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# Turbonomic 8.0.4 Release Notes

December 4, 2020

This document describes issues that are addressed in Turbonomic 8.0.4 – Release Date: December 4, 2020. Please see the Turbonomic 8 documentation for earlier versions of the Release Notes:

<https://docs.turbonomic.com/>

**NOTE:**

These release notes are for update to Turbonomic 8.0.4, from version 7.22.0 or later. For updates from the 7.21.x family or earlier, please contact your Technical Support representative.

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

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

## What's New for Version 8.0.4

### Version 8.0.4

- **Cloud Resource Management**

This release introduces key features and enhancements to help optimize your cloud workloads' performance and reduce your cloud expenditure.

- **Volume Scaling**

Turbonomic can now recommend scaling your AWS and Azure volumes. It uses percentile calculations to drive more accurate scaling actions, and indicates whether these actions are non-disruptive or reversible. With these capabilities, you can execute scaling actions with confidence.

For details, see "Supply Chain - Volume" in the *User Guide*.

- **Azure SQL Database Scaling**

This release introduces support for Azure SQL Databases that use the DTU (Database Transaction Unit) purchase model. Turbonomic automatically discovers these databases when you add Azure targets, and then presents them as *Database* entities in the supply chain.

Turbonomic monitors DTU and storage utilization for the databases, and uses percentile calculations to drive more accurate scaling actions.

For details, see "Supply Chain - Database" in the *User Guide*.

- **VM Scaling Enhancement**

You can now direct Turbonomic to only execute cloud VM scaling actions that improve performance or reduce costs. When you create a policy for the cloud VMs, choose the **Scale for Performance** or **Scale for Savings** option, and then set the action mode to *Automated* or *Manual*. If you set the action mode to *Manual* and then examine the pending actions for those VMs, only actions that satisfy the policy are allowed to execute. All other actions are read-only.

**NOTE:**

The scaling option **Cloud Compute Scale** has been renamed **Scale All**. This enables all scaling actions, including those that result in efficiency improvements and increased costs. When policy conflicts arise, **Scale All** overrides the other two scaling options in most cases. For more information, see "Relationship Between Scoped and Default Policies" in the *User Guide*.

- **Support for JVM Applications**

Turbonomic now supports JVM Applications as targets, and can recommend resizing heap and thread pool capacity.

For details, see "JVM Application" in the *Target Configuration Guide*.

## Configuration Requirements

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

### SQL Modes for External Databases

If you deploy Turbonomic to work with an external database instead of the included historical database, then you must specify the correct SQL modes for the database. Configure the database to support:

```
{ {STRICT_TRANS_TABLES,NO_ENGINE_SUBSTITUTION} }
```

In particular, the SQL modes should *not* include `ONLY_FULL_GROUP_BY`, `NO_ZERO_IN_DATE`, or `NO_ZERO_DATE`.

### Multi-tenant External DBs and Updates to 8.0.1 or Later

**NOTE:**

Azure database services are multi-tenant. If you deployed an external database on Azure, this configuration requirement applies to you.

If you are updating from Turbonomic 8.0.0 or earlier to version 8.0.1 or later, *and* you have deployed an external MariaDB or MySQL database service that is multi-tenant, then you must update the database service before you update your Turbonomic instance. This modification includes:

- Manually creating a database for the `repository` component
 

This includes creating the database in your DB instance, creating a user to access the database, and granting access to the user.
- Manually adding the repository database to your `cr.yaml` file
 

For deployments that manually add the component databases (a requirement for multi-tenant DBs), the `cr.yaml` file declares entries for each component databases. Each entry names the component, and gives the user and password that the component can use to access that database. You must add a new entry for the `repository` component.

**NOTE:**

If you have already updated to the latest version of Turbonomic, and you did not perform the steps to update your multi-tenant DB service, please contact your support representative.

To create the new database:

1. Connect to your multi-tenant DB using a global account.
 

The account must have privileges to create databases and users. If you have specified `dbRootUsername` in the `cr.yaml` file, you can use that account.
2. Create the database that the `repository` pod requires:

```
create database repository;
```

3. Create the account the pod will use to access the database:

```
create user 'repository'@'%' identified by 'vmturbo';
```

**NOTE:**

The value `vmturbo` is the default password that uses for all component database accounts. If you have manually created accounts with different credentials, you can do so for this database as well.

4. Set the user account privileges for the `repository` pod's account:

```
GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP, REFERENCES, INDEX, ALTER, CREATE TEMPORARY TABLES, LOCK TABLES, EXECUTE, CREATE VIEW, SHOW VIEW, CREATE ROUTINE, ALTER ROUTINE, EVENT, TRIGGER ON repository.* TO 'repository'@'%';
```

5. Flush privileges to make the privileges take effect:

```
flush privileges;
```

Now that the repository database is created in your multi-tenant DB service, you must declare the access in the Turbonomic `cr.yaml` resource.

1. Open the `.cr` file for editing. The location of the file depends on the type of Turbonomic installation you are configuring.

