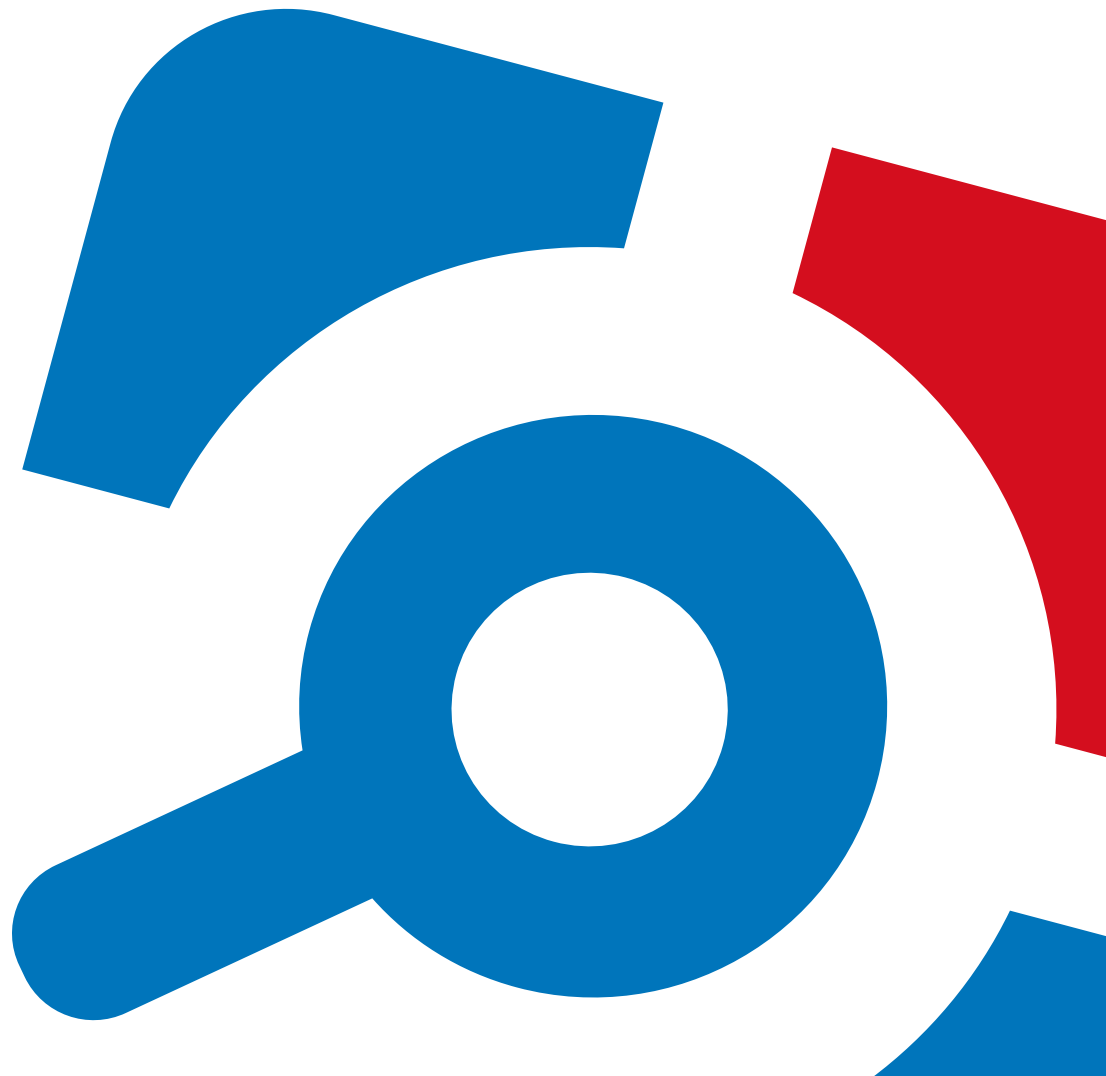


Netwrix Auditor for VMware Quick-Start Guide

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Table of Contents

1. Introduction	4
1.1. Netwrix Auditor Overview	4
2. Netwrix Auditor System Requirements	5
2.1. Supported Data Sources	5
2.2. Requirements to Install Netwrix Auditor	5
2.2.1. Hardware Requirements	5
2.2.2. Software Requirements	6
3. Review Components Checklist	7
3.1. Configure Data Collecting Account	7
4. Install the Product	9
5. Monitoring Plans	11
5.1. Create a New Plan	11
5.1.1. New Monitoring Plan (Data Source)	11
5.1.2. New Monitoring Plan	11
5.1.3. Default SQL Server Instance	12
5.1.4. Audit Database	13
5.1.5. Notifications	13
5.1.6. Recipients	14
5.1.7. Monitoring Plan Summary	14
5.2. Add Items for Monitoring	14
5.2.1. VMware ESX/ESXi/vCenter	14
6. Make Test Changes	15
7. See How Netwrix Auditor Enables Complete Visibility	16
7.1. Review an Activity Summary	17
7.2. Browse Data with Intelligence Search	18
7.3. Review VMware Overview	21
7.4. Review the All VMware Changes Report	22
8. Related Documentation	24

1. Introduction

This guide is intended for the first-time users of Netrix Auditor for VMware. It can be used for evaluation purposes, therefore, it is recommended to read it sequentially, and follow the instructions in the order they are provided. After reading this guide you will be able to:

