
2. In the **All Activity** table, view the deployments.
3. To filter the rows based on configuration type or status, click the corresponding toggle. The table contains the following columns.
    - **Name**: The name of the deployment.
        - For active deployments, the name uses the pattern `Auto Deployment - <configuration_name> - <active_deployment_date>`.
        - For pending deployments, the name shows `Scheduled Auto`

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`Deployment - <configuration_name> - Pending`.

- **Configuration**: The patch automatic deployment configuration that triggered the deployment.
- **Patches**: The number of patches in the deployment.
- **Type**: The method by which the deployment was created.
    - **Normal cadence** means the deployment was created from the regular patching schedule.
    - **Schedule Override** means the deployment was created because the override criteria was met.
- **Status**: The status of the deployment.
    - **Active**: The deployment is progressing through the rings of the deployment plan.
    - **Completed**: The deployment has successfully progressed through all the rings of the deployment plan.
    - **Pending**: The deployment is waiting for the next patching cadence to arrive.
    - **Stopped**: The deployment was manually stopped.
    - **Superseded**: The deployment was replaced by a newer deployment with newer patches for the same targets.
- **Action**: For active deployments, you can manually stop the deployment. For pending deployments, you can manually start the deployment.

4. To review an active deployment, click the deployment name. For more information, see Manually deploying patches on page 154.
5. To review a pending deployment, expand the row to see the scheduled deployment date, the deployment plan, and the patches included.
6. To review the configuration that created the deployment, click the configuration name in the **Configuration** column.

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Review automatic deployments that need attention

The Patch workbench provides notifications in the **Needs Attention** tab for automatic deployment configurations that need review.

1. From the Main menu, go to **Modules** > **Patch** > **Deployment Automation**.
2. Select the **Needs Attention** tab.
3. Review the issues and take action as needed.
    - **Override Available**: One or more patches meet the override criteria, and the automatic deployment configuration was configured to **Notify Only**. To deploy the patches, click **Deploy Now** in the **Actions** column.
    - **No Deployment Plan**: The automatic deployment configuration does not currently have a valid ring-based deployment plan associated with it. The previously assigned deployment plan was deleted. Assign a new deployment plan to the automatic deployment configuration.
    - **Ring Deployment Issue**: The deployment cannot progress to the next ring because the ring progression criteria have not been met. Review the ring deployment to assess the deployment plan status. Manually start the deployment in the next ring if desired.

Skip the wait interval during deployment

About this task

In a deployment plan, the Wait interval is a required setting for each ring except for the last ring. You can skip a wait interval that is pending or in progress in one or more rings during deployment. Skipping the wait is useful if the deployment resolves an urgent incident for which speed is a higher priority than providing Tanium Clients more time to measure the impacts. If you skip the wait, the Ring progression criteria evaluation starts. You can revert to applying the wait for a ring as long as the progression criteria evaluation has not started.

1. From the Main menu, go to **Modules** > **Patch** > **Deployments** and click the **Name** of a deployment that includes a deployment plan.

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2. Go to the **Deployment Plan** section, select the ring where you want to skip the wait, and perform one of the following steps based on the **Wait <interval>** state.
    - If the wait is **Pending**. select **Skip** in the **Progression Status** section. As long as the wait is still pending, you can revert to applying the wait by clearing **Skip**.
    - If the wait is **In progress**, click **Skip the Wait** in the message banner, review the information about the wait interval, and click **Skip the Wait** again.

Result

For auditing purposes, the **Wait <interval>** field on the Deployment Details page records the event with the message: Skipped by <user name> on <date> at <time>.

Edit a patch automatic deployment configuration

About this task

Edit configurations to change settings, such as patching cadence or patch criteria.

1. From the Main menu, go to **Modules** > **Patch** > **Deployment Automation** > **Automatic Deployment Configurations**.
2. For the automatic deployment configuration that you want to modify, click **Edit**.
3. Update the settings and then click **Save**.

Pause or resume a patch automatic deployment configuration

About this task

Pause a configuration to temporarily stop Tanium Patch from automatically creating deployments. Pausing does not stop **Active** deployments but does stop **Pending** auto deployments from starting.

When you resume a configuration, **Pending** auto deployments continue as scheduled. If the original pending deployment scheduled date has passed, the deployment starts at the next hourly job that evaluates configurations.

1. From the Main menu, go to **Modules** > **Patch** > **Deployment Automation** > **Automatic Deployment Configurations**.
2. For the automatic deployment configuration that you want to pause, click **Pause**. The

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automatic deployment configuration is no longer evaluated.

3. To resume a paused configuration, click **Resume**.

Delete a patch automatic deployment configuration

About this task

Delete a configuration to permanently remove the configuration and stop all future automated deployments. Existing deployments (Active or Pending) are not affected.

1. From the Main menu, go to **Modules** > **Patch** > **Deployment Automation** > **Automatic Deployment Configurations**.
2. For the automatic deployment configuration that you want to delete, click **Delete**.

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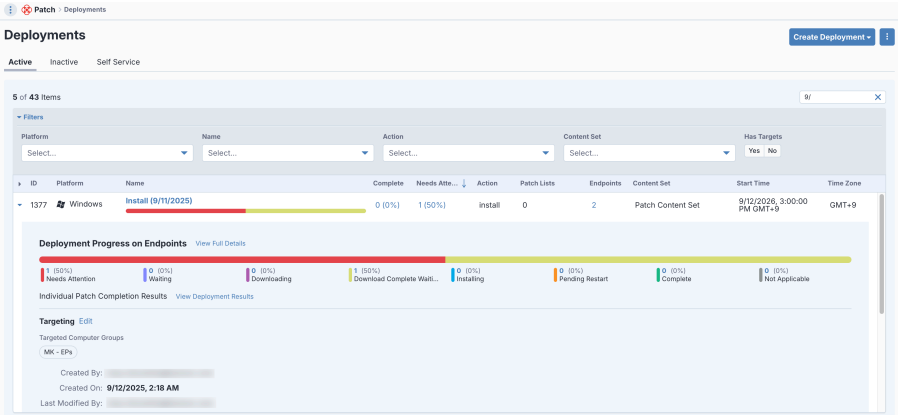
Reviewing deployments

About this task

You can get the deployment results by status, any error messages, and the deployment configuration details.

Deployments created from automatic deployment configurations are prepended with **Auto Deployment - <configuration_name>** or **Auto Deployment - Override - <configuration_name>**. For more information, see Automatically deploying patches on page 171.

1. From the Main menu, go to **Modules** > **Patch > Deployments**.
2. Select the **Active**, **Inactive**, or **Self Service** tab.
   Expand the sections to see summary information about the deployment, such as targeted groups and schedule.



3. Click the deployment name. The **Status** section shows the status and substatus, links to deployment results, OS, online endpoints, information about the last time the status or initialization was updated, and any error messages.
   - Active deployments show the current **Deployment Progress on Endpoints**. For more information, see Reference: Patch status on page 236.
   - Inactive deployments show the **Final Deployment Status on Endpoints**. When a deployment becomes inactive, all deployment activity stops and the Status section shows the last reported status at that time. If you see endpoints under an in-progress status, such as **Waiting**, **Downloading**, or **Installing**, the deployment is not in progress.

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4. In the Deployment Details area, expand the section you want to see, or click **Expand All** to expand all sections.
    - **Content to deploy** provides all the configuration information, including installation details, execution information, installation workflow and notifications, patch lists, patches, and confidence score.
    - **Endpoints to target** lists the targeted endpoints for the deployment, including the readiness scores. For more information, see Endpoint readiness score on page 19.

      Note: The readiness score is created from cached data in Tanium Data Service (TDS).
        - If you use the **Question Criteria** filter, ensure that you use registered sensors in the question to get accurate readiness scores for targeted endpoints. For more information, see Tanium Interact User Guide: Register or unregister sensors for collection.
        - If you use **Computer Names**, Patch calculates readiness scores from endpoints in the selected limiting group.
    - **Deployment type and schedule** shows the deployment frequency, time zone, and schedule.
    - **User notifications** has the information about any end-user notifications associated with the deployment.

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Setting maintenance windows

About this task

Maintenance windows control when Windows and Linux patches can be applied to endpoints. A maintenance window is separate from the deployment start and end time.

> **Best Practice:** Ensure that maintenance windows are at least four hours long for Windows endpoints, repeat at least once each month, and properly overlap with deployment times and change control process timelines.

An endpoint without a maintenance window can receive and start patch deployments at any time. Therefore, you might unintentionally install patches on endpoints that you don't want patched. To prevent an endpoint from being patched accidentally, target the endpoint with a maintenance window. After targeting an endpoint, that endpoint does not install patches or restart to complete patch installation unless it is currently in an open maintenance window, or the deployment has the **Override Maintenance Windows** option configured in the deployment settings.

For your convenience, Tanium Patch includes a built-in **Blocking Maintenance Window**. A blocking maintenance window has no recurrence pattern and no future occurrences, so the window is never open. You can target endpoints with this blocking maintenance window to prevent deployments from running on them.

Create a maintenance window

About this task

You can open multiple maintenance windows to customize when patches can be applied to your endpoints. For example, you can create windows that allow deployments to install patches during periods of low network activity or outside of core working hours.

1. From the Main menu, go to **Modules** > **Patch > Maintenance Windows** and then click **Create Window**.
2. Set the windows details: **Name**, **Description**, **Operating System**, and Content set.

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3. Configure the window options.
    - (Optional) **Recurrence**: Select a recurrence time frame. If you chose a repeating window, set additional options, such as **Frequency**, **Days of the week**, or **Day of the month**. The additional options appear dynamically based on your Recurrence selection.
    - **Window Time**: Choose from endpoint local time or time zone.
        - **Endpoint Local Time**: Maintenance window follows the endpoint local time.
        - **Time Zone**: Maintenance window follows the selected time zone or UTC offset.
        - **Observe Daylight Saving Time**: When enabled, maintenance window adjusts accordingly when clocks change due to Daylight Saving Time.

        > **Note:** If **Observe Daylight Saving Time** is not selected or is not visible, start and end times are based on the UTC offset bias of the **Effective Date**. For example, assume you set an **Effective Date** as October 1 (which is during DST) and set the time zone to America/Los Angeles. At this time, the UTC offset is –7:00. Therefore, the maintenance window always follows UTC-7:00.

    - **Effective Date and Start Time**: Use the date and time pickers to set the maintenance window start time.

        > **Important:** If you are using the **Monthly, Day of the week** frequency, select a start date that is at least one day in the future. A **Monthly, Day of the week** maintenance window cannot be enforced on the same day that it is created because some endpoints may have already passed the start time. Review the **Next 5 Instances** before continuing.

        > **Note:** Repeating maintenance windows do not have an end date. You must remove the enforcement against the target computer groups to stop the maintenance window.

    - **End Time**: (Non-repeating windows) Use the date and time pickers to set the window

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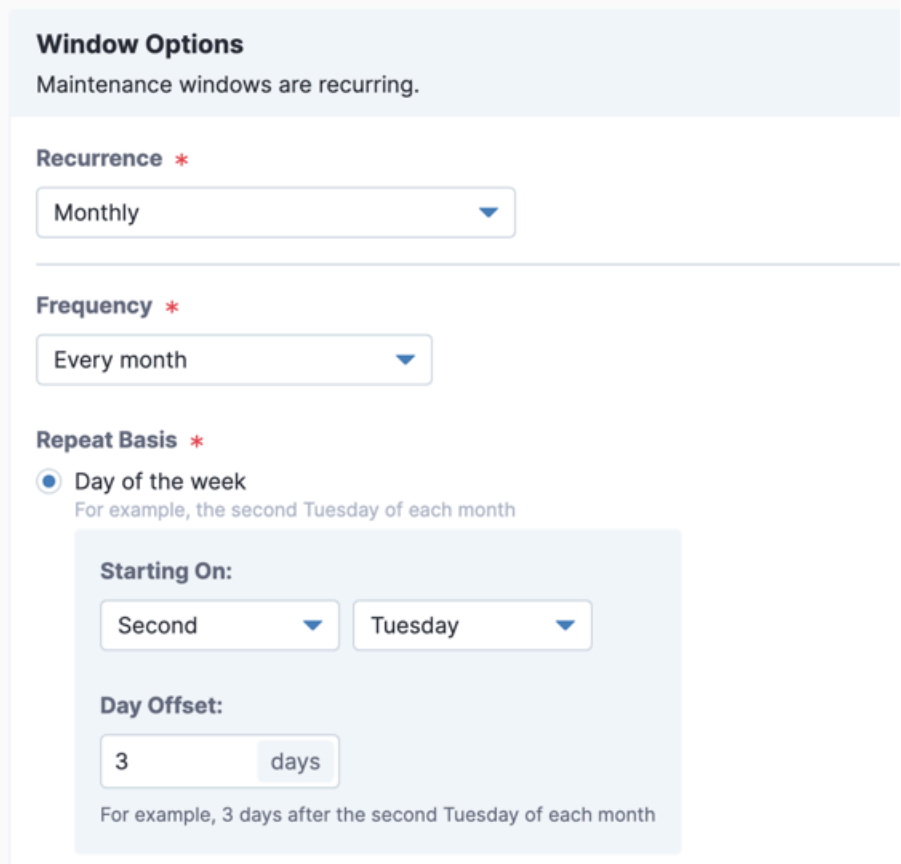
end time.

- **Duration**: (Repeating windows) Set the duration of the window.

For example, to account for Patch Tuesday, you could use these settings for three days after patch updates are typically released by Microsoft.



4. Click **Create Window**. Review any informational messages that appear and perform any updates that are necessary to the maintenance window. Click **Create Window**.
5. In the **Targeting** section, click **Edit Targeting** and then add targets. Select either or both of the following targeting methods and complete the fields.
   - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator.

     > **Note:** You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

   - **Question Criteria**: Add Tanium question filters as a target. If you add multiple

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questions, the questions are joined by an OR operator. You must also click **Set Limiting Group** to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.



Important:

When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:

`(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)`

Consider the following example:

- **Computer Group** = `All Laptops`
- **Question** = `Tanium Client IP Address starts with 192.168.1`
- **Limiting Group** = `All Windows 10, All Windows 11`

With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

6. Click **Apply** to save the targeting settings.

Maintenance window options

If you want . . .	After the date and time, select . . .
A one-time window	**Recurrence** : `Does Not Repeat`
A window that repeats every few days For example, every 3 days	**Recurrence** : `Daily` **Frequency** : The number of days between windows
A window that repeats on the same days of the week For example, every Saturday and Sunday	**Recurrence** : `Weekly` **Frequency** : The number of weeks between windows

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If you want . . .	After the date and time, select . . .
	Days of the Week to Repeat On : The days of the week
A window that repeats on the same date each month For example, every 10th day of the month	**Recurrence** : `Monthly` **Frequency** : The number of months between windows **Day of the Month** : The date of the month (such as 10th)
A window that repeats on the same day of the week each month For example, every second Tuesday of each month	**Recurrence** : `Monthly` **Frequency** : `Every month` **Day of the Week** : The day of the week **Starting On** : The week number and day (such as `Second` and `Tuesday`) **Day Offset** : 0
A window that repeats on the same day of the week every < # > months For example, every second Tuesday every 3 months	**Recurrence** : `Monthly` **Frequency** : The number of months between windows **Day of the Week** : The actual day of the week is determined by day selected in the **Effective Date** field
A window that repeats on the same date of the month, every < # > months For example, every 10th day every 3 months	**Recurrence** : `Monthly` **Frequency** : The number of months between windows **Day of the Month** : The actual date of the month is determined by date selected in the **Effective Date** field
A window that repeats relative to a specified day each month For example, three days after the second Tuesday of each month	**Recurrence** : `Monthly` **Frequency** : `Every month` **Day of the Week** : The day of the week **Starting On** : The week number and day (such as `Second` and `Tuesday`) **Day Offset** : The number of days (± 25) from the specified **Starting On** day **Note:** You can only set relative maintenance windows (**Day Offset**) when the frequency is set to `Every month`.
A window that repeats on the same date every year	**Recurrence** : `Yearly` **Effective Date** : The date of the year

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Edit a maintenance window

1. From the Main menu, go to **Modules** > **Patch > Maintenance Windows**.
2. Click the name of a window and click **Edit**.
3. Make your changes and click **Update Window**.

Override a maintenance window

About this task

You can apply a patch outside of a maintenance window by configuring the **Override Maintenance Windows** option during a patch deployment. For more information, see Manually deploying patches on page 154. Note that if you also choose to restart the endpoint in the deployment options, the endpoint restarts immediately after the patch is installed.