OVA installation of Turbonomic:	Turbonomic on a Kubernetes node or node cluster:
<p>Open a SSH terminal session on your Turbonomic instance</p> <p>Log in with the System Administrator that you set up when you installed Turbonomic:</p> <ul style="list-style-type: none"> <li>• Username: <code>turbo</code></li> <li>• Password: <code>[your_private_password]</code></li> </ul> <p>Then edit the file:</p> <pre>/opt/turbonomic/kubernetes/operator/deploy/crds/charts_v1alpha1_xl_cr.yaml</pre>	<p>Open the following file for editing:</p> <pre>deploy/crds/charts_v1alpha1_xl_cr.yaml</pre>

2. Add the credentials for the repository component database.

Add the entry to the `properties:` section of the `cr.yaml` file, where `vmturbo` is the password that you assigned to that user account, and `yourDB` is the qualified name of your multi-tenant DB partition::

```
repository:
  repositoryDbUsername: repository@yourDB
  repositoryDbPassword: vmturbo
```

The resulting `cr.yaml` file should be similar to:

```
properties:
  global:
    enableSecureDBConnection: true
    sqlDialect: MYSQL
    dbRootPassword: yourPassword
    dbRootUsername: xladmin@yourDB
    #dbUserPassword:
    #dbUsername:
  action-orchestrator:
    actionDbUsername: action@yourDB
    actionDbPassword: vmturbo
  auth:
    authDbUsername: auth@yourDB
    authDbPassword: vmturbo
  clustermgr:
    clustermgrDbUsername: clustermgr@yourDB
    clustermgrDbPassword: vmturbo
  cost:
    costDbUsername: cost@yourDB
    costDbPassword: vmturbo
  group:
    groupComponentDbUsername: group_component@yourDB
    groupComponentDbPassword: vmturbo
  history:
```

```

    historyDbUsername: history@yourDB
    historyDbPassword: vmturbo
  plan-orchestrator:
    planDbUsername: plan@yourDB
    planDbPassword: vmturbo
  topology-processor:
    topologyProcessorDbUsername: topology_processor@yourDB
    topologyProcessorDbPassword: vmturbo
  repository:
    repositoryDbUsername: repository@yourDB
    repositoryDbPassword: vmturbo

```

After you have done this, you can update to the latest version of Turbonomic and then apply the cr.yaml file.

## Transport Layer Security Requirements

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 fails to validate, this is could be 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.

## Improvements

- **Improvement:**

### Customer Issue 8632

You can now customize the format of the Turbonomic syslog output.

To customize the format, edit the cr.yaml file to specify the token order of log outputs, then use kubectl to apply the changes. For example, add the following to the cr.yaml file:

```

rsyslog:
  env:
    - name: AUDITFORMAT
      value: "<%pri%>%timestamp:::date-rfc3339% %hostname% %syslogtag%msg:::sp-if-no-1st-sp%msg:::drop-last-1f%"

```

where:

- `<%pri%>` is the log index
- `%timestamp:::date-rfc3339%` is the timestamp and date format
- `%hostname%` identifies the component generating the log message
- `%syslogtag%` identifies the log message type
- `%msg:::sp-if-no-1st-sp%` prints the message, and adds a leading space if none is present
- `%msg:::drop-last-lf%` drops the trailing linefeed from the message

- **Improvement:**

**Customer Issue 105173,108179,112638**

You can now direct Turbonomic to only execute cloud VM scaling actions that improve performance or reduce costs. When you create a policy for the cloud VMs, choose the **Scale for Performance** or **Scale for Savings** option.

- **Improvement:**

**Customer Issue 108292**

For Oracle environments, this release introduces support for environments that deploy Oracle databases to Multiple Homes.

## Fixed Issues

- **Fixed Issue:**

For Kubernetes environments, under some circumstances discovery can halt for a given cluster. This can happen when multiple pods in a node attach to the same Persistent Volume.

- **Fixed Issue:**

**Customer Issue 113632,113660**

When you download CSV data for actions, the "From" and "To" fields are blank.

- **Fixed Issue:**

**Customer Issue 113476**

Under rare circumstances, updates to the historical database can stop unexpectedly. This appears in the user interface as blank intervals in the charts.

- **Fixed Issue:**

After you enable Volume Scaling actions, under some circumstances analysis can halt actions generation.

- **Fixed Issue:**

**Customer Issue 113523**

For AWS environments, for some RI instances analysis fails to parse the format of the RI data, and discovery for that target fails.

- **Fixed Issue:**

For a given schedule, when you click to see the list of policies that the schedule is used in, the user interface does not display any data.

- **Fixed Issue:**

### Customer Issue 113377

When you create an application topology via User Defined Topology, under some circumstances the supply chain can fail to stitch the entities together.

- **Fixed Issue:**

When you scope the Workload Cost Breakdown chart to multiple types of workloads, the chart does not show reliable data. For example, this can happen if the chart is scoped to VMs and Databases. The faulty data display does not affect Turbonomic analysis.