- Install and configure Netrix Auditor
- Create a monitoring plan to start auditing a virtual infrastructure
- Launch data collection
- See how Netrix Auditor enables complete visibility

NOTE: This guide only covers the basic configuration and usage options for auditing VMware with Netrix Auditor. For advanced installation scenarios and configuration options, as well as for information on various reporting possibilities and other product features, refer to:

- [Netrix Auditor Installation and Configuration Guide](#)
- [Netrix Auditor Administration Guide](#)
- [Netrix Auditor Intelligence Guide](#)

1.1. Netrix Auditor Overview

Netrix Auditor is a visibility and governance platform that enables control over changes, configurations and access in hybrid cloud IT environments to protect sensitive data regardless of its location. The platform provides security analytics to detect anomalies in user behavior and investigate threat patterns before a data breach occurs.

Netrix Auditor includes applications for Active Directory, Azure AD, Exchange, Office 365, Windows file servers, EMC storage devices, NetApp filer appliances, SharePoint, Oracle Database, SQL Server, VMware, and Windows Server. Empowered with a RESTful API and user activity video recording, the platform delivers visibility and control across all of your on-premises or cloud-based IT systems in a unified way.

Major benefits:

- Detect insider threats—on premises and in the cloud
- Pass compliance audits with less effort and expense
- Increase productivity of IT security and operations teams

Netrix Auditor for VMware detects and reports on all changes made to ESX servers, folders, clusters, resource pools, virtual machines and their virtual hardware configuration.

2. Netwrix Auditor System Requirements

This section lists the requirements for the systems that are going to be audited with Netwrix Auditor, and for the computer where the product is going to be installed.

2.1. Supported Data Sources

The table below lists systems that can be monitored with Netwrix Auditor for VMware:

Data source	Supported Versions
VMware	<ul style="list-style-type: none"> VMware vSphere (ESX) 4.0 – 6.0 VMware vSphere Hypervisor (ESXi) 4.0 – 6.0 VMware vCenter Server 4.0 – 6.0

2.2. Requirements to Install Netwrix Auditor

This section provides the requirements for the computer where Netwrix Auditor is going to be installed. Refer to the following sections for detailed information:

- [Hardware Requirements](#)
- [Software Requirements](#)

2.2.1. Hardware Requirements

Before installing Netwrix Auditor, make sure that your hardware meets the following requirements:

Hardware Component	Minimum	Recommended
Processor	Intel or AMD 64 bit, 2 GHz or any similar	Intel Core 2 Duo 2x or 4x 64 bit, 3 GHz or any similar, preferably a virtual machine
RAM	2 GB	8 GB Required size highly depends on the number of changes per day and may be

Hardware Component	Minimum	Recommended
		up to 32 GB (approximately 3 million changes per day).
Disk space	<ul style="list-style-type: none"> 500 MB physical disk space for the product installation 30 GB for the local file-based Long-Term Archive 500 MB for the local SQL Server-based Audit Database <p>NOTE: These are rough estimations, calculated for evaluation of Netwrix Auditor for VMware. Refer to Netwrix Auditor Installation and Configuration Guide for complete information on the Netwrix Auditor disk space requirements.</p>	
Screen resolution	1280 x 1024	1920 x 1080 and higher

2.2.2. Software Requirements

The table below lists the software requirements for the Netwrix Auditor installation:

Component	Requirements
Operating system	<ul style="list-style-type: none"> Windows Desktop OS (64-bit): Windows 7 SP1, Windows 8.1, and Windows 10 Windows Server OS: Windows Server 2008 R2 SP1, Windows Server 2012/2012 R2, and Windows Server 2016
.NET Framework	<ul style="list-style-type: none"> 3.5 SP1, 4.0, 4.5, or 4.6 depending on your OS
Installer	<ul style="list-style-type: none"> Windows Installer 3.1 and above

3. Review Components Checklist

To speed up the evaluation process, Netwrix recommends you to ensure that the following services and components are up and running prior to the Netwrix Auditor installation.

Service or component	Recommendations
Network and target systems or servers that work as your data sources	Test connectivity to your data source. Make sure you can access it by its NetBIOS and FQDN name from the computer where you intend to install Netwrix Auditor—use the nslookup command-line tool to look up domain names.
SQL Server 2014 with SSRS (optional step)	<p>Although Netwrix Auditor provides a convenient interface for downloading SQL Server 2014 Express right from Netwrix Auditor, it is recommended to deploy SQL Server instance in advance. Test your SQL Server connectivity.</p> <p>NOTE: Netwrix Auditor provides an option to verify SSRS settings right in the Netwrix Auditor.</p>
Test account	<p>Netwrix recommends you to create a special account with extensive privileges. This account should have sufficient permissions to:</p> <ul style="list-style-type: none"> • Collect audit data. See Configure Data Collecting Account for more information. • Access data stored in the SQL Server instance: <ul style="list-style-type: none"> • The account must be assigned the Database owner (db_owner) role and the dbcreator server role. • The account must be assigned the Content Manager role on the SSRS Home folder. • Make test changes in your environment.

3.1. Configure Data Collecting Account

This service account is specified on the monitoring plan creation and is used to collect audit data from the data source items. To ensure successful data collection, Netwrix recommends creating a special service account in advance. The account must comply with the following requirements depending on the data source.

