



Turbonomic 5.9.4 Release Notes

October 31, 2017

This document describes issues that are addressed in Turbonomic 5.9.4 – Release Date: October 31, 2017. All builds are cumulative. Applying 5.9.4 onto any release of Turbonomic v5.0 or later will include all previous fixes. Please see the Turbonomic documentation for earlier versions of the Release Notes:

<https://greencircle.vmturbo.com/community/products/pages/documentation>

For any questions, please contact Turbonomic Technical Support at support@turbonomic.com, or open a ticket at:

<https://greencircle.vmturbo.com/support>

End of openSUSE Support

Turbonomic ships as a pre-configured virtual machine image. For the last several years, that VM ran the openSUSE distribution of Linux. Starting with release 5.7, Turbonomic has begun a process to migrate away from openSUSE 13.2 and to base further releases on CentOS. You should prepare to migrate from openSUSE to CentOS at the nearest time that is reasonable for you.

For more information, and for a roadmap that describes how we will make this transition, see the Green Circle article, [Retirement of openSUSE Support](#).

Migration Requirements

Turbonomic supports two ways to upgrade to a new version:

- Update – Use an online or offline update to upgrade the software running on the Turbonomic server
- Migrate – Install a new Turbonomic VM that includes updated software, and also includes updates to the platform OS or other components of the VM

NOTE: openSUSE ENDED ITS SPONSORED MAINTENANCE OF openSUSE 12.3 AS OF JANUARY 29, 2015, AND ENDED OFFICIAL SUPPORT ON JANUARY 17, 2017. TO ADDRESS THE END OF SUPPORT FOR openSUSE 13.2, Turbonomic IS BEGINNING AN OVERALL MIGRATION TO CentOS.

Turbonomic began delivering the platform on openSUSE version 13.2, starting with Turbonomic version 5.0. However, you could have updated to 5.0, 5.1, 5.2, or 5.3 without performing a migration. If that is the case, then you must perform a migration to 5.4 before you can update to version 5.5. After that, you can then update to version 5.9.4.

To see the version of openSUSE that your Turbonomic platform is currently running on:

- Open a secure shell session to your Turbonomic VM, logged in as `root`
- In the shell, enter `cat /etc/os-release`

The results will show the OS version for that machine. If the OS is earlier than 13.2, then *you must perform a migration* to Turbonomic version 5.4 running on openSUSE 13.2, and *only after you have migrated to version 5.4* can you perform an update to a later version.

For information about migrating to a new version, see the Turbonomic Installation Guide at the following location:

<https://greencircle.vmturbo.com/community/products/pages/documentation>

Configuration Requirements

For this release of Turbonomic, you should satisfy the following configuration requirements.

Security Requirements for Apache Configurations

Turbonomic versions 5.5.2 and earlier shipped with the default Apache configuration – this configuration is no longer considered secure. Versions 5.5.3 - 5.9.4 ship with an Apache configuration that is considered secure in most environments. Updating to these versions updates the Apache configuration as well. If you do not want to update your Turbonomic installation, contact Turbonomic Technical Support for the correct Apache configuration.

Note that after updating the Apache configuration (either by updating Turbonomic, or by editing the Apache configuration), you must restart Apache. We suggest that you reboot the Turbonomic VM. In addition, you should be sure to maintain a secure OS platform. Starting with Turbonomic version 5.5 on openSUSE, you must run openSUSE 13.2 or later. If you are running an earlier version of openSUSE, please contact Turbonomic Technical Support.

If you are updating Turbonomic on an existing openSUSE platform, you should be sure to update your OS components. Systems with internet connections can use the `zypper` update command. If you are migrating to a new Turbonomic OVA, that OVA includes updated OS components. Note that you should also consider migrating to the CentOS delivery of Turbonomic as soon as possible. Turbonomic is on a roadmap to retire support of openSUSE as its platform OS. For more information, see the Green Circle article, [Retirement of openSUSE Support](#).

For web browsers to communicate with Apache, this configuration requires TLS versions 1.1 or later. To use versions of Microsoft Internet Explorer 9 and 10, you must enable TLS 1.1 or later (in **Internet Options > Advanced**). For more information, see the following Green Circle article:

[The DROWN Attack: Configuring your Turbonomic Web Security](#)

Updating the Tomcat Server

There are circumstances when you might choose to upgrade the Tomcat server on Turbonomic to a later version. In this case you must copy a local configuration file to the tomcat installation.

After you update the Tomcat server:

- Copy the file `/usr/libexec/tomcat/server.local` to `/usr/libexec/tomcat/server`
- To ensure that this server configuration file is executable, perform the command: `chmod 755 /usr/libexec/tomcat/server`

Storage Requirements for the Turbonomic Server

Turbonomic now states 150GB or greater as a requirement for disk storage. For Turbonomic servers hosted on VMware hypervisors, you should provide 150GB *plus* swap space to match the RAM allocation.