Delete a maintenance window

About this task

After the enforcements have been removed, you can delete a maintenance window.

1. From the Main menu, go to **Modules** > **Patch > Maintenance Windows**.
2. Click the name of a window.
3. If the window is enforced against computer groups, remove all groups.
4. Click Delete .

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Managing End-User Self Service for Windows endpoints

About this task

With the Self Service Client application, you can publish patches to Windows endpoints so that users can start a patch deployment early or completely control when patches are installed. For example, you might deploy the Self Service Client application to a manufacturing endpoint that can be patched only between manufacturing runs or an endpoint in an operating room that must be patched between surgeries. To use the Self Service Client application on your Windows endpoints, you must create a self service deployment in Patch version 3.12 or later.

Before you begin

Create an End-User Notifications configuration that enables End-User Self Service and specifies other options, such as logo, title, greeting text, additional language support, and shortcut options. For more information, see End-User Notifications User Guide: Customizing the End-User Self Service interface.

Create a Self Service deployment to install patches

About this task

To create a Self Service deployment for Windows endpoints, you need to select the **Self Service** option in the **Deployment Type** setting.

1. From the Main menu, go to **Modules** > **Patch > Deployments** and click **Create Deployment** > **Create Install Deployment**.
2. In the **Deployment Overview** section, accept the default name or provide a name for the deployment, add an optional description, select an operating system, and select a content set.
   For more information, see Tanium Console User Guide: Managing content sets.
3. In the **Deployment Details** section, add one or more patch lists, including version, or add

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patches manually.

4. In the **Endpoints to target** section, add targeting criteria for endpoints.
   Select the following targeting methods and complete the fields as needed:

   - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator.

     > **Note:** You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

   - **Question Criteria**: Add Tanium question filters as a target. If you add multiple questions, the questions are joined by an OR operator. You must also click **Set Limiting Group** to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.

   > **Important:**
   > When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:
   >
   > `(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)`
   >
   > Consider the following example:
   >
   > - **Computer Group** = `All Laptops`
   > - **Question** = `Tanium Client IP Address starts with 192.168.1`
   > - **Limiting Group** = `All Windows 10, All Windows 11`
   >
   > With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

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Tip: To target specific computer names, use the following filter builder and separate names by using the pipe (|) character. It is recommended to target fewer than 100 computer names.

```
Computer Name matches "^(computername1|computername2)$"
```

Computer names must be a fully qualified domain name that exactly matches the name registered with Tanium.

5. Review the readiness score for your endpoints.
   Click the score to drill down into Interact. For more information, see Endpoint readiness score on page 19.

   Note: The readiness score is created from cached data in Tanium Data Service (TDS).
   - If you use the **Question Criteria** filter, ensure that you use registered sensors in the question to get accurate readiness scores for targeted endpoints. For more information, see Tanium Interact User Guide: Register or unregister sensors for collection.
   - If you use **Computer Names**, Patch calculates readiness scores from endpoints in the selected limiting group.

6. In the **Deployment Type and Schedule** section, click Edit.
7. In the **Deployment Type** menu, select **Self Service**.
8. Review the **Deployment Settings** section and edit as needed.
   - **Download all package files immediately**: When selected, endpoints start downloading files before the deployment start time and ignores maintenance windows. When cleared, endpoints start downloading files when the deployment start time has passed and a maintenance window is open.
   - **Override Block Lists**: Ignore block lists and include patches that are blocked.

     This setting is visible only if you have the required **Patch Deployment Override Block List Write** permission.
   - **Restart**: Select whether to restart the endpoint after deployment completes.

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9. If you enabled endpoint restarts and want to warn users about the restart, enable **Notify user after deployment** and edit the associated **Post-Deployment Notifications** settings. For more information about restarts, see Endpoint restarts on page 166.
    - **Duration of Notification Period**: Configure the amount of time before the notification must be accepted. The deadline is calculated by adding this value to the time that the notification is first displayed. If a user is signed in but the screen is locked, the deadline is still set as if the notification was displayed. If a user is signed in to a Windows remote desktop session but is not currently connected, the deadline is still set as if the notification was displayed. The notification is then displayed if the user reconnects.

      

      Best Practice: Ensure that the **Duration of Notification Period** value is less than a few days. To decrease the endpoints missing critical or important patches metric, the optimal value for this setting depends on your patching cycle. For best results, set the **Duration of Notification Period** value to less than three days.
    - **Allow user to postpone**: Give the user an option to defer accepting the notification for a specified amount of time. A user cannot postpone beyond the deadline. Then specify the amount of time a user can postpone the notification. The total amount of time specified must be less than the **Duration of Notification Period** value. Note that this is only the amount of time to defer the notification from being displayed again and does not affect when the countdown to deadline appears.
    - **Allow user to minimize**: Display the notification with a title bar that includes the minimize option.
    - **Do not allow user to minimize** Display the notification without a title bar. **Do not allow user to minimize** is the default.
    - **Final Countdown to Deadline**: Configure the amount of time for users to accept the notification. The notification also shows a countdown until users must accept. If users dismiss the notification and a restart is required, the notification will reappear in the last minute of the final countdown to deadline before the computer restarts.
    - **Message Content**: Provide the title and body of the notification message. Optionally, upload icon and body images for branding to avoid confusing users and to limit support calls.
    - **Add Language**: Select additional languages and provide the translated title and

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body text for endpoints that are configured for other languages. To preview the additional languages, toggle the language dropdown list in the preview. You can also use the dropdown list to preview the notification in light or dark theme.

- **Show Countdown**: Display a visual indicator of the remaining time before the deadline.

10. Click **Preview to Continue**.
11. Review the deployment details, and then click **Deploy**.

Create a Self Service deployment to uninstall patches

1. From the Main menu, go to **Modules** > **Patch > Deployments** and then click **Create Deployment** > **Create Uninstall Deployment**.
2. Review the **Deployment Overview** section and click Edit to make changes as needed. Accept the default name or provide a name for the deployment, add an optional description, select the **Windows** platform, and select a content set. For more information, see Tanium Console User Guide: Managing content sets.
3. In the **Content to deploy** section, expand the **Add Patches Manually** section and add one or more patches. For more information on confidence scores for Windows patches, see Windows patch confidence score on page 18.

   Note: The applicability count in the grid is for endpoints that do not have the patch installed.

4. In the **Endpoints to target** section, add targeting criteria for endpoints.
   Select the following targeting methods and complete the fields as needed:

   - **Computer Groups**: Select computer groups to target. If you make multiple selections, the computer groups are joined by an OR operator.

     Note: You can only target computer groups that are assigned to your user, user group, or persona. For more information, see Tanium Console User Guide: Assign computer groups.

   - **Question Criteria**: Add Tanium question filters as a target. If you add multiple questions, the questions are joined by an OR operator. You must also click **Set**

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Limiting Group to limit the targeting conditions. If you select multiple limiting groups, the limiting groups are joined by an OR operator.

Important:
When you combine both **Computer Group** and **Question Criteria** targets, the following logic is used:

`(Limiting Group A OR Limiting Group B) AND (Computer Group OR Question)`

Consider the following example:

- **Computer Group** = `All Laptops`
- **Question** = `Tanium Client IP Address starts with 192.168.1`
- **Limiting Group** = `All Windows 10, All Windows 11`

With these conditions, the configuration targets All Windows 10 and All Windows 11 devices that are either laptops or have an IP address starting with 192.168.1.

Tip: To target specific computer names, use the following filter builder and separate names by using the pipe (|) character. It is recommended to target fewer than 100 computer names.
`Computer Name matches "^(computername1|computername2)$"`

Computer names must be a fully qualified domain name that exactly matches the name registered with Tanium.

5. Review the readiness score for your endpoints.
   Click the score to drill down into Interact. For more information, see Endpoint readiness score on page 19.

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> **Note:** The readiness score is created from cached data in Tanium Data Service (TDS).
>
> - If you use the **Question Criteria** filter, ensure that you use registered sensors in the question to get accurate readiness scores for targeted endpoints. For more information, see Tanium Interact User Guide: Register or unregister sensors for collection.
> - If you use **Computer Names**, Patch calculates readiness scores from endpoints in the selected limiting group.

6. In the **Deployment Type and Schedule** section, click Edit.
7. In the **Deployment Type** menu, select **Self Service**.
8. Review the **Deployment Settings** section and edit as needed.
   - **Download all package files immediately**: Endpoints download the patch content immediately.
   - **Override Block Lists**: Ignore block lists and include patches that are blocked.

     This setting is visible only if you have the required **Patch Deployment Override Block List Write** permission.
   - **Restart**: Select whether to restart the endpoint after deployment completes.
9. If you enabled endpoint restarts and want to warn users about the restart, enable **Notify user after deployment** and edit the associated **Post-Deployment Notifications** settings. For more information about restarts, see Endpoint restarts on page 166.
   - **Duration of Notification Period**: Configure the amount of time before the notification must be accepted. The deadline is calculated by adding this value to the time that the notification is first displayed. If a user is signed in but the screen is locked, the deadline is still set as if the notification was displayed. If a user is signed in to a Windows remote desktop session but is not currently connected, the deadline is still set as if the notification was displayed. The notification is then displayed if the user reconnects.

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> **Best Practice:** Ensure that the **Duration of Notification Period** value is less than a few days. To decrease the endpoints missing critical or important patches metric, the optimal value for this setting depends on your patching cycle. For best results, set the **Duration of Notification Period** value to less than three days.

- **Allow user to postpone**: Give the user an option to defer accepting the notification for a specified amount of time. A user cannot postpone beyond the deadline. Then specify the amount of time a user can postpone the notification. The total amount of time specified must be less than the **Duration of Notification Period** value. Note that this is only the amount of time to defer the notification from being displayed again and does not affect when the countdown to deadline appears.
- **Allow user to minimize**: Display the notification with a title bar that includes the minimize option.
- **Do not allow user to minimize** Display the notification without a title bar. **Do not allow user to minimize** is the default.
- **Final Countdown to Deadline**: Configure the amount of time for users to accept the notification. The notification also shows a countdown until users must accept. If users dismiss the notification and a restart is required, the notification will reappear in the last minute of the final countdown to deadline before the computer restarts.
- **Message Content**: Provide the title and body of the notification message. Optionally, upload icon and body images for branding to avoid confusing users and to limit support calls.
- **Add Language**: Select additional languages and provide the translated title and body text for endpoints that are configured for other languages. To preview the additional languages, toggle the language dropdown list in the preview. You can also use the dropdown list to preview the notification in light or dark theme.
- **Show Countdown**: Display a visual indicator of the remaining time before the deadline.

10. Click **Preview to Continue**.
11. Review the deployment details, and then click **Deploy**.

Use the Self Service Client application on endpoints

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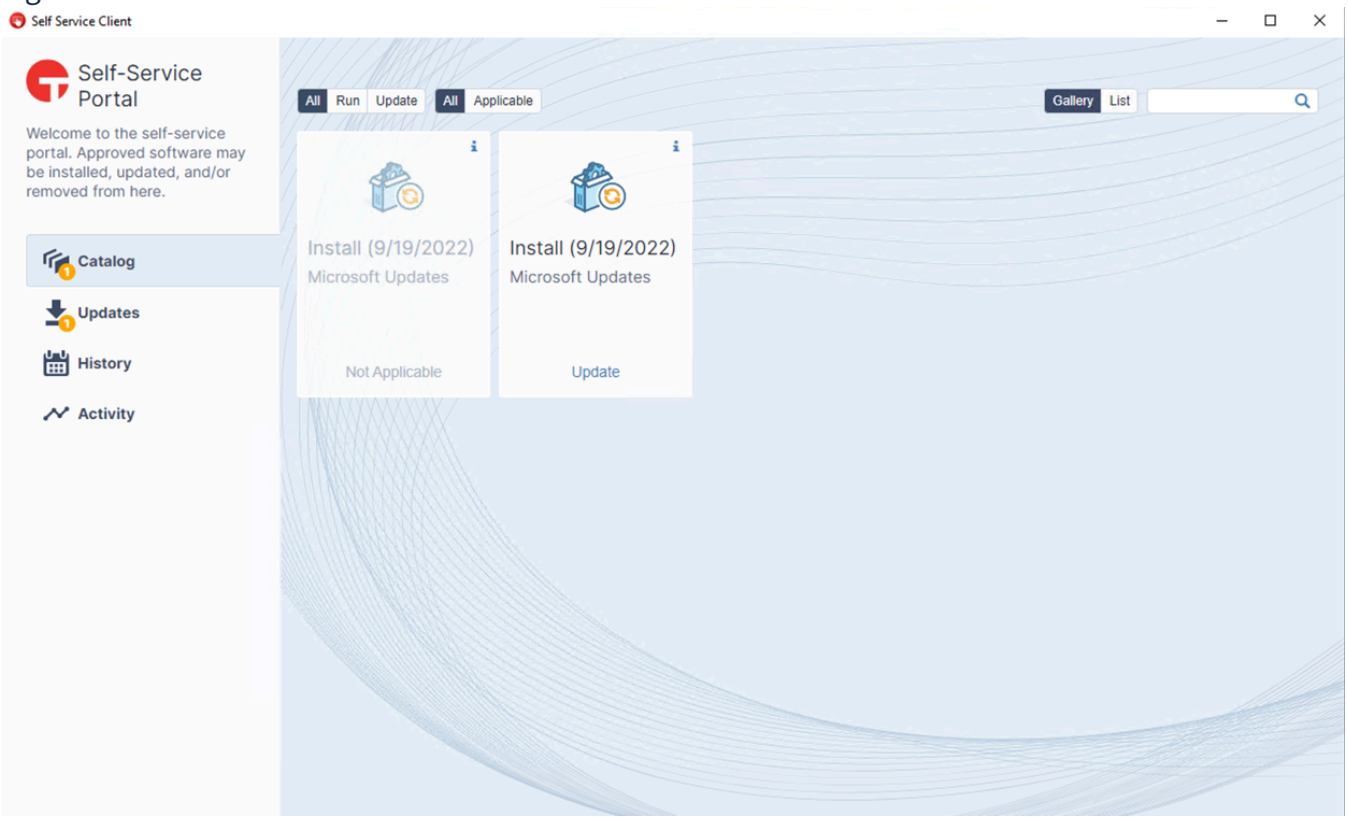
About this task

The Self Service Client application lets users install, update, or remove patches on endpoints.

The Self Service Client application displays only patches that are applicable on an endpoint. For example, if a deployment uses a patch list that includes patches released 30 or more days ago, the Self Service Client application displays patches when they become available.

Figure 5. Self-service client



The Self Service Client application includes the following tabs:

Catalog

On the **Catalog** tab, you can perform the following actions:

- See a list of all available deployments in the catalog. You can filter to show deployments to install, remove, or update, or to show only the deployments available to the endpoint. You can also select a gallery or list view and that view automatically adjusts based on the resolution set on the endpoint.
- See all active deployments, until the install, update, or removal is complete.

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- Select additional languages that you have enabled in the End User Notifications settings. For more information, see Tanium End User Notifications User Guide: Customizing the End-User Self Service interface.
- See additional details about each available deployment. Hover your mouse over the information icon to see the list of patches included in the deployment.

Updates

On the **Updates** tab, you can see updates that are available for installed patches.

History

On the **History** tab, you can see any completed activities that occurred on the system, as well as who initiated the activity. You can filter results by deployment type, as well as by time period.

Activity

On the **Activity** tab, you can see current and upcoming deployment activity. You can also select **Install** to start the deployment before its scheduled start time.

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Maintaining Patch for Windows and Linux endpoints

About this task

Perform regular maintenance tasks to ensure that Patch successfully performs scheduled activities on all the targeted Windows and Linux endpoints and does not overuse endpoint or network resources. If Patch is not performing as expected, you might need to troubleshoot issues or change settings. For more information, see Troubleshooting Patch on page 208 for related procedures.

Perform monthly maintenance

Review Patch coverage, scan configurations, deployments, and maintenance windows. Update the configurations if necessary.

About this task

Review and remediate Patch coverage

1. From the Main menu, go to **Modules** > **Patch** > **Overview**.
2. Go to the **Health** dashboard to verify that the Patch process is running on all endpoints.
3. To investigate endpoints that are not running the process, click the number above **No** or **Error** in the **Running Patch** panel. The Tanium Server issues a question that returns the computer name, operating system, IP address, and Patch process status for the affected endpoints.
4. To investigate Patch coverage issues, click the number above **Needs Attention** in the **Patch Coverage** panel. The Tanium Server issues a question that returns the computer name, operating system, IP address, and Patch coverage status details for the affected endpoints.