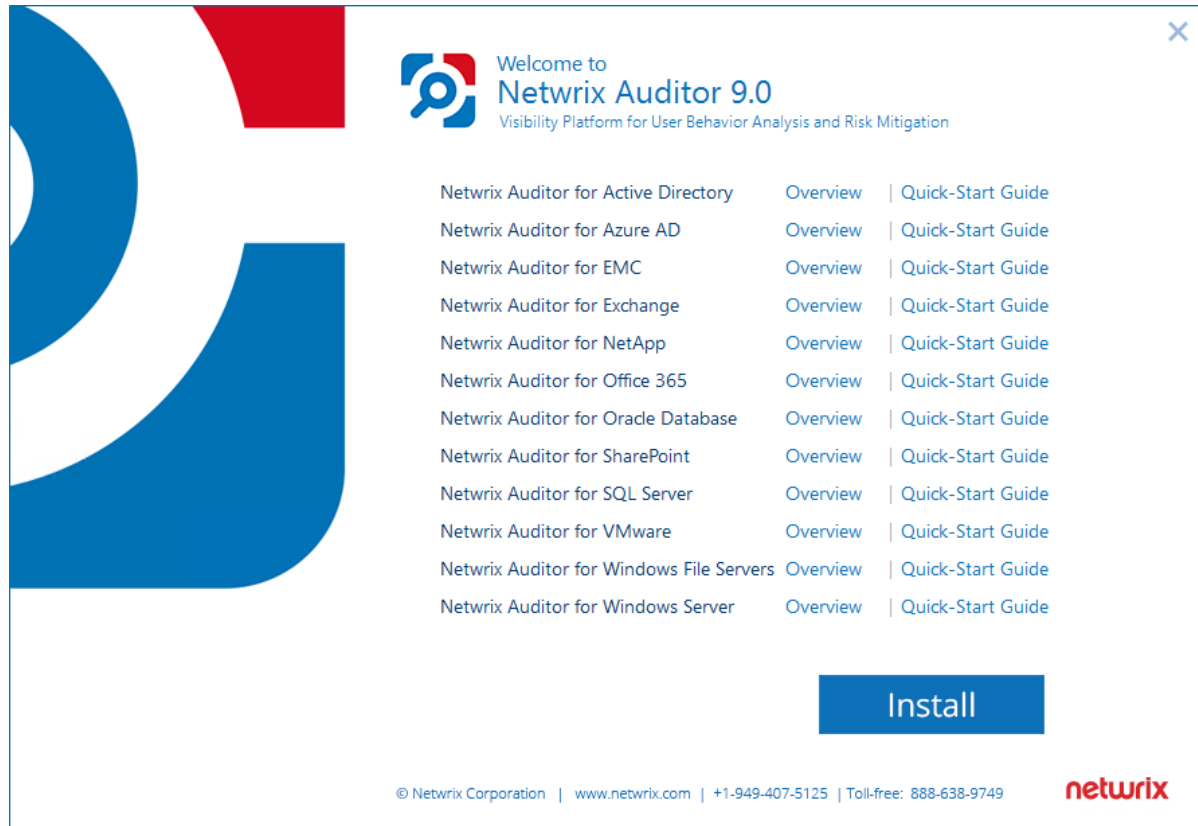
NOTE: The information in this section is outside the quick-start guide scope and is provided for reference only. See [Netwrix Auditor Installation and Configuration Guide](#) for detailed instructions on how to configure your Data Processing Account.

Data source	Rights and permissions
VMware	<i>On the target server:</i> <ul style="list-style-type: none">• At least Read-only role on the audited hosts