Transport Layer Security Requirements

Starting with version 5.4, by default Turbonomic requires Transport Layer Security (TLS) version 1.2 to establish secure communications with targets. Most targets should have TLSv1.2 enabled. However, some targets might not have TLS enabled, or they might have enabled an earlier version. In that case, you will see handshake errors when Turbonomic tries to connect with the target service. When you go to the Target Configuration view, you will see a Validation Failed status for such targets.

In particular, we have found that NetApp filers often have TLS disabled by default, and that the latest version they support is TLSv1. If your NetApp target suddenly fails to validate after installing Turbonomic 5.4 or later, this is probably the cause.

If target validation fails because of TLS support, you might see validation errors with the following strings:

- `No appropriate protocol`
To correct this error, ensure that you have enabled the latest version of TLS that your target technology supports. If this does not resolve the issue, please contact Technical Support.
- `Certificates does not conform to algorithm constraints`
To correct this error, refer to the documentation for your target technology (for example, refer to NetApp documentation) for instructions to generate a certification key with a length of 1024 or greater on your target server. If this does not resolve the issue, please contact Turbonomic Technical Support.

Enabling Reports on Custom SELinux Platforms

When you install the provided Turbonomic OVA, the SELinux platform is configured to enable the generation and delivery of Turbonomic reports. However, if you install the Turbonomic software on a custom SELinux platform, you must perform configuration changes to enable reports.

To configure reporting, execute the following command with root privileges:

```
setsebool -P httpd_can_network_connect on
```

Further, on RHEL 7.1 you must change the context of the cgi-bin directory to enable the execution of cgi scrips by executing the following commands with root privileges:

```
semanage fcontext -a -t httpd_sys_script_exec_t /srv/www/cgi-bin/  
restorecon /srv/www/cgi-bin
```

If you need additional assistance, contact Turbonomic Technical Support.

Enabling IOPS and Network Monitoring for OpenStack Mitaka

The Target Configuration Guide gives instructions to connect to OpenStack targets. However, if you are running OpenStack Mitaka, you must perform additional configuration on the Mitaka platform to enable IOPS and Network data collection from Physical Machines. For those instructions, please see the Green Circle article, [Enabling OpenStack PM Metric Collection](#).

SMI-S Provider Versions for EMC VNX and EMC VMAX Storage Solutions

To connect to EMC VNX and VMAX disk arrays, Turbonomic uses EMC SMI-S providers that have the given disk arrays added to them. You should know that VNX and VMAX support different versions of SMI-S Providers:

- VNX
For VNX and VNX2 arrays, use SMI-S version 4.6.2, based on Solutions Enabler 7.6.2. We have verified Turbonomic control of VNX block storage using SMI-S version 4.6.2 as a target.
- VMAX
For VMAX arrays, use SMI-S version 8.1, which is included in Solutions Enabler 8.1 – We have verified Turbonomic control of VMAX storage arrays using SMI-S version 8.1 as a target.

Update Recommendations

You can apply this update to any GA version of Turbonomic from version 5.0 or later, if it is running on openSUSE 13.2

NOTE: If your Turbonomic installation is running on an older version of openSUSE, contact Turbonomic Technical Support to confirm your update path.

Note that if your Turbonomic software is running on openSUSE 13.2, then you should consider migrating as soon as possible to a delivery of Turbonomic running on CentOS. Turbonomic is on a roadmap to retire support of openSUSE as its platform OS. For more information, see the Green Circle article, [Retirement of openSUSE Support](#).

Update Links

If your server is able to connect to the Internet, you can apply the update through the online process by going to **Admin > Maintenance > Software updates > Update**. If you require an offline update, please see the Green Circle article:

[How To Perform an Operations Manager "Offline Update" - Latest Links Included](#)

Related Green Circle Articles

- Offline and Online Update Instructions:
<https://greencircle.vmturbo.com/docs/DOC-1649>
- Release Notes and Product Documentation:
<https://greencircle.vmturbo.com/community/products/pages/documentation>