   Tip: You can also see this information in the predefined **Patch Coverage Status** report, which is available in the Tanium Reporting workbench.
5. To troubleshoot issues related to the Patch process or coverage, see Tanium Patch User

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Guide: Monitor and troubleshoot Patch coverage.

Review and update scan configurations

1. From the Main menu, go to **Modules** > **Patch > Scan Management**.
2. Review the **Scan Configurations** for each operating system (OS) to verify that they conform to the practices of your organization.
3. Select the **Tanium Scan for Windows** tab and click **Edit**.
4. Review the **Products to Include in Scan**, add any products that you want to include, and click **Submit**.
5. From the Main menu, go to **Modules** > **Patch** > **Overview**.
6. Review the **Days Since Last Patch Scan** and **Scan Errors - Last 7 Days** panels for any errors. Click a panel name to see more details.
7. Troubleshoot scan errors if necessary. For more information, see Tanium Patch User Guide: Troubleshooting Patch.
8. Edit scan configurations if necessary to resolve errors. For more information, see Tanium Patch User Guide: Edit a scan configuration.
9. Delete scan configurations if any are no longer useful. For more information, see Tanium Patch User Guide: Delete a scan configuration.

Review and update deployments

1. From the Patch menu, go to **Deployments**.
2. Review the deployments to determine if any are misconfigured, no longer useful, or do not comply with the practices of your organization.
   For example, if the number of targeted endpoints is low relative to the number of deployments, you might be able to make the patching process more efficient by configuring fewer deployments to target more endpoints.
3. Check the deployment summaries for error messages. For more information, see Tanium Patch User Guide: Review deployment summary.
4. From the Main menu, go to **Modules** > **Trends** > **Boards** and click the **Patch** board.

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5. Review the panels in the **Summary**, **Missing Patches**, and **SLA Based Compliance Reporting** sections for any errors. Click a panel name to see more details.
6. Troubleshoot deployments if necessary. For more information, see Tanium Patch User Guide: Troubleshooting.
7. Add targets to the deployments if necessary to resolve errors. For more information, see Tanium Patch User Guide: Add targets to an existing deployment.

   Note: For an existing deployment, you cannot perform edits other than adding targets.
8. Stop any deployments that are no longer useful. For more information, see Tanium Patch User Guide: Stop a deployment.

Review and update maintenance windows

1. From the Main menu, go to **Modules** > **Patch > Deployments**.
2. Review the maintenance windows to determine if any are misconfigured or no longer useful. For example, maintenance windows that have end dates in the past are useful only as blocking maintenance windows. For more information, see Tanium Patch User Guide: Setting maintenance windows.

   Important: Deployments can run anytime if no maintenance windows are configured. If you imported Patch with default settings, it provides predefined maintenance windows that are not enforced on any computer groups. For more information, see Tanium Patch User Guide: Configuring Patch.
3. From the Main menu, go to **Modules** > **Trends** > **Boards** and click the **Patch** board.
4. If the **Endpoints Missing Critical or Important Patches Released Over 30 Days Ago** panel shows a higher than expected number, check whether maintenance windows are a contributing factor. For more information, see Tanium Patch User Guide: Monitor and troubleshoot mean time to patch.
5. Edit maintenance windows if necessary to resolve issues. For more information, see Tanium Patch User Guide: Edit a maintenance window.
6. Remove any maintenance windows that are no longer useful. For more information, see Tanium Patch User Guide: Delete a maintenance window.

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Patch quarterly maintenance

About this task

If you install Patch with default settings, it includes the **Patch** action group, to which the **Patch Supported Systems** computer group is assigned. If you changed computer group assignments for the **Patch** action group, or if you created custom action groups for Patch, review those action groups and, if necessary, update them. For example, if you discover that the Patch process is not starting on all the necessary endpoints, you might have to change the computer group assignments in the action group that is specified for **Patch - Start Patch Process** actions.

1. From the Main menu, go to **Administration** > **Actions** > **Action Groups**.
2. Use the filters to list only the groups that are for Patch operations. For more information, see Tanium Console User Guide: View action groups.
   For example, if the custom action groups all have the string "Patch" in their names, enter `Patch` in the **Filter items** field.
3. Edit, create, or delete action groups if necessary to ensure Patch targets the correct computer groups. For more information, see Tanium Console User Guide: Managing action groups.

Patch as-needed maintenance

About this task

Review Patch block lists and, if necessary, update them:

1. Go to **Modules** > **Patch** > **Block Lists** and review the block lists.
2. Expand each block list that has one or more **Targets** (computer groups) and verify that the list is **Enforced**. If a list is **Unenforced** on endpoints or some endpoints have an **Old Version**, click the percentage (number) of affected endpoints to analyze the data in Interact.
3. Edit, create, or delete block lists if necessary to resolve issues. For more information, see Tanium Patch User Guide: Managing patches.

Check and update the Windows Update Agent

About this task

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You can use Tanium to check which Windows Update Agent versions are installed on your Windows endpoints.

1. In Interact, ask the `Get File Version["C:\Windows\System32\wuaueng.dll"] from all machines` question.
2. Update any endpoints that have a version earlier than 6.1.0022.4. For more information, see the Microsoft article Updating the Windows Update Agent.

Check patch history on Windows endpoints

About this task

Use the following resources to check patch history on Windows endpoints:

1. Ask questions in Interact using the Tanium sensors, specifically the **Patch Installation History** sensor. The **Patch Installation History** sensor returns a list of patches that were installed along with the date and the tool that installed them. AV Definition updates and Windows Store updates are excluded.

   Important: The **Patch Installation History** sensor queries and returns the data in C:\Windows\SoftwareDistribution\ReportingEvents.log. Be aware that if you have modified or deleted ReportingEvents.log or the SoftwareDistribution folder (for example, for troubleshooting), this sensor does not return comprehensive patch history on the endpoint.

2. Use the Powershell Get-Hotfix cmdlet, which returns the hotfixes that are installed on local or remote computers.

   Note: Get-Hotfix is supplied by the Component Based Servicing Win32_QuickFixEngineering WMI class. Updates supplied by the Microsoft Windows Installer (MSI) or the Windows update site are not returned by Get-Hotfix. For more information, see Microsoft Ignite: Get-Hotfix not returning all installed KBs.

Monitor and troubleshoot Patch coverage

The following table lists contributing factors into why the Patch coverage metric might report endpoints as **Needs Attention** or **Unsupported**, and corrective actions you can make.

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Contributing factor	Corrective action
Gaps in Patch action group membership	Ensure all operating systems that are supported by Patch are included in the Patch action group.
Gaps in scan configuration coverage	Review each scan configuration and which computer groups are targeted by each configuration. Ensure that every endpoint that is supported by Patch is targeted by at least one scan configuration.
Scan frequency value is set too high	Review each scan configuration to ensure that the **Frequency** value is set to less than three days for all scan configurations.
Scan windows are too restrictive	Scan windows are optional. If you decide to use them, the **Override** option should be set to less than two days.
Unmitigated scan failures	Investigate endpoints with scan errors in scan results that are older than two days. Remediate the error conditions on each endpoint. For more information, see Troubleshoot scan errors on Windows and Linux endpoints on page 215 .
Patch process is not running	Ensure that there are no conditions that could prevent the Patch process from running on endpoints that are included in the Patch action group.

Monitor and troubleshoot endpoints missing critical or important patches

The following table lists contributing factors into why the endpoints missing critical or important patches metric might be higher than expected, and corrective actions you can make.

Contributing factor	Corrective action
Selective patching as a practice	Avoid choosing specific patches based on vulnerability reports. Instead, use dynamic, rule-based patch lists. These lists should be cumulative. For example, do not create any rules that prevent patches that are older than a specific date from being included in a patch list.
Patches are deployed only for the current	Use dynamic, rule-based patch lists. These lists should be cumulative. For example, do not create any rules that prevent patches that are older than a specific date from being included in a patch list.

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Contributing factor	Corrective action
month	
Having an n-1 patching policy	Include patches for the current month. Expand endpoint diversity in patch testing groups to increase the changes of identifying newly-released problematic patches for deploying patches to production.
Not enforcing post-deployment restarts	Use the **Restart** option within deployments. (Windows) Use the **Notify User** option and set the **Deadline for restart** value to less than a few days. To decrease both the endpoints missing critical or important patches and the mean time to patch metrics, the optimal value for this setting depends on your patching cycle. Successful customers find that setting the **Deadline for restart** value to less than three days is optimal.

Monitor and troubleshoot mean time to patch

The following table lists contributing factors into why the mean time to patch metric might be higher than expected for endpoints and corrective actions you can make.

Contributing factor	Corrective action
Delayed testing cycle	Begin the process of testing new monthly patches the day they are released, typically Patch Tuesday (second Tuesday of each month).
Delayed start of production cycle	Avoid waiting longer than two weeks after a patch release to start patching production systems. The longer you wait to start patching production systems, the more aggressive the subsequent deployments need to be to complete the patching cycle in a reasonable time.
Staggering deployments to distribute the load on the network	Do not stagger deployments in an attempt to distribute the load on your network or Tanium. The more endpoints that are being patched simultaneously, the more efficient Tanium becomes with overall WAN usage. For bandwidth-constrained locations, you can implement site throttles. For more information, see Tanium Console User Guide: Configure site throttles .
Staggering	Do not stagger deployments in an attempt to distribute the load on your network or Tanium.

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Contributing factor	Corrective action
deployments to distribute the load on the Tanium Server or Patch	
Endpoints do not have enough time to install patches	Ensure that deployment windows are at least four hours and properly overlap with maintenance window times. Ensure that maintenance windows are at least four hours long, repeat at least once each month, and properly overlap with deployment times and change control process timelines. For deployments that are scheduled for the future, select the **Download immediately** option. If you find that endpoints are not completing patch installations within the specified windows, schedule the deployments even further in advance.
Attempting to minimize disruption to users with maintenance windows	Use Tanium End-User Notifications instead of restrictive maintenance windows.
Not enforcing post-deployment restarts	Use the **Restart** option within deployments. (Windows) Use the **Notify User** option and set the **Deadline for restart** value to less than a few days. To decrease both the endpoints missing critical or important patches and the mean time to patch metrics, the optimal value for this setting depends on your patching cycle. Successful customers find that setting the **Deadline for restart** value to less than three days is optimal.
Unmitigated installation failures	Identify endpoints with patch installation failures. Investigate the specific error codes. Remediate the conditions that caused the failures.
Endpoint health issues	Ensure that endpoints have at least 5 GB of free space, a healthy Windows Update Agent, and an up-time of less than 90 days.

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Troubleshooting Patch

About this task

If Patch is not performing as expected, you might need to do some troubleshooting or change settings. For information about specific error messages, see Reference: Common Patch errors on page 240.

Best Practice: To prevent issues that might occur due to endpoint health issues, ensure that endpoints have:

- At least 5 GB of free space
- A healthy Windows Update Agent
- An up-time of less than 90 days

Collect a troubleshooting package

About this task

For your own review or to assist support, you can compile Patch logs and files that are relevant for troubleshooting. The ZIP file is also known as a support bundle.

1. From the Main menu, go to **Modules** > **Patch > Overview** and click Help ?.
2. Click the **Support** tab and click **Collect**.
3. When the **Status:** is updated, click **Download**.
   The log ZIP file might take a few moments to download. The files have a timestamp with a Patch-*YYYY-MM-DD*T*HH-MM-SS.mmm*Z format.

Download audit log

About this task

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You can download an audit log for a single object (for example, a deployment) or multiple objects (for example, all deployments). The audit log contains all creation, modification, and deletion events for the object or objects. For example, you can download the audit log for a deployment to view the details of when it was stopped.

To download an audit log, on a Patch page, click Options **> Download <Object> Audit Logs**. The CSV file is available in your downloads folder.

View job logs to troubleshoot job failed errors

About this task

You can download job logs to troubleshoot "job failed" errors.

1. From the Main menu, go to **Modules** > **Patch > Overview** and click Help ?.
2. Click the **Support** tab and click **View Job Status**.
3. In the **Job Detail** window, click **Download Logs** to download a job-logs.txt file with more details about recent jobs.

Collect Patch troubleshooting information from Windows and Linux endpoints

You can collect and review endpoint artifacts to troubleshoot Patch issues on Windows and Linux endpoints.

About this task

You can use Client Management to directly connect to an endpoint and collect a bundle of logs and other artifacts, sometimes referred to as an *Endpoint Must Gather* (EMG).

1. From the Main menu, go to **Shared Services** > **Client Management**.
2. From the Client Management menu, click **Client Health**.
3. In the **Direct Connect** search box, enter all or part of an IP address or a computer name. Matching results appear after the search completes.
4. From the search results, click the computer name to connect to the endpoint.

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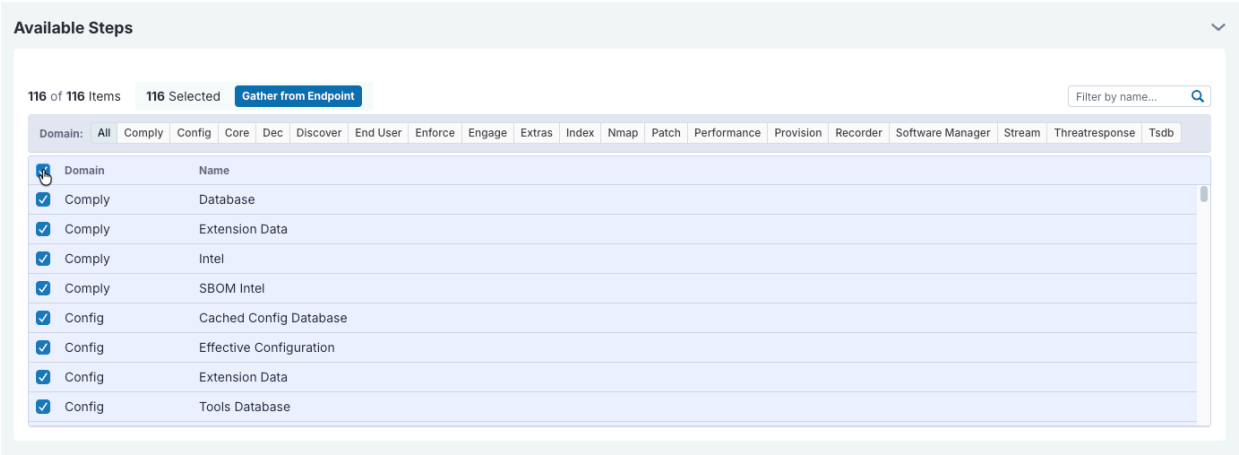
5. Click the **Gather** tab.
   For the **Domain** filter, select the domain and category names for which you want to gather troubleshooting information. You can optionally filter the category list by domain, and you can select the check box in the header row to toggle the selection of all categories in the current filter.

   Figure 6. Select a domain and category name in the 'Available Steps' section

   For Patch information, select the **Core** and **Patch** domains.

6. Click **Gather from Endpoint**.
   The selected logs and artifacts are gathered from the endpoint. The package appears in the **Must Gathers** section, and the name of the package corresponds with its time stamp.

7. When **Finished** appears in the **Run State** column, select the package and click **Download** to download a ZIP file that contains the troubleshooting information.

Result

For more information about how to connect directly to endpoints, see Tanium Direct Connect User Guide.

For more information about Client health features in Client Management, see Tanium Client Management User Guide: Monitor the Client health overview in Client Management and Tanium Client Management User Guide: Access detailed Client health and troubleshooting information on an endpoint.

(Windows) Determine whether patch-cx client extension is running on an endpoint

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About this task

> **Note:** Patch-cx client extension is currently available for Windows endpoints only.

Patch-cx is a client extension that was introduced in Endpoint Configuration Toolset 2.20 and Tanium is currently enabling the extension in phases. During this phased rollout, patch-cx might be running on some endpoints, but not all.

To find endpoints that are running patch-cx, ask the following question in Tanium Interact:

```
Get Computer Name and Client Extensions - Status having Client Extensions - Status:Domain contains Patch from all entities with Client Extensions - Status:Domain contains Patch
```

Conversely, to find endpoints that are not running patch-cx, ask the following question in Tanium Interact:

```
Get Computer Name and Client Extensions - Status from all entities with all Client Extensions - Status:Domain not contains Patch
```

(Windows) Use TaniumCX commands to check patch-cx status

To determine the state of patch-cx directly on an endpoint, you can run the following `TaniumCX` commands from the <Tanium Client> directory.