4. Install the Product

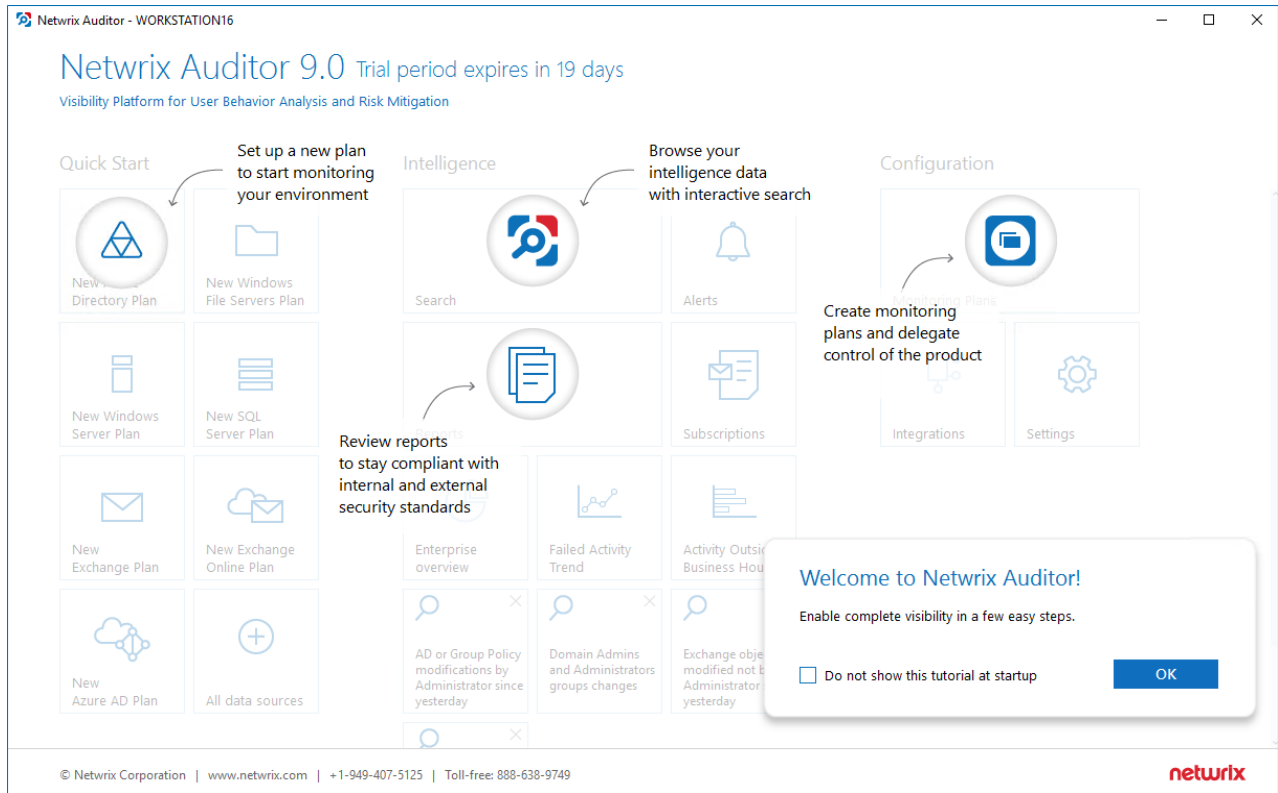
To install Netwrix Auditor

1. Download Netwrix Auditor 9.0 on [Netwrix website](#).
2. Unpack the installation package. The following window will be displayed on successful operation completion:



3. Follow the instructions of the setup wizard. When prompted, accept the license agreement.
4. On the **Select Installation Type** step, select **Full installation**.
5. On the **Destination Folder** step, specify the installation folder.
6. Click **Install**.

After a successful installation, Netwrix Auditor shortcut will be added to the **Start** menu/screen and the product will start.



5. Monitoring Plans

To start auditing your environment and analyzing user behavior with Netrix Auditor, create a monitoring plan. All your monitoring plans are listed in the **Monitoring Plans** section.

A monitoring plan defines your data sources and general data collection, notification, and storage settings. To start collecting data, choose a data source, such as VMware, and add items to its scope. Item is a specific object you want to audit. All data sources and items in your plan share common settings so that you can supervise and manage several data collections as one.

On a high level, you should perform the following steps to start monitoring your environment:

1. Specify a data source and create a monitoring plan with a wizard. See [Create a New Plan](#) for more information.
2. Add items for monitoring. Netrix Auditor does not collect data until you specify an item. See [Add Items for Monitoring](#) for more information.

5.1. Create a New Plan

On the main Netrix Auditor page, click the **All data sources** tile in the **Quick Start** section.

The wizard that appears will help you set up a new plan in a few easy steps:

- Choose a data source for monitoring
- Specify an account for collecting data
- Specify default SQL Server instance and configure the Audit Database to store your data
- Configure notification settings
- Specify the recipients who will receive daily activity summaries
- Specify a plan name

5.1.1. New Monitoring Plan (Data Source)

Specify the **VMware** tile.

5.1.2. New Monitoring Plan

Option	Description
Specify the account for collecting data	Provide a user name and a password for the account that Netrix Auditor will use to collect data. By default, the user name is prepopulated with your

Option	Description
	<p>account name.</p> <p>Make sure the account has sufficient permissions to collect data. For a full list of the rights and permissions, and instructions on how to configure them, refer to Netwrix Auditor Installation and Configuration Guide. Netwrix recommends creating a special service account with extended permissions.</p>

5.1.3. Default SQL Server Instance

To provide search, alerting, and report capabilities, Netwrix Auditor has to store security intelligence data in the Audit Database hosted on a SQL Server instance. Make sure the **Disable security intelligence and make data available only in activity summaries** checkbox is cleared.

Specify one of the following options:

- **Install a new instance of Microsoft SQL Server Express automatically**—Select if you want Netwrix Auditor to download and configure SQL Server 2014 Express with Advanced Services.
- **Use an existing SQL Server instance**—Select to continue using an installed SQL Server instance. Netwrix Auditor detects local SQL Server instance automatically and prepopulates the fields. Complete the following fields:

Option	Description
SQL Server instance	Specify the name of the SQL Server instance to store audit data.
Authentication	<p>Select the authentication type you want to use to connect to the SQL Server instance:</p> <ul style="list-style-type: none"> • Windows authentication • SQL Server authentication
User name	<p>Specify the account to be used to connect to the SQL Server instance.</p> <p>NOTE: This account must be granted the database owner (db_owner) role and the dbcreator server role. See Netwrix Auditor Installation and Configuration Guide for more information.</p>
Password	Enter a password.

5.1.4. Audit Database

Specify a database name to store security intelligence data for your monitoring plan or disable this functionality. Make sure the **Disable security intelligence and make data available only in activity summaries** checkbox is cleared and **Use default SQL Server settings** is checked.

Netrix Auditor will create a database on the SQL Server instance you specify.