Known Issues

- In OpenStack environments, it is possible to place a VM belonging to a specific cluster (a VM flavor that is set via extra specifications) onto a host that is not a member of that cluster. Turbonomic cannot identify this configuration error, and will not recommend a move to place the VM on an appropriate host. You can implement placement policies to ensure that VMs always get placed on the correct hosts. This can work even if there is no host cluster to match the VM flavor. However, in that case the user interface will not show these VMs as members of a PM cluster.
- For Hyper-V and VMM targets, secure connections use port 5986 and unsecure connections use 5985. As you enable or disable a secure connection, the user interface does not automatically set the correct port number. You must be sure to specify the correct port for the type of connection you want.
- For VMs running on Hyper-V, if you set a VCPU limit (limit VCPU to less than 100%), then the VCPU utilization data that VM returns to Turbonomic is not correct. As a result, Turbonomic will not recommend that you increase the VCPU limit.
- When you reserve resources for VMs that you will deploy in the future, Turbonomic initially calculates these reserved resources as CPU Provisioned, Memory Provisioned, and Storage Provisioned. However, these resources ultimately revert back to values that do not include the reserved VMs.
- For IBM PowerVM targets, Turbonomic creates a group named AIX-vioses-auto to contain discovered VMs. Under some circumstances, the PowerVM configuration does not result in the information Turbonomic needs to create this group. To fix this issue, see the following IBM workaround: <http://www-01.ibm.com/support/docview.wss?uid=isg3T1024482>.

- There is a rare case where Turbonomic can lose the cluster relationship for VMs running on a host. Assume you move a host out of a cluster, and directly into the datacenter (not into a cluster). Next you create a new cluster and then move the host into that cluster. In this case, the VMs on that host will not belong to any PM cluster. This can also affect Provider Virtual Datacenters that belong to the new cluster.

To avoid this problem, create the cluster first, and move the host directly into it.

If this problem occurs, rediscover your environment to establish the correct cluster relationships.

- If you ignore hyperthreading for a scope that is less than a datacenter and then restart tomcat for the Turbonomic application, then Turbonomic does not calculate the CPU capacity correctly for the affected scope of hosts. If this problem occurs, perform a full rediscovery to show correct CPU capacity.
- Under some circumstances when using the Deploy View, the user interface can fail to respond. After you request a placement, if the placement recommendation does not appear within one to two minutes, reload the Turbonomic web page to reset the user interface.
- When using the xml-based Turbonomic REST API (prior to the HTML User Interface), be aware that requests include the password for your Turbonomic user account. You should always use the secure HTTPS protocol to ensure these requests do not include the password in clear text.
- Earlier versions of Turbonomic on the centOS platform included an Apache configuration that enabled directory browsing. Versions 5.9 and later fix this issue. If you migrate to a new centOS VM, the fix will take effect. However, if you update an older version to a version containing this fix, you must manually restart the httpd service to have the fix take effect.
- **Customer Issue 95094**
For AWS environments with multiple AWS targets, deleting one of the targets sometimes resulted in Turbonomic removing from its market some of the entities that are managed by the remaining targets. This issue has been resolved. However, when you delete the last AWS target, you must restart the Turbonomic server.
- In the New User Interface, you cannot add a VMM target unless you provide a value for Ignore Hosts. To add a VMM target that does not ignore any hosts, provide an invalid host address (an address that does not point to any existing host).
- The information Turbonomic gets from Azure and AWS cloud providers for VM costs does not include license costs for a VM's OS. For that reason, the costs you see in Turbonomic do not match your actual costs for Windows VMs.
- The Turbonomic installation includes a script named ACMCust.pl. This script configures the Turbonomic VM for self-monitoring in the Turbonomic environment. For version 5.9.1 the delivered script does not enable self-monitoring. To get an updated version of this script, contact Technical Support.
- In the New User Interface, when you expand an entry for a host in the cloud, the user interface does not show any values for host or datacenter resources. This is expected behavior because cloud services handle these entities differently than on-prem environments.
- In RedHat installations, generated PDFs may fail to load. The workaround is to change the ownership of the `/srv/reports/pdf_files/` directory from apache to tomcat. For assistance, contact Technical Support.
- For UCS Director targets, the documentation does not describe a configuration requirement. In UCS Director the configuration includes a number of Physical and Virtual Accounts for different services. For example, UCS Director can include Physical Accounts for storage controllers and Virtual Accounts for hypervisors. These accounts can identify the services by IP address or DNS name. To use this UCS Director target in Turbonomic, then the same services should also be set up as Turbonomic targets.
To correctly configure these targets, they must use an IP Address or DNS Name that matches the identification that is specified in UCS Director Physical or Virtual Account. For example, if a storage controller's Physical Account

uses a DNS name, then you must also use a DNS name when you configure the same storage controller as a Turbonomic target.