> **Note:** Patch-cx client extension is currently available for Windows endpoints only.

Check the status of all extensions

To display the status and health checks of all extensions on the endpoint, run the following command:

```
TaniumCX get-status
```

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Tip: You can also retrieve this information from the `Client Extensions - Status` and `Client Health - Health Failures` sensors.

Example output:

```
...
patch
  applied_scan_name: [Offline CAB Scan] - Windows
patch
  applied_scan_type: CAB
patch
  version: 1.2.1478.0
...
software_manager
  deploy_service_running: true
software_manager
  windows_update_service_status: stopped
software_manager
  patch_service_running: false
software_manager
  version: 3.8.564.0
...
```

Check deployment status history

To display the status of all known deployments on the endpoint, including deployments that are no longer active, run the following command:

```
TaniumCX call patch.get-deployment-statuses
```

The last column in the output indicates whether the deployment is active.

```
1|Installing|Installing|Yes
3|Downloading|Downloading|Yes
```

Check the CX task schedule

To display the status of all Client Extension scheduled tasks, including patch scans, deployments, and maintenance windows, run the following command:

```
TaniumCX.exe call extras.get-schedule-status
```

The `current_time_local` value in the results shows the current time on the endpoint. Use that `current_time_local` value to compare against the scheduled times.

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```
current_time_utcs: 1746019769
current_time_local: "2025-04-30T06:29:29.000-07:00"
starting {
  domain: "patch"
  name: "scans"
  id: "scan_2_1"
  started_count: 1
  next_start {
    value: "2025-05-01T12:48:29.000+00:00"
  }
  active: true
}
maintenance {
  domain: "patch"
  name: "deployments"
  id: "maintenancewindow_18_1"
  window_start {
    value: "2025-04-30T07:37:00.000-07:00"
  }
  window_end {
    value: "2025-05-01T07:37:00.000-07:00"
  }
  blocking: true
}
```

To view a list of all available commands for a given extension, run `TaniumCX call <extension name>`, for example, `TaniumCX call patch`.

You can also read the current Endpoint Configuration settings for patch-cx from the following file on the endpoint: [Tanium Client Directory]\extensions\patch\data\last-apply.json.

Configure endpoint logging for Windows and Linux endpoints

About this task

Distribute the **Patch - Set Patch Process Options** package to your Windows and Linux endpoints to change the default logging type and log rotation settings.

1. In Interact, target the endpoints on which you want to configure logging. For example, `Get Operating System from all machines`.
2. Click **Deploy Action**. Choose the **Patch - Set Patch Process Options** package and specify the log level, log size, and number of logs to keep.
3. Click **Preview** and then click **Deploy Action**.

Verify endpoint tools

If you are experiencing issues such as a feature not working on an endpoint or seeing incorrect data

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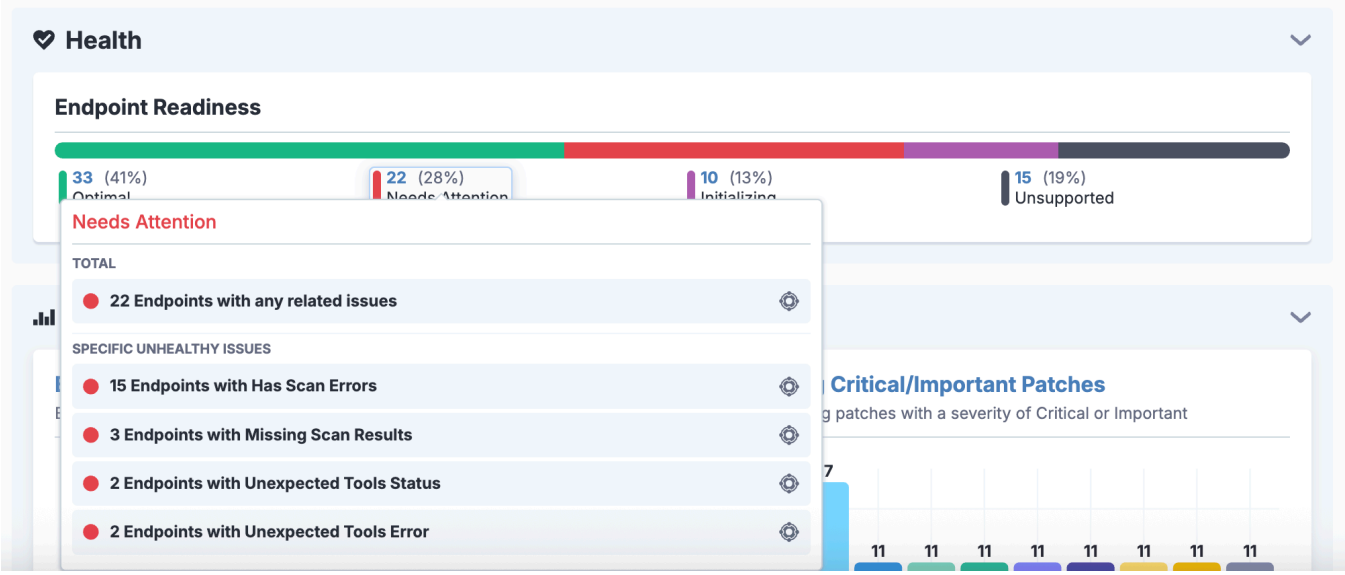
in the workbench, confirm that your endpoints have the latest toolset version.

For more information, see Tanium Endpoint Configuration User Guide: Identify and resolve issues with endpoint tools or Client Extensions and Reference: Client extensions and endpoint tools used for Tanium solutions.

Endpoint has unhealthy readiness score (Needs Attention)

You can review the endpoint issues contributing to an unhealthy readiness score by clicking **Needs Attention** in the **Endpoint Readiness** section on the **Overview** page, when creating a deployment after selecting endpoints to target, and when viewing a deployment.

Figure 7. Unhealthy endpoint breakdown



The following table lists the specific issues that contribute to an unhealthy readiness score. Troubleshoot the issues to improve the endpoint readiness score.

Issues that need attention

Issue	Solution
Missing Scan Results Has Scan Errors Stale Scan Results	Troubleshoot scan errors on Windows and Linux endpoints on page 215

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Issue	Solution
No Scan Targeted No Longer Targeted Not Targeted	The endpoint is not included in any targeted computer groups for the scan configuration. Edit a scan configuration on page 135 to include the endpoint.
Tools Missing Unexpected Tools Error Unexpected Tools Status Unable to Load Tools	The endpoint does not have the required tools or there is an issue with the tools. Review the following troubleshooting topics: • Install and configure Tanium Endpoint Configuration on page 76 • Identify and resolve issues with Client Extensions on page 225 • Tanium Endpoint Configuration User Guide: Troubleshooting Endpoint Configuration

Windows and Linux patches are not listed in the Patches view

If you are having difficulty getting Windows and Linux patches to appear:

1. Verify that the **Patch - Is Process Running** sensor returns `Yes` for your endpoints.
2. Ensure that the expected endpoints are in the action group.
3. Verify that the expected endpoints are targeted by a scan configuration.
4. Check for scan errors on the endpoints targeted by a scan configuration.

Troubleshoot scan errors on Windows and Linux endpoints

About this task

Investigate Windows and Linux endpoints with scan errors that have scan results older than two days and resolve the errors for each endpoint. If Patch is unable to successfully scan an endpoint for its applicable patches, Patch does not know what patches to deliver to the endpoint during a patch deployment.

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1. From the Main menu, go to **Modules** > **Patch > Scan Management** and then click **Scan Errors**.
2. Review any scan errors.
3. For other errors, complete the following general troubleshooting steps.
    a. (Windows) Review the Windows Update log on the endpoint. Search for key errors and then search the internet for solutions for the identified error. To get the Windows Update log, see Collect Patch troubleshooting information from Windows and Linux endpoints.
    b. Review the Tanium Patch logs for information on why the scan did not start or complete successfully on an endpoint. To get the Tanium Patch logs, see View job logs to troubleshoot job failed errors on page 209.
4. Confirm that routine scan error remediation is done before your routine patching cycle. To help identify errors, create a report from a saved question that identifies endpoints with scan errors.
   For example, you might use the following saved question:

   ```
   Get Computer Name and Operating System and Patch - Scan Errors and Patch - Scan Age and Patch - Has Enforced Scan Configuration and Patch - Is Process Running from all machines with ( Patch - Scan Errors matches "^[1-9]\d+\|.*$" or ( Patch - Has Enforced Scan Configuration equals No or ( Patch - Scan Age matches "^(?!([0-2] Day|N\/A|Could not get results).*).*$" and Uptime matches "^\d+ [Dd]ays$" ) ) )
   ```

   For more information on saved questions and reporting, see Tanium Console User Guide: Managing saved questions in Console and Interact.

Offline CAB scans fail for Windows 7 and Windows Server 2008 R2

If offline CAB scans fail for Windows 7 and Windows Server 2008 R2 with the error:

```
Error creating Update Service Object - See C:\Windows\
windowsupdate.log for more details
```

Check the Windows Update log for the following errors:

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```
WARNING: Digital Signatures on file C:\Windows\SoftwareDistribution\
ScanFile\f6f0081a-1e6e-4e64-a804-58cf334a1f48\Source.cab are not
trusted: Error 0x800b0109

WARNING: Digital Signatures on file C:\Windows\SoftwareDistribution\
ScanFile\f6f0081a-1e6e-4e64-a804-58cf334a1f48\Source.cab are not
trusted: Error 0x800b0109
```

If you see these errors, then prerequisite patches might not be installed on the endpoints. To resolve this issue, use either Tanium Scan or a method outside of Patch to install updates for SHA2 signing and Extended Security Update on the endpoints. For more information, see Tanium Scan on page 123 and Knowledge Article: Enabling and Delivering Microsoft Extended Security Updates with Tanium.

Scans are not completed on Linux endpoints

About this task

Patch 2.3.5 supports Red Hat and CentOS Linux endpoints. Patch 2.4.3 also supports Oracle and Amazon Linux endpoints. Patch 3.2.160 also supports SUSE endpoints.If you are having difficulty getting scans to run on Linux endpoints:

1. From the Main menu, go to **Modules** > **Patch > Overview**, click Settings and then click **Operating Systems** to verify that the **Enhanced Linux Support** option is enabled.
2. Verify that the **Patch - Is Process Running** sensor returns `Yes` for your Linux endpoints.
3. Verify that the Tanium Server can reach the repomd.xml file by appending /repodata/repomd.xml to the configured **baseurl** value.
4. Check the endpoint log at /opt/Tanium/TaniumClient/Tools/Patch/logs/patch-process.log for errors.

Red Hat Linux endpoints stuck in Waiting for Initial Scan status

If you configure a repository that includes both **Red Hat Enterprise Linux 6 Server (RPMs)** and **Red Hat Enterprise Linux 7 Server (RPMs)** endpoints, your targeted endpoints might appear to be stuck in the `Waiting for Initial Scan` status.

1. Verify that each major operating system is targeted in repositories.

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2. Target Linux endpoints by major operating systems.

Linux repository snapshots issues

If you encounter issues creating or using snapshots, review the following solutions. For information about specific snapshot errors, see Reference: Common Patch errors on page 240.

Warning about a failed snapshot

About this task

A warning message appears, to indicate that a snapshot failed. To modify the snapshot, click **Manage Repository Snapshots**. To remove the warning, click **Dismiss warning**.

Patch process is not running on Linux endpoints

Start the Patch process:

1. In Interact, ask the `Get Operating System from all machines` question.
2. From the grid, select the Linux operating systems.
3. Click **Deploy Action**. Choose the **Patch - Start Patch Process [Non-Windows]** package.
4. Click **Preview** and then click **Deploy Action**.

Patch deployment status: Download Failed, Download Size Threshold Exceeded

When reviewing a deployment, you might notice a `Download Failed, Download Size Threshold Exceeded` status under the parent **Needs Attention** status.

Issue

During a deployment, an endpoint incorrectly identified a UUP patch as a non-UUP patch resulting in a download failure due to network bandwidth protections.

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Solution

1. From the Main menu, go to **Modules** > **Patch** > **Deployments**.
2. Click the Deployment with the error. The **Deployment details** page loads.
3. Review the patches that are applicable to the deployment. If the deployment uses a patch list, go to the Patch List details on page 146 page.
4. Click the name of each UUP patch to view the Patch details page.
5. Verify whether the patch should have been considered a UUP patch. UUP patches usually have the following characteristics:
    - Are Cumulative Updates
    - Are approximately 10 GB in size
    - Have at least 10 files
6. If the patch is supposed to be synchronized with UUP but was not, then open a support ticket and provide the following information:
    - The title of the patch
    - The list of files associated with the patch
    - The total size of the patch
    - The endpoints targeted by the deployment
7. If the patch is not a UUP patch, add an advanced setting to increase the **DownloadSizeThreshold**.

    CAUTION: By adding this advanced setting, all endpoints that are applicable for this patch will download the full contents of the patch. This can result in substantial bandwidth utilization.

    a. From the Main menu, go to **Modules** > **Patch** > **Overview** and then click **Settings**.

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b. In Advanced Settings, click **Add Setting**.

c. Add the following settings:

   i. **Setting name**: DownloadSizeThreshold

   ii. **Value**: <an integer greater than the total download size of the patch, in bytes>

d. Click **Save**. After this new value is updated on endpoints, the deployment will proceed with the download step.

Resolve UUP synchronization errors

If Tanium encounters problems synchronizing patches for Windows 11 22H2 or later endpoints, errors appear in the **UUP Synchronization Management** section of the **Overview** page or in the **Summary** section of a **Patch details** page.

UUP synchronization errors and resolutions

Error message	Problem	Solution
Not enough disk space on the Tanium Server	Synchronization will result in less than 10% total disk space remaining on the Tanium Server so the process does not progress.	To resolve the error you can do one of the following actions: • Get more disk space and then retry the failed synchronization. • In time-sensitive emergency situations, configure the **BypassUUPStorageLimit** advanced setting, which allows synchronization to fill the disk to 95% disk usage. 1. From the Main menu, go to **Modules** > **Patch** > **Overview** > **Settings**. 2. In the **Advanced Settings** section, click **Add Setting** and then set `BypassUUPStorageLimit = 1` 3. Click **Save**.

Error message	Problem	Solution
		4. Retry the failed synchronization. For more information, see Manually synchronize patches on page 148. 5. After synchronization is successful, set `BypassUUPStorageLimit = 0` to disable the setting.
Failed to upload data to Tanium Server	Potential `System User Service` error or some internal error within the Tanium Server.	This error often self-resolves after the sync retries. If the problem persists, contact Tanium Support.
All known urls failed to respond	Tanium could not reach any of the URLs on patch.	• If you are using are using a local WSUS server: 1. Confirm that the WSUS server is reachable from the Tanium Module Server. 2. On the WSUS server, verify whether the update is approved. 3. If the update is approved, verify that making a head request from the Tanium Module Server to the URL of the associated metadata file responds with a 200 status. If the response is a 404, proceed with troubleshooting any proxy settings that might be present in the environment. 4. If the update is not approved, approve the update and then Manually synchronize patches on page 148. • If you are not using a local WSUS server: 1. Go to the Patch details page and confirm whether the patch URLs have any of the following domains:

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Error message	Problem	Solution
		• windowsupdate.microsoft.com • *.windowsupdate.microsoft.com • *.update.microsoft.com • *.windowsupdate.com • download.windowsupdate.com • download.microsoft.com • *.download.windowsupdate.com • dl.delivery.mp.microsoft.com • *.delivery.mp.microsoft.com 2. If a patch URL domain is not on the list: a. Use Tanium to target the endpoints that have this patch marked as applicable. b. Deploy the **Patch - Reset Windows Update Client** package to perform a Windows Update Agent reset. c. Wait for a re-scan.

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Error message	Problem	Solution
		3. If the issue is not resolved, check the proxy configuration of the environment and confirm whether the Tanium Module Server can reach any of the patch URLs that have errors. Resolve any proxy issues.
All reachable urls responded with 404	The update is revoked or proxy settings are causing issues .	• If you are using a local WSUS server, see the solution for **All known urls failed to respond**. • If you are not using a local WSUS server, the patch is likely a revoked update. No action is needed. If the patch is not a revoked update, retry the failed synchronization. For more information, see Manually synchronize patches on page 148 .
Hash mismatch	Incorrect files might have been staged on the WSUS server.	1. On the third-party patching tool or WSUS server, approve the patches that failed to synchronize. 2. Retry the failed synchronization. For more information, see Manually synchronize patches on page 148. 3. If the problem persists, deploy the **Patch - Reset Windows Update Client** package to all endpoints to perform a Windows Update Agent reset. If the problem persists, contact Tanium Support to help investigate the issue.
Failed to sync update with endpoint config	Patch files were downloaded successfully, and packages were created, but Endpoint Configuration failed to register the necessary metadata for endpoints.	1. Collect a troubleshooting package on page 208. 2. In the logs, search for the root cause of the Endpoint Configuration errors and resolve the issues 3. Retry the failed synchronization. For more information, see Manually synchronize patches on page 148.