5.1.5. Notifications

Specify the email settings that will be used for activity summaries, reports and alerts delivery. Netrix Auditor automatically detects SMTP settings or you can provide them manually. Complete the following fields:

Option	Description
SMTP server	Enter your SMTP server address. It can be your company's Exchange server or any public mail server (e.g., Gmail, Yahoo).
Port number	Specify your SMTP server port number.
Sender address	Enter the address that will appear in the From field. NOTE: It is recommended to click Send Test Email . The system will send a test message to the specified email address and inform you if any problems are detected.
SMTP authentication	Select this checkbox if your mail server requires the SMTP authentication.
User name	Enter a user name for the SMTP authentication.
Password	Enter a password for the SMTP authentication.
Use Secure Sockets Layer encrypted connection (SSL)	Select this checkbox if your SMTP server requires SSL to be enabled.
Use implicit SSL authentication	Select this checkbox if the implicit SSL mode is used, which means that an SSL connection is established before any meaningful data is sent.
Enforce certificate validation to ensure security	Select this checkbox if you want to verify security certificate on every email transmission.

5.1.6. Recipients

Specify the users who will receive daily activity summaries that list changes that occurred for a given time period. Click **Add Recipient** and enter your email.

NOTE: It is recommended to click **Send Test Email**. The system will send a test message to the specified email address and inform you if any problems are detected.

5.1.7. Monitoring Plan Summary

Your plan is almost complete. Provide a name and description for your monitoring plan. Make sure the **Add item now** checkbox is selected. In this case, on the next step, you will be prompted to add an item for monitoring.

5.2. Add Items for Monitoring

Once you completed monitoring plan wizard and specified data sources, add items for monitoring.

Each data source has a dedicated item type. Netwrix Auditor automatically suggests item types associated with your data source.

5.2.1. VMware ESX/ESXi/vCenter

Complete the following fields:

Option	Description
Specify VMware ESX, ESXi, or vCenter for monitoring	Specify the ESX or ESXi host URL, or vCenter Server URL.
Specify the account for collecting data	Select the account that will be used to collect data for this item.

6. Make Test Changes

Now that the product has collected a snapshot of the data source's current configuration state, you can make test changes to see how they will be reported by Netwrix Auditor.

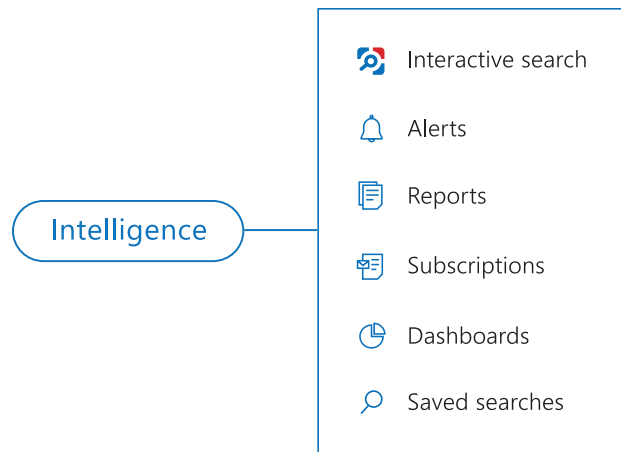
For example, make the following test changes:

- Create a virtual machine
- Modify the virtual machine's name

NOTE: Before making any test changes to your environment, ensure that you have the sufficient rights, and that the changes conform to your security policy.

7. See How Netwrix Auditor Enables Complete Visibility

After you have made test changes to your environment, you can see how Netwrix Auditor brings security intelligence into your IT infrastructure and enables complete visibility. Take a closer look at the **Intelligence** section. It contains everything you need to enable complete visibility in your environment.



This chapter explains how to review your test changes with some of the Intelligence options and Activity Summary. Review the following for additional information:

- [Review an Activity Summary](#)
- [Browse Data with Intelligence Search](#)
- [Review VMware Overview](#)
- [Review the All VMware Changes Report](#)

In order not to wait for a scheduled Activity Summary generation, force data collection and email delivery.

To launch data collection manually

1. Navigate to **Monitoring Plans** and select your plan in the list.
2. Click **Edit**.
3. In the your monitoring plan settings, click **Update** in the right pane.
4. Check your mailbox for an email notification and make sure that the data collection has completed successfully.

7.1. Review an Activity Summary

An Activity Summary is email that lists all changes that occurred since the last Activity Summary delivery. By default, an Activity Summary is generated daily at 3:00 AM and delivered to the specified recipients. You can also launch data collection and an Activity Summary generation manually.

After the data collection has completed, check your mailbox for an Activity Summary and see how your test changes are reported:

Netrix Auditor for VMware

Activity Summary

- Added: 1
- Removed: 0
- Modified: 1

Action	Object type	What	Item	Where	Who	When	Details
Modified	VirtualMachine	\ha-folder-root\ha-datacenter\vm\server16	https://VirtualCenterServer.shroot.loc:443	https://VirtualCenterServer.shroot.loc:443	vpxuser	4/11/2017 10:02:25 PM	Added Advanced Configuration (VMCI.FILTER.ENABLE): "true" Added Advanced Configuration (VMCI0.UNRESTRICTED): "true" Name changed from "vm16" to "server16"
Added	VirtualMachine	\ha-folder-root\ha-datacenter\vm\server16	https://VirtualCenterServer.shroot.loc:443	https://VirtualCenterServer.shroot.loc:443	root	4/11/2017 10:02:07 PM	none

The example Activity Summary provides the following information:

Column	Description
Action	Shows the type of action that was performed on the object.
Object Type	Shows the type of the object.
What	Shows the name of the changed object or its path.
Item	Shows the item associated with the selected monitoring plan.
Where	Shows VMware Center URL (click on the link to navigate to this object).
Who	Shows the name of the account under which the change was made.
When	Shows the exact time when the change occurred.
Details	Shows the before and after values of the modified object, object attributes, etc.