- Turbonomic regularly checks that your targets are valid. If it discovers that a target is invalid it then posts status to the Target Configuration user interface. Under some circumstances, the target can become valid again, but the status does not update in the user interface. If you see an Invalid message for a given target, try to manually validate the target (click VALIDATE) as a first step in troubleshooting.
- If Turbonomic discovers a WebLogic target, and then the WebLogic and Turbonomic instance are both shut down, then Turbonomic will not rediscover the WebLogic target after it restarts. To correct this issue, execute a rediscovery of the WebLogic target.
- Assume you have application or database servers as targets, and they use dynamic groups to define their scopes for monitoring. If you add new application or database servers to these dynamic groups, or if you shut down and then restart an existing server, then Turbonomic fails to discover the change and these servers will not appear in the UI. To resolve this problem, execute a manual rediscovery of the affected target.
- When you run an Add Workload plan, the plan results show incorrect values for the BEFORE and AFTER counts of workloads. You will see the starting count in the AFTER column, and the resulting count in the BEFORE column.
- When running a plan, there are cases where Turbonomic calculates an action, but then recognizes a reason not to map that action to any entity in your environment. When that occurs, the initial count of actions includes these unmapped actions. To see the correct count of mapped actions, click Plan Actions in the Plan Results.
- Turbonomic supports the use of HTTP and HTTPS proxies for internet communication. However, you must edit the Tomcat Server configuration file to add the required system variables.

The file you must edit is on your Turbonomic server at `/usr/libexec/tomcat/server`.

In this file, search for the OPTIONS statement. It should appear in the config file similar to the following:

```
FLAGS="$($JAVA_OPTS) $CATALINA_OPTS"
```

```
OPTIONS="-Dcatalina.base=$CATALINA_BASE ..."
```

Add the following flags to the OPTIONS statement, giving values for your proxies:

```
-Dhttp.proxyHost  
-Dhttp.proxyPort  
-Dhttps.proxyHost  
-Dhttps.proxyPort  
-Dhttp.proxyUser  
-Dhttp.proxyPassword  
-Dhttps.proxyUser  
-Dhttps.proxyPassword
```

The resulting OPTIONS statement should be similar to the following:

```
OPTIONS="-Dcatalina.base=$CATALINA_BASE \  
-Dcatalina.home=$CATALINA_HOME \  
-Dhttp.proxyHost=111.10.10.123 -Dhttp.proxyPort=123 \  
-Dhttps.proxyHost=112.10.10.123 -Dhttps.proxyPort=456 \  
-Dhttp.proxyUser=user -Dhttp.proxyPassword=password \  
-Dhttps.proxyUser=user -Dhttps.proxyPassword=password"
```

Note that the values you provide for this file must match the values you provide when specifying a proxy in the Turbonomic user interface. After you make these changes, restart the Tomcat server.

For further assistance, contact Technical Support.

- Starting with version 5.9.1, Turbonomic redirects http requests to the user interface and the REST API over to HTTPS. To enable this feature, if you are updating from an earlier version of Turbonomic then you must restart the httpd service on the Turbonomic server.

Use the following command:

```
service httpd restart
```

For more information, contact Technical Support.

Fixed Issues

- **Customer Issue 96361**
In VMM and Hyper-V environments, executing an action on VM while Turbonomic is executing discovery through the target the manages that VM would fail.
- **Customer Issue 96385**
When updating Turbonomic to a new version, the update process would return Action Mode settings to the shipped defaults.
- **Customer Issue 96590**
When an operator moves a VM from a cluster that Turbonomic manages, into a cluster that Turbonomic cannot access (there is no target that manages the cluster), then Turbonomic does not remove the VM from the user interface, and it can still generate actions for that VM.
- **Customer Issue 96622**
In XTremIO environments, there were circumstances where Turbonomic would show zero latency for storage.
- Turbonomic failed to generate right size reports (VM Rightsizing Recommendations or VM Group RightSizing Info).
- The user interface for policy settings did not allow the storage latency capacity to a value lower than 20 ms.
- **Customer Issue 96031**
After a user has set the *disabled* action mode for resize actions on a group of VMs, those VMs would still appear in Resizing reports.
- **Customer Issue 96912**
If you had cloud targets for your installation and then later deleted them, Turbonomic would continue to attempt updating some of its internal data for those targets. As a result, you could see an error notification that `vm_spend_by_hour` has not been updated.
- **Customer Issue 97355**
In environments with disk arrays, Turbonomic could incorrectly move a VM to a different volume on the same array as a response to storage latency.
- For rebranding of the legacy user interface, the script that worked with the Branding ZIP file did not include the full set of file. As a result, users could not fully rebrand the legacy user interface.
- **Customer Issue 97387**
Under some circumstances where two storage clusters have the same name, Turbonomic could incorrectly recommend vStorage moves from one cluster to the other.

- **Customer Issue 97429**

Under some circumstances, Turbonomic failed to discover tags and tag values in a vCenter environment. As a result, users could not create groups based on the tagging.

- In Pure Storage environments, there were circumstances where Turbonomic would show zero latency for storage.
- For application discovery via SNMP, under some circumstances timeout issues could cause Turbonomic to fail to discover the associated applications.
- There are circumstances when Turbonomic fails to roll up hourly data into the database for a valid reason, and it posts a notification to indicate the issue. However, after successfully rolling up the data in a subsequent attempt, Turbonomic did not clear the issue notification.