OpenSUSE and SLES endpoints install later version of software

OpenSUSE and SUSE Linux Enterprise Server (SLES) endpoints might install a later version of

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software than specified in a deployment. Zypper, which manages software packages on those endpoints, automatically selects the latest available version of software for installation. If you create a deployment to install version 1.0.1 of software and the latest available version of the software is 1.0.2, when the endpoint receives the deployment, Zypper installs version 1.0.2.

To workaround this Zypper behavior, use repository snapshots. For more information, see Manage Linux repository snapshots on page 105.

End-user notifications are not displayed or endpoints have errors

End-user notifications are supported for Windows endpoints only. If end-user notifications are not being displayed on the endpoints or the endpoints have errors (for example, their statuses are **Non-compliant**):

1. Confirm that the endpoints have the latest versions of the tools. For more information, see Tanium Endpoint Configuration User Guide: Manage toolset versions in the upgrade rings.
2. Verify that the Tanium End-User Notifications solution is installed. For more information, see Tanium End-User Notifications User Guide: Installing End-User Notifications.
3. Ask the question: `Get Endpoint Configuration - Tools Status from all machines` to check if your endpoints have the End-User Notifications tools.
4. Verify that any security software exclusions include the \Tanium\Tanium End User Notification Tools directory. For more information, see Security exclusions on page 46.
5. Uninstall the End-User Notifications tools on the endpoints. For more information, see Tanium End-User Notifications User Guide: Remove End-User Notifications tools from endpoints. Then wait up to 10 minutes for the tools to automatically reinstall.

> **Note:** You can also reinstall the End-User Notifications tools with the **Endpoint Configuration - Reinstall Tool** package.

Patch workbench slowly loads pages

If the Patch workbench slowly loads pages, confirm that you have enabled the **Inactive**

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Deployments Removal option to remove old inactive deployments. The deployment cleanup helps improve the performance of the Patch workbench. For more information, see Delete old inactive deployments on page 169.

Identify and resolve issues with Client Extensions

Use the following steps to troubleshoot issues with the Client Extensions that Patch installs and uses. During troubleshooting, consider environmental factors such as security exclusions, file locks, CPU usage, RAM usage, and disk failures.

1. If endpoints have Client Extension shared process mode enabled and you need to troubleshoot resource usage or crashes in the combined TaniumCX.exe or TaniumCX process, disable shared process mode on the affected endpoints, and then reproduce the issue if possible. For more information, see Endpoint Configuration User Guide: Manage Client Extension shared process mode.

2. To review the health of Client Extensions or to start an investigation into an existing error, ask a question using the `Client Extensions - Status` sensor.
   The results of these questions help to identify endpoints with errors and provide a starting point to deploy actions that might help correct the issue. Filter the results and drill down as necessary to investigate results that indicate errors.

   Tip: Consider whether endpoints with errors share common characteristics, such as operating system, domain or organization unit, or the antivirus software that is installed.

3. Target one or more endpoints with errors, and uninstall tools that report errors without blocking reinstallation. For more information, see Remove Patch tools from endpoints on page 229 and Endpoint Configuration User Guide: Uninstall a tool installed by Endpoint Configuration.

   CAUTION: When you perform a hard uninstallation of some tools, the uninstallation also removes data that is associated with the tool from the endpoint. This data might include important historical or environmental data. If data that you want to keep is associated with the tool, make sure you perform only a soft uninstallation of the tool.

   Wait for automatic reinstallation of the tool. If the reinstallation does not resolve the issue, continue to the next step.

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4. Ask a question using the `Endpoint Configuration - Tools Status Details` sensor, and include filters to limit the results to the tool that you are investigating. For example:
`Get Endpoint Configuration - Tools Status Details having Endpoint Configuration - Tools Status Details:Tool Name contains <Tool_Name> from all machines with Endpoint Configuration - Tools Status:Tool Name contains <Tool_Name>`

   Review the columns in the results for specific information about errors. The following table provides guidance for some common error conditions:

Potential errors returned by the Endpoint Configuration - Tools Status Details sensor

Error Condition	Possible Resolution
No error appears, but an available new version has not been installed	Review the **Targeted Version** column to make sure that the endpoint has received the latest manifest. If the targeted version does not yet show the updated version, the Endpoint Configuration manifest has not updated on the endpoint, usually for one of the following reasons: • The manifest update is still pending. Either wait for the manifest to update and then review the results again, or follow the steps in Endpoint Configuration User Guide: Verify and manually update the Endpoint Configuration manifest. • Action lock is enabled on the endpoint. Follow the steps in Endpoint Configuration User Guide: Verify and manually update the Endpoint Configuration manifest to identify endpoints with action lock turned on. • Patch is no longer installed, or it is no longer targeting the endpoint. In some cases, Patch might stop targeting an endpoint because it no longer needs the endpoint for a particular workload. Consider whether Patch should still target the endpoint: • If it is expected or intentional that Patch no longer targets the endpoint, you can optionally uninstall Patch tools and dependencies. For more information, see Remove Patch tools from endpoints on page 229. • If Patch should still target the endpoint, make sure that the Patch action group includes the endpoint, and make sure Patch targets the endpoint in any expected configurations or profiles. Then, either wait for the manifest to update and then review the results again, or follow the steps in Endpoint Configuration User Guide: Verify and manually update the Endpoint Configuration manifest.

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Error Condition	Possible Resolution
Installation Blocker: `Unmet Dependencies: [ Tool name ]`	If no **Failure Message** or **Failure Step** appears, the endpoint might be waiting for the dependencies to install. Wait to see if the condition resolves on its own. If this condition remains for an extended period, ask the question again and review any error information in other columns, especially the **Failing Dependency** column.
`Failing Dependency:[ Tool name ]`	Ask the question: `Endpoint Configuration - Tools Status Details having Endpoint Configuration - Tools Status Details:Tool Name contains [Tool name] from all machines with Endpoint Configuration - Tools Status:Tool Name contains [Tool name]` Investigate further errors with the tool. If the dependency has not been installed on an endpoint, ask the question: `Get Endpoint Configuration - Tools Retry Status from all machines with Computer Name equals Computer_Name` to review the retry status for the tool installation. For more information, see Endpoint Configuration User Guide: Review tool installations that are scheduled for a retry .
Manually Blocked: `blocked`	The tool was previously blocked, either manually or during a previous uninstallation. Unblock the tool. For more information, see Endpoint Configuration User Guide: Block or unblock tools from installing on an endpoint .

5. Review the Extensions logs on the endpoint. Take note of entries that include `fail` or `error`. For more information, see Review the Extensions log for an endpoint on page 227.

Result

For additional help, contact Tanium Support on page 235.

Review the Extensions log for an endpoint

About this task

Use Client Management to directly connect to an endpoint and view and download extension logs.

1. From the Main menu, go to **Shared Services** > **Client Management**.
2. From the Client Management menu, click **Client Health**.
3. In the **Direct Connect** search box, enter all or part of an IP address or a computer name.

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Matching results are displayed after the search completes.

4. From the search results, click the computer name to connect to the endpoint.
5. Click the **Logs** tab, and select an extensions[#].log file.
6. (Optional) To download the log, click **Download**.

Next steps

For additional help, collect all logs for Patch on page 208, and contact Tanium Support on page 235.

(Windows) Disable patch-cx

About this task

You might encounter situations where you need to disable patch-cx temporarily to troubleshoot Patch issues. To disable patch-cx from running on an endpoint without removing the tool completely, you can deploy a client setting.

1. In Interact, ask a question to target the Windows endpoints on which you want to disable patch-cx.
2. Select the endpoints from the results and click **Deploy Action**.
3. For **Deployment Package**, select **Modify Tanium Client Setting** and configure the following settings:
   - **RegType**: **REG_DWORD**
   - **ValueName**: `DisableExtension_patch`
   - **ValueData**: `1`

   Tip: To re-enable patch-cx, set **ValueData** to `remove`.
4. Click Show Preview to Contiue, review the list of targeted endpoints, and then click **Deploy Action**. The change takes effect after the next client extension restart.
5. To force a client extension restart, deploy the **Endpoint Configuration - Restart Client Extensions [Windows]** deployment package to the same endpoints.

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Remove Patch tools from endpoints

About this task

You can deploy an action to remove Patch tools from an endpoint or computer group. Separate actions are available for Windows and non-Windows endpoints.

Important: (Windows) Removing patch-cx can cause loss of historical data, and take longer to restore functionality than temporarily disabling the tools. It is recommended that you disable patch-cx instead of removing the tool, particularly in cases where Patch needs to be disabled as part of diagnosing a problem or for other temporary reasons. For more information, see (Windows) Disable patch-cx on page 228.

1. Prevent Patch tools from installing on endpoints and scheduled actions from running.
    a. From the Main menu, go to **Administration** > **Actions** > **Action Groups**.
    b. Click the **Patch** action group, change the **Computer Groups**, and click **Save**.
        - To prevent Patch actions on select endpoints, change the computer groups to no longer target the endpoint or computer group.
        - To prevent Patch actions on all endpoints, change the computer groups to **No Computers**.
2. In Interact, target the endpoints from which you want to remove the tools. For example, ask a question that targets a specific operating system: `Get Endpoint Configuration - Tools Status from all machines with Is Windows equals true`
3. In the results, select the row for Patch, drill down as necessary, and select the targets from which you want to remove Patch tools. For more information, see Tanium Interact User Guide: Drill Down.
4. Click **Deploy Action**.
5. For the **Deployment Package**, select **Endpoint Configuration - Uninstall Tool [Windows]** or **Endpoint Configuration - Uninstall Tool [Non-Windows]**, depending on the endpoints you are targeting.
6. For **Tool Name**, select one of the following options depending on the target endpoints:
    a. For Windows and Linux endpoints that are running legacy Patch tools, select Patch.
    b. For Windows endpoints that are running patch-cx, select **patch-cx**.

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7. (Optional) By default, after the tools are removed they cannot be reinstalled. To allow tools to be automatically reinstalled, clear the selection for **Block reinstallation**. Re-installation occurs almost immediately.

   > **Note:**
   > If reinstallation is blocked, you must unblock it manually:
   >
   > - To allow Patch to reinstall tools, deploy the **Endpoint Configuration - Unblock Tool [Windows]** or **Endpoint Configuration - Unblock Tool [Non-Windows]** package (depending on the targeted endpoints).
   > - If you reinstall tools manually, select **Unblock Tool** when you deploy the **Endpoint Configuration - Reinstall Tool [Windows]** or **Endpoint Configuration - Reinstall Tool [Non-Windows]** package.

8. (Optional) To remove all Patch databases and logs from the endpoints, clear the selection for **Soft uninstall**.

   > **CAUTION:** When you perform a hard uninstallation of some tools, the uninstallation also removes data that is associated with the tool from the endpoint. This data might include important historical or environmental data. If data that you want to keep is associated with the tool, make sure you perform only a soft uninstallation of the tool.

9. (Optional) To also remove any tools that were dependencies of the Patch tools that are not dependencies for tools from other solutions, select **Remove unreferenced dependencies**.

10. (Optional) In the **Deployment Schedule** section, configure a schedule for the action.

    > **Best Practice:** If some target endpoints might be offline when you initially deploy the action, select **Recurring Deployment** and set a reissue interval.

11. Click **Show preview to continue**.

12. A results grid appears at the bottom of the page showing you the targeted endpoints for your action. If you are satisfied with the results, click **Deploy Action**.

Result

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Note: If you have enabled Endpoint Configuration approval, tool removal must be approved in Endpoint Configuration before tools are removed from endpoints.

Uninstall Patch

If you need to uninstall Patch, first clean up the Patch artifacts on the endpoint and then uninstall Patch from the server.

1. Remove the Patch solution from the Tanium Module Server. From the Main menu, go to **Administration** > **Configuration** > **Solutions**.
    a. In the Patch section, select **Patch**, click **Uninstall**, and follow the process.
    b. Click **Proceed with Uninstall**. The uninstaller disables any actions.
    c. Return to the Solutions page and verify that the **Import** button is available for Patch. If the Patch module has not updated in the console, refresh your browser.
2. Delete any remaining files in the *<Module Server>*\services\patch-service and Tanium Module Server\services\patch-files directories.
3. Unregister all Patch-related sensors.
    a. Go to the Interact **Overview** page and click Settings.
    b. Filter the **Registration & Collection** tab to find the Patch-related sensors.
    c. For each sensor, select **Actions** > **Release** to unregister.
4. Delete all Patch-related Endpoint Configuration items.
    a. From the Main menu, go to **Shared Services** > **Endpoint Configuration** > **Configurations**.
    b. Select **Patch Toolset** and all items in the **Patch** domain, and click **Delete**.
5. Delete all scheduled actions under the Patch action group.
    a. From the Main menu, go to **Administration** > **Actions** > **Scheduled Actions**.

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b. Select the **Patch** action group.

c. Select the scheduled actions and click **More** > **Delete**.

6. Delete the Patch action group.

a. From the Main menu, go to **Administration** > **Actions** > **Action Groups**.

b. Select the **Patch** action group, click **Migrate and Delete**, and complete the process.

7. Delete all Patch-related saved questions.

a. From the Main menu, go to **Administration** > **Content** > **Saved Questions**.

b. Select all Patch-related questions and click Delete .

8. Delete all sensors prefixed with **Patch -** .

a. From the Main menu, go to **Administration** > **Content** > **Sensors**.

b. Select all sensors prefixed with **Patch -** and click Delete .

9. Delete all packages prefixed with **Patch -** .

a. From the Main menu, go to **Administration** > **Content** > **Packages**.

b. Select all packages prefixed with **Patch -** and click Delete .

Restore the state of the Patch database

About this task

You can import the patch.db file to restore the Patch configuration.

1. Stop the Patch service on the Tanium Module Server.
2. Copy your patch.db file into the <*Module Server*>\services\patch-service\ directory, replacing the existing file.
3. Restart the Patch service.
4. In Tanium Console, refresh the Patch workbench.

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5. Configuring Patch on page 73. Any existing data, including patch lists, deployments, and associated patches and actions appear in the Patch workbench.

   Note: If a deployment scheduled action is missing, you might need to wait up to 5 minutes for it to show up.

(Windows) Configure endpoint disk space requirements

About this task

Patch uses Client Extension free disk space safety checks to avoid excessive disk usage, defaulting to a 5% free space requirement. On very large disks, percentage checks might be too restrictive. If an endpoint does not have at least 5% free space, Patch stops the download of files. Affected endpoints appear in the **Needs Attention** status of the Endpoint Readiness on page 214 health check. When you drill down to **View in Interact**, you might see the following client extension statuses:

- `Disk space below warning threshold of 5%`
- `Not downloading patch files due to cx-core disk space health check`

If your Windows endpoints are running the patch-cx client extension on page 210, you can configure the `CX.patch.MinFreeSpaceMB` client setting to check the number of available megabytes instead of a percentage.

Disk space requirement example

Suppose you have an endpoint with a 1 TB system drive. A 5% free-space requirement means the device must have at least 50 GB free for patch installation. If the endpoint has only 45 GB free space (which is below the 5% threshold), the patch files will not be installed. To allow patching to continue in this scenario, you can override endpoint disk space requirements with the `CX.patch.MinFreeSpaceMB` client setting to a value such as 20,000 (20,000 MB/20 GB).

Tip: You can use the `Disk Drive Details` sensor to identify large disks that could be candidates for using the `CX.patch.MinFreeSpaceMB` client setting.