7.2. Browse Data with Intelligence Search

Netrix Auditor delivers complete visibility into your IT infrastructure. Its convenient interactive search interface enables you to investigate incidents and browse data collected across the entire IT infrastructure. When running a search, you are not limited to a certain data source, change type, or object name. You can create flexible searches that provide you with precise results on *who* changed *what*, and *when* and *where* each change was made.

After collecting initial data, making test changes to your environment and running data collection again, you can review changes in details with Intelligence search.



To browse your audit data and see you test changes

1. On the main Netrix Auditor page, navigate to **Intelligence** → **Search**.
2. Add search filters to your search by clicking on a corresponding icon and providing a value. By default, all entries that contain this filter value are shown. For an exact match, use quotation marks.

Filters are used to narrow your search results. To create a unique set of filters, you can:

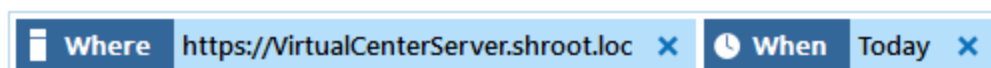
- Add different filters to your search. Search results will be sorted by all selected filters since they work as a logical conjunction (e.g., **Who: Administrator** AND **Action: Added**).
- Specify several values in the same filter to search for any of them (e.g., **Action: Modified** OR **Action: Removed**). To do this, select a filter again and specify a new value.

For example, consider adding these filters:

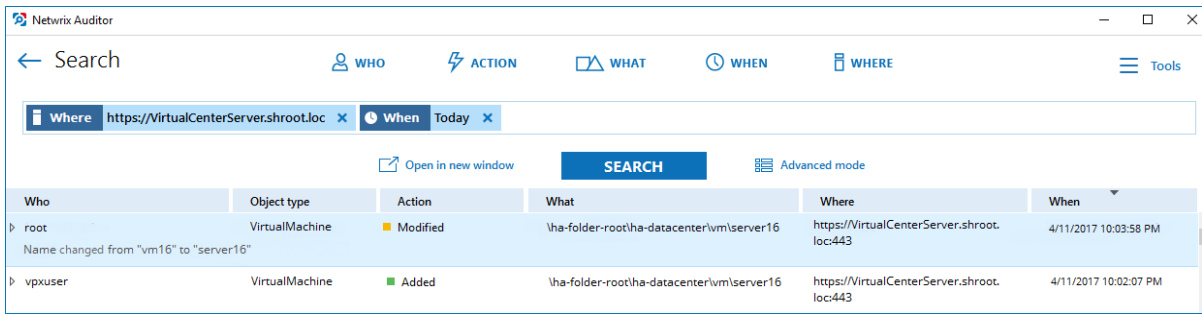
Filter	Value
 WHERE	Specify your VMware host name.
 WHEN	Specify a timeframe.

NOTE: Refer to [Netrix Auditor Intelligence Guide](#) for detailed instructions on how to apply filters and change match types.

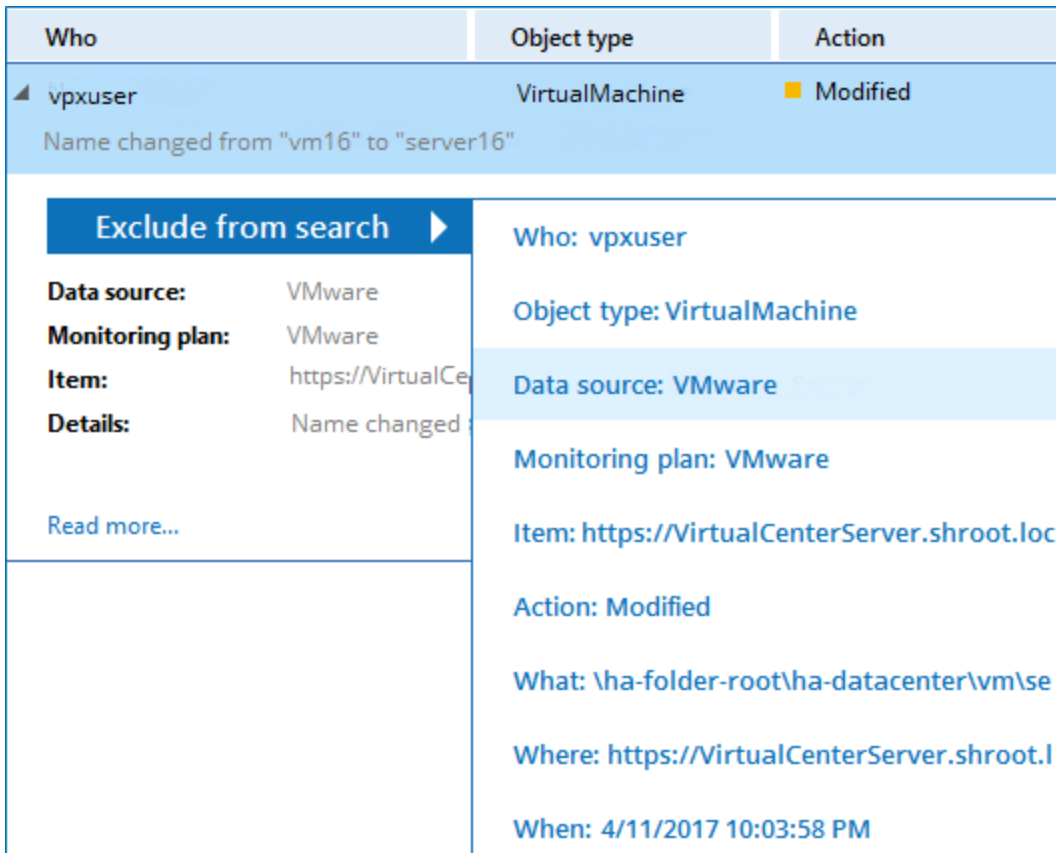
As a result, you will see the following filters in the **Search** field:



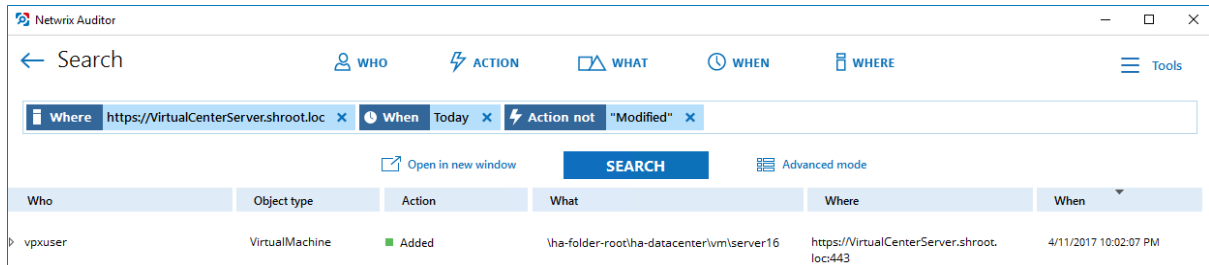
3. Click **Search**.



4. Now, you can narrow your search and modify it right from the search results pane. Double-click any entry that contains excess data, select **Exclude from search** and specify a filter, e.g., **Action: Modified** to leave information on newly created virtual machines only.



Your **Search** field will be updated, the **Action not** filter will be added. Make sure to click **Search** again to update your search results.



5. Having reviewed your search results, navigate to **Tools**.

- Click **Copy Search** to copy the search filters that are currently applied to your search.
- Click **Paste Search** to paste the search filters you copied before. These can be filters copied from a previous search.
- Click **Save search** to save the selected set of filters. This search will be added to the **Intelligence** section on the main Netwrix Auditor page, so that you will be able to access it instantly. Refer to [Netwrix Auditor Intelligence Guide](#) for detailed instructions on how to create saved searches.
- Click **Create alert** to get instant email or SMS notifications on suspicious activity that matches your current search criteria. You only need to specify a name for a new alert, add recipient and enable threshold where applicable. The selected set of search criteria will be associated with the new alert automatically. Refer to [Netwrix Auditor Administration Guide](#) for detailed instructions on how to create and configure alerts.

Wed 4/12/2017 5:48 PM

Administrator
Netwrix Auditor Alert: New Virtual Machines

To Administrator

Netwrix Auditor Alert

New Virtual Machines

Who: root
 Action: Added
 Object type: VirtualMachine
 What: \ha-folder-root\ha-datacenter\vm\vm12
 When: 4/12/2017 1:24:34 PM
 Where: <https://VirtualCenterServer.shroot.loc:443>
 Data source: VMware
 Monitoring plan: VMware
 Item: <https://VirtualCenterServer.shroot.loc:443> (VMware ESX/ESXi/vCenter)
 RID: 201704121028354162AE83DE94B37456BAA58A52493B1BB6A
 Details: none

- Click **Export data** to save your search results as a *.pdf or *.csv file.