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Procedure

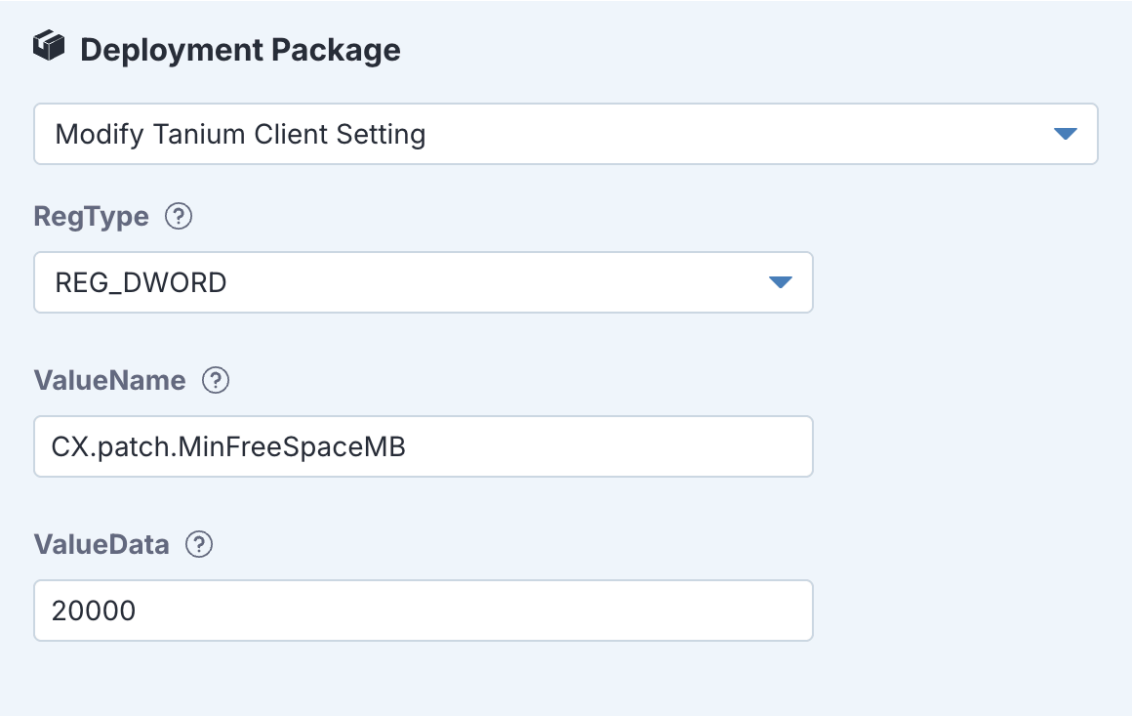
About this task

To change requirements to check for free disk space in megabytes, complete the following steps:

1. In Interact, ask a question to target the Windows endpoints on which you want to change the disk space requirements.
2. Select the endpoints from the results and click **Deploy Action**.
3. For **Deployment Package**, select **Modify Tanium Client Setting** and configure the following settings:
    - **RegType**: **REG_DWORD**
    - **ValueName**: `CX.patch.MinFreeSpaceMB`
    - **ValueData**: `<free_space_in_megabytes>`

    Tip: To revert back to percentage-based checks, set **ValueData** to `0`.

    Figure 8. Action Deployment with settings required to configure disk space check

4. Click Show Preview to Contiue, review the list of targeted endpoints, and then click **Deploy**

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Action.

Cannot use Tanium Patch to deploy Microsoft out-of-band updates

Tanium Scan for Windows synchronizes with the Microsoft Windows Server Update Services (WSUS) catalog. Only updates which Microsoft publishes to the Server Update Services release channel are visible to endpoints scanned with the Tanium Scan method. Microsoft typically does not release out-of-band updates to the Server Update Services channel.

To deploy out-of-band updates, use Tanium Deploy to install the Latest Cumulative Update (LCU) package that includes the out-of-band update. For more information, see Knowledge Article: Deploying Out-of-Band Microsoft Updates with Tanium. If the out-of-band update is not included in an LCU, download the update from Microsoft and then create a software package in Tanium Deploy. For more information, see Tanium Deploy User Guide: Create a software package.

Contact Tanium Support

To contact Tanium Support for help, sign in to the Tanium Customer Community.

For more information about submitting a support case, see Case Submission Form.

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Reference: Patch status

Deployment status

The following is a list of all possible deployment status groups and the sub-statuses.

If there has been more than one attempt, the status might be appended with `- Retry #`, for example `Downloading - Retry 2`. For more information on retries, see Adjust the deployment retries on page 169.

Note: If a patch is rolled back by Windows after installation, the patch's deployment result is marked as `Rolled Back After Install`. Patch does not automatically retry the installation of a rolled-back patch, even if retries remain. To reattempt the installation, stop and reissue the deployment, or create a new deployment with the same patch. To find all patches that have the `Rolled Back After Install` result, use the **Patch - Deployment Results** sensor.

Status group	Sub-status
Needs Attention	• Complete, Missing Download URLs • Complete, Some Patches Applied (if you have exhausted your retries) • Complete, Some Patches Removed (if you have exhausted your retries) • Download Complete, Waiting for Block List Configuration File • Download Complete, Waiting for Maintenance Window Configuration File • Download Failed, Download retry limit exceeded • Download Failed, Download Size Threshold Exceeded on page 218 • Error, No Patches Removed • Error, Install Aborted • Error, Uninstall Aborted • Error, Deployment Ended Before Any Action Was Taken

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Status group	Sub-status
	• Error, No Patches Applied • Has Scan Errors on page 214 • Missing Scan Results on page 214 • No Scan Targeted on page 214 • No Longer Targeted on page 214 • Not Targeted on page 214 • Pending Restart, End-User Notification Unsupported • Pending Restart, Missing End-User Notification Tools • Pending Restart, Waiting for Maintenance Window Configuration File • Stale Scan Results (results older than three days) on page 215 • Tools Missing on page 214 • Unable to Download • Unable to Load Tools on page 214 • Unexpected Tools Error on page 214 • Unexpected Tools Status on page 214 • Waiting for Deployment Configuration File • Waiting for Scan Configuration File • Waiting for Block List Configuration File
Waiting	• Waiting for Deployment Start Time • Waiting for Maintenance Window • Waiting for User Input • Waiting for Required UUP Metadata
Downloading	• Downloading
Download Complete Waiting	• Download Complete, Waiting for Deployment Start Time • Download Complete, Waiting for Maintenance Window • Download Complete, Waiting for User Input
Installing	• Pre-Install Random Delay

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Status group	Sub-status
	• Pre-Install Scan • Installing • Post-Install Scan
Uninstalling	• Pre-Uninstall Random Delay • Uninstalling • Pending Restart, Waiting for Maintenance Window • Post-Uninstall Scan
Pending Restart	• Pending Restart, Awaiting User Acceptance (this includes user has postponed) • Pending Restart, Restart Required to Complete the Install • Pending Restart, Waiting for Maintenance Window
Complete	• Complete, All Patches Applied • Complete, All Patches Removed • Complete, No Patches Applied • • The patches that were applicable to the deployment are no longer applicable. This occurs when the patch was installed by another deployment, or by another tool like SCCM.
Not Applicable	• Not Applicable[1,2] • Not Targeted[2] • Deployment Configuration File Received (applicability has not yet been determined) • Not Applicable, No longer targeted

[1] Windows endpoints return deployment statuses only for targeted endpoints. If a Windows endpoint returns the `Not Applicable` status, then the deployment is targeted to the endpoint and has no applicable patches.

[2] Linux endpoints return the `Not Applicable` status when the deployment has no applicable patches for that endpoint. If a Linux endpoint returns the `Not Targeted` status, then the endpoint is not targeted by the deployment.

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Enforcement status

Status group	Sub-status
Block lists and maintenance windows	• Enforced • Unenforced
Scan configurations	• Unenforced • Waiting For Initial Scan • Complete, Waiting For Next Scan • Downloading • Scanning

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Reference: Common Patch errors

Review common Patch error messages and possible solutions. For information about general errors in Patch, see Troubleshooting Patch on page 208.

Client API connection failed. Unable to download file. Error #9

Cause

An endpoint performed a client reset while downloading a patch.

Solution

This error message can typically be ignored. After the client reset is complete, the endpoint typically continues downloading the patch within minutes. If you continue to see this error message, Contact Tanium Support on page 235.

Error creating Update Service Object - See C:\Windows\windowsupdate.log for more details. Error #9

Cause

Patch is unable to establish communication with the local Windows Update API.

Solution

Review the Windows Update log for errors, and then consult the Microsoft documentation for information about each error.

Patch <Patch UID>: WU_E_DM_INCORRECTFILEHASH. Error #-2145099774

Cause

A patch file becomes corrupted in transit from Microsoft to the Tanium Server.

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Solution

For help with this error message, Contact Tanium Support on page 235.

Patch <Patch UID>: ERROR_INSTALL_FAILURE. Error #-2147023293

Cause

This error can have various causes, but it is likely caused either by a third-party application or by corruption in the Windows update.

Solutions

- Review your Host and network security requirements on page 45 and make sure you have added the necessary security exclusions so that antivirus software is not blocking Tanium processes.
- Use Tanium to target the endpoint and deploy the **Patch - Reset Windows Update Client** package to perform a Windows Update Agent reset.

Patch <Patch UID>: WU_E_CALL_CANCELLED. Error #-2145124341

Cause

This error is likely caused by interference from anti-virus software on an endpoint.

Solution

Review your Host and network security requirements on page 45 and make sure you have added the necessary security exclusions so that antivirus software is not blocking Tanium processes.

-2147024784 ERROR_DISK_FULL

Cause

The installation drive on an endpoint is full.

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Solution

Check the system drive and the drive on which the Tanium Client is installed and provide more disk space. Use the **Disk Free Space**, **System Disk Free Space**, **Low Disk Space**, or **Low System Disk Free Space** Tanium sensors to identify systems with low amounts of free disk space.

OfflSnc WARNING: failed to copy offline cab. hr = 0x80070070

Cause

The drive that contains the Tanium Client does not have enough disk space to download the offline CAB file.

Solution

Increase the amount of space available on the drive. Use the **Disk Free Space**, **System Disk Free Space**, **Low Disk Space**, or **Low System Disk Free Space** Tanium sensors to identify systems with low amounts of free disk space.

-2145124320 WU_E_NO_INTERACTIVE_USER

Cause

The patch cannot be installed silently, and a user must sign in and interact with the installation. Typically, this error occurs when conducting server patching.

Solution

Add the update to a block list or remove it from your deployment patch list. For more information, see Exclude patches with block lists on page 141 and Edit a list on page 146.

E_PROP_ID_UNSUPPORTED

Cause

This error is triggered by the Windows Update Agent, and usually indicates that the endpoint needs to be restarted.

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Solutions

- Use the **Uptime** sensor to verify the uptime of the endpoint. For more information, see Tanium Console User Guide: Managing Sensors.
- If the endpoint was configured to reboot but did not reboot after receiving a patch, this error is the result of conflicting files running on the endpoint. Verify that End-User Notifications and reboot settings are properly configured for the endpoint. For more information, see Install and configure Tanium End-User Notifications for Windows endpoints.
- Restart the endpoint and reissue the deployment. For more information, see Reissue a deployment on page 169.

Unable to Load PatchLib

Cause

This error is likely caused either by an endpoint not being part of a Patch action group, or by an incorrect version of Patch on the endpoint.

Solutions

- Verify that the affected endpoint is in the Patch action group so that it is within scope of operations. For more information, see Configuring Patch on page 73.
- Verify that asking **Get Endpoint Configuration – Tools Status contains Patch** in Interact shows the correct version of Patch is installed.

Windows Update Error: -2145124338 WU_E_XML_INVALID

Cause

The Windows Update Agent found invalid information in the XML data for the update.

Solution

Make sure that the endpoint is using the latest version of Windows Update Agent.

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Unrestored registry snapshot found

Cause

The Patch Manager process was interrupted during a scan. This issue can happen if the endpoint restarts during a scan.

Solution

This issue is usually transient and no longer appears after the next scheduled scan. If you continue to see this error message, Contact Tanium Support on page 235.

Windows Update Error Code: 7 Out of Memory

Cause

The system has reached the system commit limit and is unable to complete scanning operations. Patch automatically performs batching operations to try to reduce the overall memory utilization of svchost during scans.

When Windows Update Service (wuauserv) builds the datastore.edb cache database, several gigabytes of memory need to be available to be committed. If not, this error can occur.



Note: Systems running earlier versions of Windows Server 2016 are more prone to this error.

Solutions

- Set the page file to system managed.

  Review Microsoft documentation: How to determine the appropriate page file size for 64-bit versions of Windows. When using a dedicated logical disk for a system-managed paging file, the page file does not automatically grow beyond the size of the volume ÷ 8. For example, if a system is mounted with a 16 GB volume and a system-managed page file, the page file only expands to approximately 2 GB. In this situation, consider using a static page file or increasing the volume size to allow the page file to dynamically grow.

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- If the system is undersized, increase the installed RAM or reduce memory from other applications.

Windows Update Manager timed out waiting for the Windows Update Service to reach a Stopped state

Cause

Tanium attempted to restart the Windows Update service prior to executing a Tanium Scan for Windows scan. This attempt timed out if the Windows Update service was busy performing an operation (likely unrelated to Tanium Patch) at the time Tanium attempted to restart the service.

Solutions

- Check the following Windows Update Agent logs to determine what invoked the operation (for example, automatic updates scan or WSUS):
  - C:\Windows\Logs\WindowsUpdate
  - C:\Windows\WindowsUpdate.log
- Use the **Patch - Reset Windows Update Client** package to reset Windows Update Agent.

Windows Update Error: -2145107951 WU_E_PT_SUS_SERVER_NOT_SET

Cause

This error has the following causes:

- The endpoint is running Windows 10 Home Edition.
- The registry value is not set for a WSUS scan.

Solutions

- Windows 10 Home Edition does not support Tanium Scan or WSUS scan. Contact Tanium Support on page 235 if you see this error in your environment.
- Use the **Registry Value Data** Tanium sensor to identify the values set on the endpoint.

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WSUS scans require the following registry values:

- HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\WUServer with a value of URL:port. For example, `http://192.168.1.10:8530`
- HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU\UseWUServer with a value of `1`

To update the values on the endpoint, use the **Registry - Set Value** Tanium package. To add the key on the endpoint, use the **Registry - Create Key** Tanium package. Specify the WUServer registry value as a **REG_SZ** value type and the UseWUServer as a **REG_DWORD** value type. For more information, see Tanium Console User Guide: Managing packages.

Important: After the values are added to the endpoints, restart the Windows Update service for the changes to take effect.

Linux: Could not get results

Cause

This error is likely caused by Patch tools not being installed on endpoints.

Solution

Verify that the Patch tools are installed on your Linux endpoints.

1. From the Main menu, go to **Modules** > **Patch > Overview**, click Settings and then click **Operating Systems** to verify that the **Enhanced Linux Support** option is enabled.
2. Verify that the Patch tools are installed on your Linux endpoints. If the Patch tools are not installed on your Linux endpoints, the **Endpoint Configuration - Tools Status** sensor returns `Not Installed for Patch`.

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Linux: Failed to download repomd.xml

Cause

This error indicates that the Tanium Server cannot download the repomd.xml metadata file from the repository. The repomd.xml file is required for patch scanning.

Solution

Check for the following issues:

- For Red Hat endpoints, the Red Hat certificate has been improperly configured or has rotated or the subscription has expired. For more information, see Knowledge Article: Create a Red Hat certificate for Tanium downloads (login required).
- The repository has been decommissioned by the vendor (for example, CentOS 6).
- A firewall or proxy is interfering with communication between the Tanium Server and the remote repository.

Linux: Repo URLs found but unable to snapshot metadata files, likely due to connectivity issue

Cause

This error indicates that the Tanium Server cannot access the source repository for download.

Solutions

- Ensure that the Tanium Server can access the repository upstream URL.
- For Red Hat Enterprise Linux repositories, ensure that you have properly configured the Red Hat certificate. For more information, see (Red Hat endpoints) Configure Tanium Server to use certificate authentication on page 98.
- If the problem persists, Contact Tanium Support on page 235 for assistance. Provide logs from the time period during which the problem occurred. For more information, see Collect a troubleshooting package on page 208.

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Linux: Selected repo <repository_name> is missing required Yum variables

Cause

This error indicates that Patch could not gather Yum variables for the operating system type of the selected repository. This issue might occur after you import a new version of Patch.

Solution

1. Ensure that the process is running on Linux endpoints. For more information, see Patch process is not running on Linux endpoints on page 218.
2. Re-create the Yum variables by clicking the Interact icon  in the message.

Linux: Repo URLs were found but the snapshot could not be created, likely due to a Yum variable mismatch

Cause

This issue indicates that Patch could not resolve the listed Yum variables in the repository upstream URL.

Solution

1. Ensure that the Patch process is running on Linux endpoints. For more information, see Patch process is not running on Linux endpoints on page 218.
2. Ensure that custom Yum variables in the URL are accurate.
3. Ensure that you have defined the custom Yum variables on your Linux endpoints.
4. Reinitialize Patch, which runs the `Patch - Repository variables` sensor to gather Yum variables from Linux endpoints. For more information, see Initialize Patch on Windows and Linux endpoints on page 109. Alternatively, wait up to three hours for normal processing to gather the variables.

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Linux: Could not load DNF variables

Cause

The Patch module calls Python to resolve DNF variables, such as $releasever and $basearch, at startup. If the Python invocation returns empty or invalid output, a JSON parse failure occurs.

Common root causes include:

- A custom Python installation takes precedence over the OS-standard Python (/usr/bin/python3) in the PATH variable, and the custom Python does not have the DNF module.
- The DNF version on the endpoint is below 4.2.15.
- The DNF Python module is corrupted or missing.

Solution

1. Run `which python3` on the affected endpoint.
2. If the result is not `/usr/bin/python3` or `/usr/libexec/platform-python` on Red Hat Enterprise Linux or CentOS, verify that the referenced Python has the DNF module by running: `python3 -c 'import dnf; print(dnf._version_)'`.
3. If a custom Python is shadowing the OS-standard Python, complete one of the following actions:
    - adjust the PATH variable priority
    - remove or rename the custom Python
    - install the DNF module into the custom Python environment
4. Verify that the DNF version is 4.2.15 or later by running `dnf --version`.

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Reference: End-User Self Service sensors

Patch uses the following sensors for End-User Self Service activity. Use these sensors to help troubleshoot End-User Self Service issues.

Patch End-User Self Service sensors

Sensor	Description

Patch - Patch Downloads	Returns the status for Tanium file downloads initiated by Patch deployments, including deployments visible in the Self Service Client application.
	Example: `Deployment IDs|Tanium UID|Patch URL|Status`
	`1|09fa665904c554959b822222c203d444|https://path/to/patch/file|Complete`
	`2|fe320b179031f7b18942d0b4af98180f|https://path/to/patch/file|Requested`
	Note: This sensor is also used by Patch for deployments that do not use the Self Service Client application.

Patch - Self Service Activity	Return the self service activity for deployments. By default, registered with Tanium Data Service.
Patch - Self Service Deployments	Return Patch self service deployments. By default, registered with Tanium Data Service.

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Reference: Patch endpoint tools

Endpoint Configuration installs the following Patch tools on endpoints. Patch endpoint tools extend the functionality of Tanium Patch. You can check the status of these tools with the **Get Endpoint Configuration - Tools Status** sensor.

Patch endpoint tools

Tool	Description
7za	<Tanium Client>\Tools\Patch File archiver used for compressing patches.
active-user-sessions	<Tanium Client>\Patch\tools A utility used to detect if there is an active user session. If there is an active user session, End-User Notifications notifies the user or immediately reboots, depending on deployment configuration.
end-user-cx	<Tanium Client>\extensions\end_user Tanium Client Extension that handles end-user notifications for patch deployments.
index-cx	<Tanium Client>\extensions\index Tanium Client Extension that runs Tanium Index. If an endpoint uses both Asset and Patch, Index must be installed for Patch on the endpoint. Index is not used by Patch but is a dependency of **swmgr-cx** . You can disable but not uninstall Index on Patch endpoints.
Patch	<Tanium Client>\Patch\lib Tool that provides patch functionality, such as deployments and scans.
patch-cx	<Tanium Client>\extensions\patch Tanium Client extension that provides patch functionality on Windows endpoints. For more information, see How to prepare for patch-cx and (Windows) Determine whether patch-cx client extension is running on an endpoint on page 210 .
Patch - Euss Tool Wrapper and **Tanium EUSS**	• <Tanium Client>\Tools\EussToolWrapper Euss Tool Wrapper installs End-User Self Service (EUSS) for Patch on Windows endpoints. The version file in this directory indicates the current version of EUSS required by Patch.

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Tool	Description
	Note: Deploy and End-User Notifications use unique Euss Tool Wrappers to indicate the required EUSS versions for the solutions. Separate tool wrappers for each solution allow for independent solution installations and upgrades. • <Tanium Client>\Tools\euss EUSS code. When a user runs the Self Service Client, Tanium writes logs to %localappdata%\tanium-end-user-self-service. When a user clicks a Patch tile or deployment in Self Service, Tanium generates an activity file in %localappdata%\tanium-end-user-self-service. If you are uninstalling or reinstalling EUSS, generally target Tanium EUSS and not the wrapper. If you are using End-User Self Service and notifications, Patch also uses the **End-User Notifications** tool. For more information, see Tanium End-User Notifications User Guide: Reference: End-User Notifications tool .
python38	<Tanium Client>\python38 Provides TPython binary and libraries for endpoints with a toolset version earlier than 2.7. **Note:** **python38** is also used by other Tanium solutions and is commonly found on endpoints managed using Tanium Client.
python312	<Tanium Client>\python312 Provides TPython binary and libraries for endpoints with toolset 2.7 or later. **Note:** **python312** is also used by other Tanium solutions and is commonly found on endpoints managed using Tanium Client.
TaniumExecWrapper	<Tanium Client>\Patch\tools Wrapper used to invoke child processes to enforce process timeouts and logging levels.
TaniumFileInfo	<Tanium Client>\Patch\tools Executable used to calculate the hashes of files on disk.
TaniumUpdateSearcher	<Tanium Client>\Patch\tools A utility to extract patch file download URLs from Windows Update Agent (WUA) results. This utility addresses Microsoft changes to the WUA API introduced in Windows 10, version 2004.

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Tool	Description
swmgr-cx (or Software Manager)	<Tanium Client>\extensions\software_manager Tanium Client extension that starts the Patch process. Software Manager is also used for Client Management Endpoint Must Gathers. **Note:** Software Manager is also used by Deploy and Asset.

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Reference: Gateway examples for Patch

Tanium Gateway provides a GraphQL API integration point for Tanium solutions, including Patch. Patch requests require Patch 3.16.191 or later to create, retrieve, and stop Patch deployments.

For additional Gateway example syntax, see Tanium Gateway User Guide: Reference: Filter syntax and Tanium Gateway User Guide: Reference: Gateway examples.

Patch query filter syntax

Patch queries to retrieve patch definitions support the following filter field:

- `cveIds`
- `classification`
- `hasCve`
- `isSuperseded`
- `platform`
- `product`
- `releasedOnOrBeforeDate`
- `releasedOnOrAfterDate`
- `severity`

For more information on syntax, see `patchDefinitionFieldFilter` in the **Documentation Explorer** pane of the query explorer.

CVE ID

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You can filter patch definitions based on an associated CVE ID. Define a filter object using the syntax:

```
{cveIds: [cve-id]}
```



Note: The filter supports one, and only one, CVE ID to filter the returned patch definitions.

For example, the following request filters and returns only patch definitions with a CVE ID of `CVE-2014-123456`:

```
query exampleGetPatchDefinitions ($first: Int, $filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (first: $first, filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "first": 1,
  "filter": {"cveIds": ["CVE-2014-123456"]},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Classification

You can filter patch definitions based on a patch definition classification. Define a filter object using the syntax:

```
{classification: classification-type}
```

For example, the following request filters and returns only patch definitions with a classification of

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`Security Updates`:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"classification": ["Security Updates"]},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Has association with any CVE

You can filter patch definitions based on whether the patch definition is associated with any CVE. Define a filter object using the syntax:

```
{hasCve: boolean-value}
```

For example, the following request filters and returns only patch definitions associated with any CVE:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
```

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```
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"hasCve": true},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Is superseded by another patch definition

You can filter patch definitions based on whether the patch definition is superseded by another patch definition. Define a filter object using the syntax:

```
{isSuperseded: boolean-value}
```

For example, the following request filters and returns only patch definitions superseded by another patch definition:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

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Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"isSuperseded": true},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Operating System platform

You can filter patch definitions based on whether the patch definition applies to an operating system. Define a filter object using the syntax:

```
{platform: PatchEndpointPlatform-enum-value}
```

Supported values include `MACOS`, `LINUX`, and `WINDOWS`.

For example, the following request filters and returns only patch definitions that apply to Linux operating systems:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"platform": "LINUX"},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Product

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You can filter patch definitions based on the product to which the patch definition applies to an operating system. Define a filter object using the syntax:

```
{product: product-name}
```

For example, the following request filters and returns only patch definitions for Windows Server 2019:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"product": "Windows Server 2019"},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Released on or before a date

You can filter patch definitions based on the patch definition release date occurring prior to or equal to a date in ISO 8601 format. Define a filter object using the syntax:

```
{releasedOnOrBeforeDate: iso-8601-date}
```

For example, the following request filters and returns only patch definitions released before or on December 31, 2020:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
```

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```
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"releasedOnOrBeforeDate": "2020-12-31"},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Released on or after a date

You can filter patch definitions based on the patch definition release date occurring on or after a date in ISO 8601 format. Define a filter object using the syntax:

```
{releasedOnOrAfterDate: iso-8601-date}
```

For example, the following request filters and returns only patch definitions released on or after December 31, 2023:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
```

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```
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"releasedOnOrAfterDate": "2023-12-31"},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Severity

You can filter patch definitions based on the patch definition severity. Define a filter object using the syntax:

```
{severity: severity-value}
```

The filter comparison is case-insensitive. Supported severity values include `critical`, `important`, `low`, `medium`, `moderate`, and `none`

For example, the following request filters and returns only patch definitions assigned a `medium` severity:

```
query exampleGetPatchDefinitions ($filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions (filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
                classification
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    },
    totalRecords
  }
}
```

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Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "filter": {"severity": "medium"},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Create a Linux patch deployment

(mutation.patchCreateDeployment)

About this task

The `patchCreateDeployment` mutation requires Patch 3.16.191 or later and the **Patch Deployment write** and **Patch Deployment execute** permissions.

Note: The `patchCreateDeployment` mutation does not support uploading images to pre-install and post-install user notifications.

The following mutation creates a new deployment for installing Linux patches on targeted endpoints.

```
mutation exampleCreateLinuxPatchDeployment($input: PatchCreateDeploymentInput!) {
  patchCreateDeployment(input: $input) {
    deployment {
      id
      author {
        id
        displayName
        username
      }
      contentDeploymentType
      contentSet {
        id
      }
      createdTime
      description
      downloadImmediately
      name
      notifications {
        postDeployment {
          body
          countdownToDeadline {
            nanoseconds
            seconds
          }
          notificationPeriodDuration {
            nanoseconds
            seconds
          }
          postponeOptions {
            durationOne {
```

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```
              nanoseconds
              seconds
            }
            durationTwo {
              nanoseconds
              seconds
            }
            durationThree {
              nanoseconds
              seconds
            }
          }
          title
          translations {
            body
            languageCode
            title
          }
        }
      }
      overrideBlocklists
      patches {
        id
      }
      patchLists {
        id
        version
      }
      platform
      restart
      schedule {
        distributeOver {
          nanoseconds
          seconds
        }
        endTime
        eussAvailableBeforeStart
        eussHideFromActivity
        overrideMaintenanceWindows
        startTime
        timeZone
        type
      }
      status
      stoppedTime
      targets {
        computerGroups {
          id
        }
      }
      type
      updatedTime
    }
    error {
      message
      retryable
      timedOut
    }
  }
}
```

Include the input variables in the **Variables** panel or in your variables dictionary:

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```
{
  "input": {
    "contentDeploymentType": "ALL_UPDATES",
    "contentSet": {
      "id": "123"
    },
    "description": "example Patch deployment for Linux",
    "downloadImmediately": true,
    "name": "example_deployment_linux",
    "overrideBlocklists": false,
    "patches": null,
    "patchLists": [
      {
        "id": "234",
        "version": 1
      }
    ],
    "platform": "LINUX",
    "restart": false,
    "schedule": {
      "distributeOver": {
        "seconds": 600
      },
      "endTime": "2025-02-01",
      "eussAvailableBeforeStart": false,
      "eussHideFromActivity": false,
      "overrideMaintenanceWindows": false,
      "startTime": "2025-01-01",
      "timeZone": "EST",
      "type": "SINGLE"
    },
    "targets": {
      "computerGroups": [
        {
          "id": "123"
        }
      ]
    },
    "type": "INSTALL"
  }
}
```

Example response:

```
{
  "data": {
    "patchCreateDeployment": {
      "deployment": {
        "id": "123",
        "author": {
          "id": "1",
          "displayName": null,
          "username": "Administrator"
        },
        "contentDeploymentType": "ALL_UPDATES",
        "contentSet": {
          "id": "123"
        },
        "createdTime": "2023-10-18T18:48:43.515Z",
        "description": "example Patch deployment for Linux",
        "downloadImmediately": true,
        "name": "example_deployment_linux",
```

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```
        "notifications": null,
        "overrideBlocklists": false,
        "patches": [],
        "patchLists": [
          {
            "id": "234",
            "version": 1
          }
        ],
        "platform": "LINUX",
        "restart": false,
        "schedule": {
          "distributeOver": {
            "nanoseconds": 0,
            "seconds": 600
          },
          "endTime": "2025-02-01T00:00:00.000Z",
          "eussAvailableBeforeStart": false,
          "eussHideFromActivity": false,
          "overrideMaintenanceWindows": false,
          "startTime": "2025-01-01T00:00:00.000Z",
          "timeZone": "EST",
          "type": "SINGLE"
        },
        "status": "INACTIVE",
        "stoppedTime": null,
        "targets": {
          "computerGroups": [
            {
              "id": "123"
            }
          ]
        },
        "type": "INSTALL",
        "updatedTime": "2023-10-18T18:48:43.515Z"
      },
      "error": null
    }
  }
}
```


Create a Windows patch deployment

(mutation.patchCreateDeployment)

About this task

The `patchCreateDeployment` mutation requires Patch 3.16.191 or later and the **Patch Deployment write** and **Patch Deployment execute** permissions.

> **Note:** The `patchCreateDeployment` mutation does not support uploading images to pre-install and post-install user notifications.

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The following mutation creates a new deployment for installing Windows patches on targeted endpoints.

Note: Set `mutation.patchCreateDeployment (input.type)` equal to `INSTALL` for a Windows patch install deployment, or `UNINSTALL` for a Windows patch uninstall deployment.