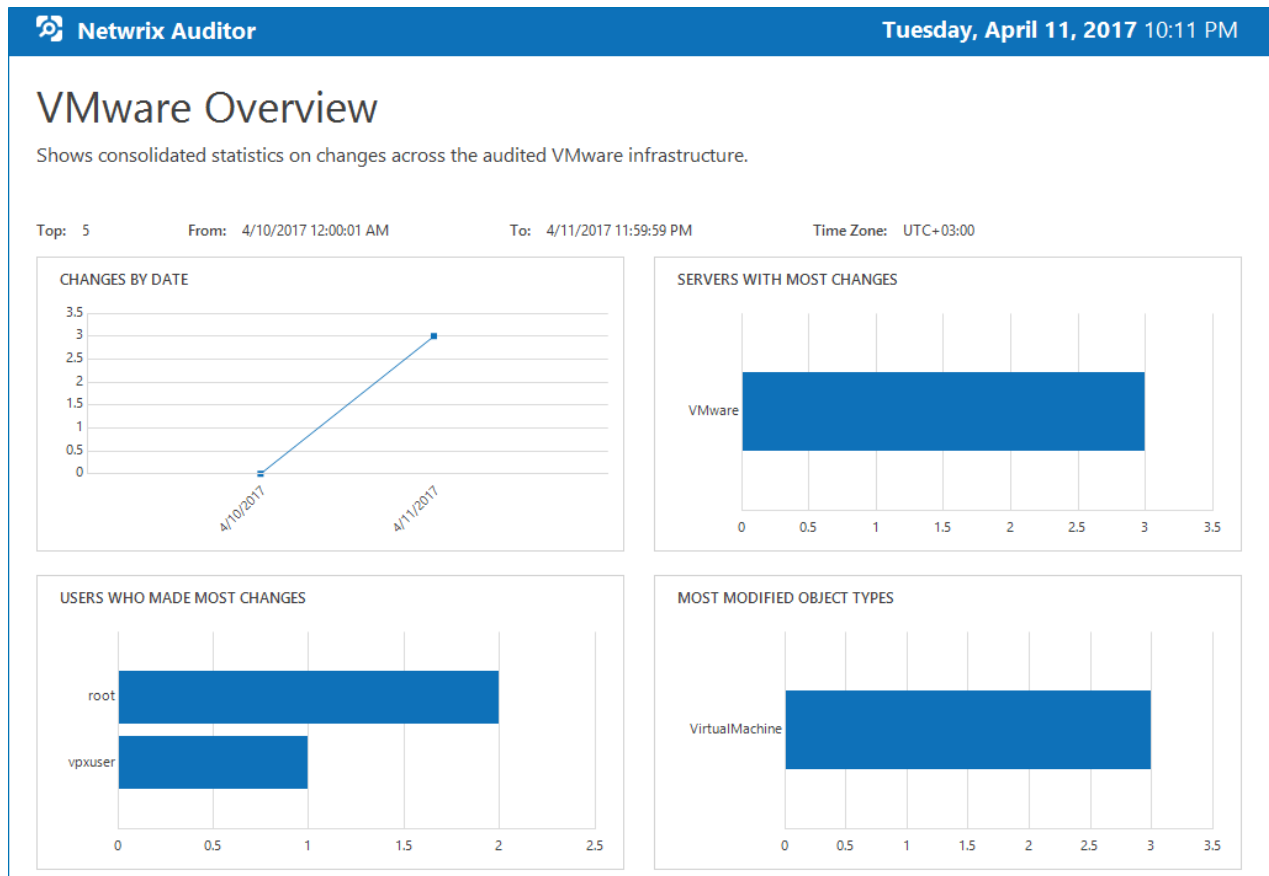
7.3. Review VMware Overview

Enterprise diagram provides a high-level overview of activity trends by date, user, server, object type or data source in your IT infrastructure. The **Enterprise** diagram aggregates data on all monitoring plans and all data sources, while system-specific diagrams provide quick access to important statistics within one data source.

After collecting initial data, making test changes to your environment and running data collection again, you can get at-a-glance statistics for changes with the **VMware Overview**.

To see how your changes are reported with VMware Overview

1. On the main Netwrix Auditor page, navigate to the **Intelligence** section and click the **Reports** tile.
2. Expand the **VMware** reports.
3. Select the **VMware Overview** report and click **View**.
4. Review your changes.
5. Click on any chart to jump to a table report with the corresponding grouping and filtering of data.



7.4. Review the All VMware Changes Report

The Netrix Auditor client provides a variety of predefined reports that aggregate data from the entire audited IT infrastructure or individual data sources.

Change and activity reports can be found under the **Reports** → **VMware** and provide a narrower insight into what is going on in the audited infrastructure and help you stay compliant with various standards and regulations (FISMA, HIPAA, PCI, SOX, etc.).

After collecting initial data, making test changes to your environment and running data collection again, you can take advantage of the reports functionality.

To see how your changes are listed in the report

1. On the main Netrix Auditor page, navigate to **Reports** → **VMware**.
2. Select the **All VMware Changes** report.
3. Click **View** to open the report.

All VMware Changes

Shows all changes to VMware infrastructure objects and settings, including hosts, containers, resource pools, and virtual machines.

Filter		Value		
Action	Object Type	What	Who	When
■ Added Where:	VirtualMachine	\ha-folder-root\ha-datacenter\vm\ server16 https://VirtualCenterServer.shroot.loc:443	root	4/11/2017 10:02:07 PM
■ Modified Where: Name changed from "vm16" to "server16" Added Advanced Configuration (VMCI.FILTER.ENABLE): true Added Advanced Configuration (VMCI0.UNRESTRICTED): true	VirtualMachine	\ha-folder-root\ha-datacenter\vm\ server16 https://VirtualCenterServer.shroot.loc:443	vpxuser	4/11/2017 10:02:25 PM

8. Related Documentation

The table below lists all documents available to support Netwrix Auditor for VMware:

Document	Description
Netwrix Auditor Installation and Configuration Guide	Provides detailed instructions on how to install Netwrix Auditor, and explains how to configure your environment for auditing.
Netwrix Auditor Administration Guide	Provides step-by-step instructions on how to configure and use the product.
Netwrix Auditor Intelligence Guide	Provides detailed instructions on how to enable complete visibility with Netwrix Auditor interactive search, report, and alert functionality.
Netwrix Auditor Integration API Guide	Provides step-by-step instructions on how to leverage Netwrix Auditor audit data with on-premises and cloud auditing solutions using RESTful API.
Netwrix Auditor Release Notes	Lists the known issues that customers may experience with Netwrix Auditor 9.0, and suggests workarounds for these issues.