```
mutation exampleCreateWindowsPatchDeployment($input: PatchCreateDeploymentInput!) {
  patchCreateDeployment(input: $input) {
    deployment {
      id
      author {
        id
        displayName
        username
      }
      contentDeploymentType
      contentSet {
        id
      }
      createdTime
      description
      downloadImmediately
      name
      notifications {
        postDeployment {
          body
          countdownToDeadline {
            nanoseconds
            seconds
          }
          notificationPeriodDuration {
            nanoseconds
            seconds
          }
          postponeOptions {
            durationOne {
              nanoseconds
              seconds
            }
            durationTwo {
              nanoseconds
              seconds
            }
            durationThree {
              nanoseconds
              seconds
            }
          }
          title
          translations {
            body
            languageCode
            title
          }
        }
      }
      overrideBlocklists
```

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```
      patches {
        id
      }
      patchLists {
        id
        version
      }
      platform
      restart
      schedule {
        distributeOver {
          nanoseconds
          seconds
        }
        endTime
        eussAvailableBeforeStart
        eussHideFromActivity
        overrideMaintenanceWindows
        startTime
        timeZone
        type
      }
      status
      stoppedTime
      targets {
        computerGroups {
          id
        }
      }
      type
      updatedTime
    }
    error {
      message
      retryable
      timedOut
    }
  }
}
```

Include the input variables in the **Variables** panel or in your variables dictionary:

```
{
  "input": {
    "contentDeploymentType": "MANUAL_SELECTION",
    "contentSet": {
      "id": "123"
    },
    "description": "example Patch deployment for Windows",
    "downloadImmediately": true,
    "name": "example_deployment_windows",
    "notifications": {
      "postDeployment": {
        "body": "example text display",
        "countdownToDeadline": {
          "seconds": 15
        },
        "notificationPeriodDuration": {
          "seconds": 1440
        },
        "postponeOptions": {
          "durationOne": {
```

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```
            "seconds": 60
          },
          "durationTwo": {
            "seconds": 120
          },
          "durationThree": {
            "seconds": 240
          }
        },
        "title": "example title",
        "translations": [
          {
            "body": "ejemplo",
            "languageCode": "es",
            "title": "texto"
          }
        ]
      }
    },
    "overrideBlocklists": false,
    "patches": null,
    "patchLists": [
      {
        "id": "234",
        "version": 1
      }
    ],
    "platform": "WINDOWS",
    "restart": true,
    "schedule": {
      "distributeOver": {
        "seconds": 600
      },
      "endTime": null,
      "eussAvailableBeforeStart": false,
      "eussHideFromActivity": false,
      "overrideMaintenanceWindows": false,
      "startTime": "2025-01-01",
      "timeZone": "EST",
      "type": "ONGOING"
    },
    "targets": {
      "computerGroups": [
        {
          "id": "345"
        }
      ]
    },
    "type": "INSTALL"
  }
}
```

Example response:

```
{
  "data": {
    "patchCreateDeployment": {
      "deployment": {
        "id": "123",
        "author": {
          "id": "1",
          "displayName": null,
```

```
    "username": "admin"
  },
  "contentDeploymentType": "MANUAL_SELECTION",
  "contentSet": {
    "id": "123"
  },
  "createdTime": "2023-10-24T17:59:00.274Z",
  "description": "example Patch deployment for Windows",
  "downloadImmediately": true,
  "name": "example_deployment_windows",
  "notifications": {
    "postDeployment": {
      "body": "example text display",
      "countdownToDeadline": {
        "nanoseconds": 0,
        "seconds": 0
      },
      "notificationPeriodDuration": {
        "nanoseconds": 0,
        "seconds": 1440
      },
      "postponeOptions": {
        "durationOne": {
          "nanoseconds": 0,
          "seconds": 60
        },
        "durationTwo": {
          "nanoseconds": 0,
          "seconds": 120
        },
        "durationThree": {
          "nanoseconds": 0,
          "seconds": 240
        }
      },
      "title": "example title",
      "translations": [
        {
          "body": "ejemplo",
          "languageCode": "es",
          "title": "texto"
        }
      ]
    }
  },
  "overrideBlocklists": false,
  "patches": [],
  "patchLists": [
    {
      "id": "234",
      "version": 1
    }
  ],
  "platform": "WINDOWS",
  "restart": true,
  "schedule": {
    "distributeOver": {
      "nanoseconds": 0,
      "seconds": 600
    },
    "endTime": null,
    "eussAvailableBeforeStart": false,
    "eussHideFromActivity": false,
    "overrideMaintenanceWindows": false,
```


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```
          "startTime": "2025-01-01T00:00:00.000Z",
          "timeZone": "EST",
          "type": "ONGOING"
        },
        "status": "INACTIVE",
        "stoppedTime": null,
        "targets": {
          "computerGroups": [
            {
              "id": "345"
            }
          ]
        },
        "type": "INSTALL",
        "updatedTime": "2023-10-24T17:59:00.274Z"
      },
      "error": null
    }
  }
}
```

Get multiple patch definitions

(query.patchDefinitions)

About this task

The `patchDefinition` query requires Patch 3.17.175 or later and the **Patch show** permission.

The following query retrieves the first patch definition that matches the specified CVE ID.



Note: The filter supports one, and only one, CVE ID to filter the returned patch definitions.

```
query exampleGetPatchDefinitions($first: Int, $filter: PatchDefinitionFieldFilter,
$sort:PatchDefinitionFieldSort) {
  patchDefinitions(first: $first, filter: $filter, sort: $sort) {
    edges {
      node {
        id
        createdDate
        cveIds
        isSuperseded
        platform
        releaseDate
        severity
        sizeInBytes
        title
      }
    }
    pageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
```

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```
      endCursor
    },
    totalRecords
  }
}
```

Include the pagination and filter variables in the **Variables** panel or in your variables dictionary:

```
{
  "first": 1,
  "filter": {"cveIds": ["CVE-2014-123456"]},
  "sort": {"field": "releaseDate", "order": "desc"}
}
```

Example response:

```
{
  "data": {
    "patchDefinitions": {
      "edges": [
        {
          "node": {
            "id": "1234567890abcdef1234567890abcdef",
            "createdDate": "2021-04-20",
            "cveIds": [
              "CVE-2014-123456"
            ],
            "isSuperseded": false,
            "platform": "LINUX",
            "releaseDate": "2020-01-01",
            "severity": "Important",
            "sizeInBytes": 12345678,
            "title": "example patch definition"
          }
        }
      ],
      "pageInfo": {
        "hasNextPage": false,
        "hasPreviousPage": false,
        "startCursor":
"eyJpZCI6ImE4OWE0ZGFkZWY2YWU0YTAzZDBjYzY5NGFhZjg4MzMzIiwiY3JlYXRlZERhdGUiOiIyMDIxLTA0LTIwVDA2
OjAxOjQ2Ljg1MloiLCJyZWxlYXNlRGF0ZSI6IjIwMTItMDYtMThUMDA6MDA6MDAuMDAwWiJ9",
        "endCursor":
"eyJpZCI6ImE4OWE0ZGFkZWY2YWU0YTAzZDBjYzY5NGFhZjg4MzMzIiwiY3JlYXRlZERhdGUiOiIyMDIxLTA0LTIwVDA2
OjAxOjQ2Ljg1MloiLCJyZWxlYXNlRGF0ZSI6IjIwMTItMDYtMThUMDA6MDA6MDAuMDAwWiJ9"
      },
      "totalRecords": 1
    }
  }
}
```

Get a patch deployment by ID

(query.patchDeployment)

About this task

The `patchDeployment` query requires Patch 3.16.191 or later and the **Patch Deployment read** permission.

The following query retrieves the Patch deployment that matches the specified ID.

```
query examplgeGetPatchDeployment($id: ID!) {
  patchDeployment(ref: {id: $id}) {
    id
    author {
      id
      displayName
      username
    }
    contentDeploymentType
    contentSet {
      id
    }
    createdTime
    description
    downloadImmediately
    name
    notifications {
      postDeployment {
        body
        countdownToDeadline {
          nanoseconds
          seconds
        }
        notificationPeriodDuration {
          nanoseconds
          seconds
        }
        postponeOptions {
          durationOne {
            nanoseconds
            seconds
          }
          durationTwo {
            nanoseconds
            seconds
          }
          durationThree {
            nanoseconds
            seconds
          }
        }
        title
        translations {
          body
          languageCode
          title
        }
      }
    }
    overrideBlocklists
    patches {
      id
    }
    patchLists {
      id
      version
```

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```
    }
    platform
    restart
    schedule {
      distributeOver {
        nanoseconds
        seconds
      }
      endTime
      eussAvailableBeforeStart
      eussHideFromActivity
      overrideMaintenanceWindows
      startTime
      timeZone
      type
    }
    status
    stoppedTime
    targets {
      computerGroups {
        id
      }
    }
    type
    updatedTime
  }
}
```

Include the ID variable in the **Variables** panel or in your variables dictionary:

```
{
  "id": "123"
}
```

Example response:

```
{
  "data": {
    "patchDeployment": {
      "id": "123",
      "author": {
        "id": "1",
        "displayName": null,
        "username": "Administrator"
      },
      "contentDeploymentType": "ALL_UPDATES",
      "contentSet": {
        "id": "123"
      },
      "createdTime": "2023-10-18T18:48:43.515Z",
      "description": "example Patch deployment for Linux",
      "downloadImmediately": true,
      "name": "example_deployment_linux",
      "notifications": null,
      "overrideBlocklists": false,
      "patches": [],
      "patchLists": [
        {
          "id": "234",
          "version": 1
        }
```

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```
      ],
      "platform": "LINUX",
      "restart": false,
      "schedule": {
        "distributeOver": {
          "nanoseconds": 0,
          "seconds": 600
        },
        "endTime": "2025-02-01T00:00:00.000Z",
        "eussAvailableBeforeStart": false,
        "eussHideFromActivity": false,
        "overrideMaintenanceWindows": false,
        "startTime": "2025-01-01T00:00:00.000Z",
        "timeZone": "EST",
        "type": "SINGLE"
      },
      "status": "INACTIVE",
      "stoppedTime": null,
      "targets": {
        "computerGroups": [
          {
            "id": "1"
          }
        ]
      },
      "type": "INSTALL",
      "updatedTime": "2023-10-18T18:48:44.693Z"
    }
  }
}
```

Stop a patch deployment by ID

(mutation.patchStopDeployment)

About this task

The `patchStopDeployment` mutation requires Patch 3.16.191 or later and the **Patch Deployment write** and **Patch Deployment execute** permissions.

The following mutation updates a deployment that matches the ID `123`.

```
mutation exampleStopPatchDeployment($id: ID!) {
  patchStopDeployment(ref: {id: $id}) {
    deployment {
      id
      author {
        id
        displayName
        username
      }
      contentDeploymentType
      contentSet {
        id
      }
      createdTime
      description
```

```
    downloadImmediately
    name
    notifications {
      postDeployment {
        body
        countdownToDeadline {
          nanoseconds
          seconds
        }
        notificationPeriodDuration {
          nanoseconds
          seconds
        }
        postponeOptions {
          durationOne {
            nanoseconds
            seconds
          }
          durationTwo {
            nanoseconds
            seconds
          }
          durationThree {
            nanoseconds
            seconds
          }
        }
        title
        translations {
          body
          languageCode
          title
        }
      }
    }
    overrideBlocklists
    patches {
      id
    }
    patchLists {
      id
      version
    }
    platform
    restart
    schedule {
      distributeOver {
        nanoseconds
        seconds
      }
      endTime
      eussAvailableBeforeStart
      eussHideFromActivity
      overrideMaintenanceWindows
      startTime
      timeZone
      type
    }
    status
    stoppedTime
    targets {
      computerGroups {
        id
      }
```

```
      }
      type
      updatedTime
    }
    error {
      message
      retryable
      timedOut
    }
  }
}
```

Include the ID variable in the **Variables** panel or in your variables dictionary:

```
{
  "id": "123"
}
```

Example response:

```
{
  "data": {
    "patchStopDeployment": {
      "deployment": {
        "id": "123",
        "author": {
          "id": "1",
          "displayName": null,
          "username": "Administrator"
        },
        "contentDeploymentType": "ALL_UPDATES",
        "contentSet": {
          "id": "123"
        },
        "createdTime": "2023-10-18T18:48:43.515Z",
        "description": "example Patch deployment for Linux",
        "downloadImmediately": true,
        "name": "example_deployment_linux",
        "notifications": null,
        "overrideBlocklists": false,
        "patches": null,
        "patchLists": [
          {
            "id": "234",
            "version": 1
          }
        ],
        "platform": "LINUX",
        "restart": false,
        "schedule": {
          "distributeOver": {
            "nanoseconds": 0,
            "seconds": 600
          },
          "endTime": "2025-02-01T00:00:00.000Z",
          "eussAvailableBeforeStart": false,
          "eussHideFromActivity": false,
          "overrideMaintenanceWindows": false,
          "startTime": "2025-01-01T00:00:00.000Z",
          "timeZone": "EST",
          "type": "SINGLE"
```

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```
        },
        "status": "STOPPED",
        "stoppedTime": "2023-10-18T19:16:28.105Z",
        "targets": {
          "computerGroups": [
            {
              "id": "1"
            }
          ]
        },
        "type": "INSTALL",
        "updatedTime": "2023-10-18T19:16:28.123Z"
      },
      "error": null
    }
  }
}
```

Upsert (create or update by ID) a patch list

(mutation.patchListUpsert)

The `patchListUpsert` mutation requires Patch 3.24.83 or later and the **Patch Patchlist execute** and **Patch Patchlist write** permissions.

The `patchListUpsert` mutation either creates a new patch list or updates the existing patch list that matches an ID.



Note: Although you can manually select patches to include in a patch list, it is more efficient to use rules to dynamically populate lists of patches.

The following mutation creates a new Linux patch list. The list defines two rules:

- include all patches with "example" in the title
- include all critical severity patches released in the past seven days

```
mutation examplePatchListCreate($input: PatchListUpsertInput!) {
  patchListUpsert(input: $input) {
    patchList {
      id
      name
      author {
        id
        displayName
        username
      }
      contentSet {
        id
```

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```
        description
        name
      }
      createdTime
      includeSupersededPatches
      isTaniumManaged
      patchDefinitionIDs
      platform
      rules {
        name
        conditions {
          comparisonOperator
          fieldName
          fieldValue
        }
      }
      updatedTime
      version
    }
    error {
      message
      retryable
      timedOut
    }
  }
}
```

Include the input variables in the **Variables** panel or in your variables dictionary:

```
{
  "input": {
    "name": "example_patch_list",
    "platform": "LINUX",
    "contentSet": {
      "id": "234"
    },
    "patchDefinitionIDs": [],
    "includeSupersededPatches": false,
    "rules": [
      {
        "name": "example_rule_1",
        "conditions": [
          {
            "fieldName": "TITLE",
            "comparisonOperator": "CONTAINS",
            "fieldValue": {
              "value": "example"
            }
          }
        ]
      },
      {
        "name": "example_rule_2",
        "conditions": [
          {
            "fieldName": "RELEASE_DATE",
            "comparisonOperator": "ON_OR_BEFORE_RELATIVE_DAYS",
            "fieldValue": {
              "releaseDateDaysAgo": 7
            }
          },
          {
```

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```
            "fieldName": "SEVERITY",
            "comparisonOperator": "EQUALS",
            "fieldValue": {
              "severity": "CRITICAL"
            }
          }
        ]
      }
    ]
  }
}
```

Example response:

```
{
  "data": {
    "patchListUpsert": {
      "patchList": {
        "id": "123",
        "name": "example_patch_list",
        "author": {
          "id": "1",
          "displayName": null,
          "username": "admin"
        },
        "contentSet": {
          "id": "53",
          "description": "Default container for objects.",
          "name": "Patch Content Set"
        },
        "createdTime": "2025-02-03T14:24:43.327Z",
        "includeSupersededPatches": false,
        "isTaniumManaged": false,
        "patchDefinitionIDs": [],
        "platform": "LINUX",
        "rules": [
          {
            "name": "example_rule_1",
            "conditions": [
              {
                "comparisonOperator": "CONTAINS",
                "fieldName": "TITLE",
                "fieldValue": "example"
              }
            ]
          },
          {
            "name": "example_rule_2",
            "conditions": [
              {
                "comparisonOperator": "ON_OR_BEFORE_RELATIVE_DAYS",
                "fieldName": "RELEASE_DATE",
                "fieldValue": "7"
              },
              {
                "comparisonOperator": "EQUALS",
                "fieldName": "SEVERITY",
                "fieldValue": "CRITICAL"
              }
            ]
          }
        ],
```

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```
        "updatedTime": "2025-02-03T14:24:43.370Z",
        "version": 1
      },
      "error": null
    }
  }
}
```

The following mutation updates the patch list with the ID `123`.

```
mutation examplePatchListUpdate($input: PatchListUpsertInput!) {
  patchListUpsert(input: $input) {
    patchList {
      id
      name
      author {
        id
        displayName
        username
      }
      contentSet {
        id
        description
        name
      }
      createdTime
      includeSupersededPatches
      isTaniumManaged
      patchDefinitionIDs
      platform
      rules {
        name
        conditions {
          comparisonOperator
          fieldName
          fieldValue
        }
      }
      updatedTime
      version
    }
    error {
      message
      retryable
      timedOut
    }
  }
}
```

Include the input variables in the **Variables** panel or in your variables dictionary:

```
{
  "input": {
    "id": "123",
    "name": "example_patch_list",
    "platform": "LINUX",
    "contentSet": {
      "id": "234"
    },
    "patchDefinitionIDs": [],
    "includeSupersededPatches": false,
```

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```
    "rules": [
      {
        "name": "example_rule_1",
        "conditions": [
          {
            "fieldName": "TITLE",
            "comparisonOperator": "CONTAINS",
            "fieldValue": {
              "value": "example"
            }
          }
        ]
      }
    ]
  }
}
```

Example response:

```
{
  "data": {
    "patchListUpsert": {
      "patchList": {
        "id": "123",
        "name": "example_patch_list",
        "author": {
          "id": "1",
          "displayName": null,
          "username": "admin"
        },
        "contentSet": {
          "id": "53",
          "description": "Default container for objects.",
          "name": "Patch Content Set"
        },
        "createdTime": "2025-02-03T14:24:43.327Z",
        "includeSupersededPatches": false,
        "isTaniumManaged": false,
        "patchDefinitionIDs": [],
        "platform": "LINUX",
        "rules": [
          {
            "name": "example_rule_1",
            "conditions": [
              {
                "comparisonOperator": "CONTAINS",
                "fieldName": "TITLE",
                "fieldValue": "example"
              }
            ]
          }
        ],
        "updatedTime": "2025-02-03T14:24:43.370Z",
        "version": 1
      },
      "error": null
    }
  }
}
```

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