- **Fixed Issue:**

### Customer Issue 113418

For Virtual Machine Manager (VMM) environments, under rare circumstances discovery can fail when the VMM environment reports a null host cluster.

- **Fixed Issue:**

### Customer Issue 112459

When you export the Top Accounts chart to CSV data, any data field that shows N/A in the chart shows 0 in the CSV data.

- **Fixed Issue:**

### Customer Issue 113284

When you create or edit a chart that offers a choice of commodities, for scoped users the commodity choice is greyed out.

- **Fixed Issue:**

For Migrate to Cloud plans, if you plan a migration to an Azure environment, under some circumstances the plan results can fail to show RI costs.

- **Fixed Issue:**

### Customer Issue 113401

For environments with baremetal hosts, validation of the SNMP target can fail.

- **Fixed Issue:**

### Customer Issue 113379

When running plans that ignore constraints, if the plan scope includes dynamic group, and the regex for that group is invalid, then the plan fails to complete. The plan should continue to execute.

- **Fixed Issue:**

### Customer Issue 113365

When you change the Default Policies to disable all actions, the setting does not take effect.

- **Fixed Issue:**

### Customer Issue 113294

For UCS environments, the reporting of IOModule throughput is excessively high.

- **Fixed Issue:**

### Customer Issue 113231

For Microsoft Azure environments that use Availability Sets (AS), under some circumstances resize actions can fail to execute.

According to Microsoft, if the new instance type for a resize action is not supported in the current cluster, then all the VMs in the AS must be deallocated before executing the resize. This is necessary so that Azure can identify a different compute cluster supports the instance type. If any VMs in the AS are still running, then the resize action fails.

- **Fixed Issue:**

- **Customer Issue 113016**

- Under rare circumstances, for large environments with many Application Component entities, Turbonomic can generate a flood of VM Scale Up actions that it later reverts.

- **Fixed Issue:**

- **Customer Issue 112821,112849,112880,113288**

- For vCenter Server environments, if you turn on **Enable Guest Metrics** for your target configuration, the metrics that vCenter returns to Turbonomic can be inaccurate, depending on the version of vCenter Server and VMware Tools that you have running on your VMs.

- **Fixed Issue:**

- **Customer Issue 110677**

- When assigning scope to a chart, for large environments the scope pick list can show only invalid group or entity types for the given chart.

- This can occur because the list shows all entity types (not just valid entity types), and the list of invalid types can exceed the page length.

## Known Issues

- **Known Issue:**

- For AWS environments, Turbonomic can discover the new EBS volume type named GP3. However, the cost data is unavailable at this time.

- **Known Issue:**

- For the RI Utilization and RI Coverage charts, when the display date range is set to default, the charts do not show the complete range of data. To see complete data, change the date range to another setting, such as Last 7 Days or Last 30 Days.

- **Known Issue:**

- For Azure environments, under some circumstances Turbonomic can repeatedly recommend and fail to execute a VM resize action.

- Within an Azure subscription, Turbonomic can recommend resizing a VM to an instance type that is no longer supported in the given region. When this occurs, the action fails (correctly) and includes the following in the log message:

- We do not have sufficient capacity for the requested VM size in this region.

- This behavior is as expected. However, after encountering this error Turbonomic can repeatedly recommend the same resize action. If you encounter this situation, you can manually resize the VM to a similar, but supported instance type.

- **Known Issue:**

When you set the scope of the Turbonomic view to a group, you can then view the automation policies that impact the given group. If you edit a policy for that group (in Settings: Policies), and then scope the view to that group again, the policy changes do not appear in the display for that group. The display should update within ten minutes, after the next round of incremental discovery. If the condition persists, log out of your session and log in again to update the display.

- **Known Issue:**

**Customer Issue 113323,113332,113493,113560**

After updating Turbonomic, the process to change the platform's IP address does not change all references to the new address.

The Installation Guide includes instructions to change the IP address of your Turbonomic installation. However, after updating to version 8.0.2 or 8.0.3, this process does not change all references to the new address. After running the script, the storage services can still show that they use the old IP address.

- **Known Issue:**

For vSAN environments, when running plans that add or replace hosts to the environment, under some circumstances the plan can show the incorrect count for hosts, and the plan can fail.

This can happen for plans that meet the following conditions:

- The plan type is Hardware Refresh, Add Workload, or Custom
- The plan scope is set to a datacenter, and it includes vSAN hosts
- The plan uses an HCI template to replace the hosts

After running, the plan shows the full count of hosts in the vSAN environment, instead of the count of hosts in the plan scope. To avoid this situation, do not scope the plan to the datacenter.

- **Known Issue:**

For the Partial RI feature, in Azure environments there can be delays in updates to billing information that Azure makes available to Turbonomic. In that case, there can be times when analysis uses partial billing data in its calculations. When showing utilization of RIs that are discovered outside of the targeted Azure subscriptions, this can result in changing costs for those RIs.

- **Known Issue:**

For Nutanix environments, the Target Guide states that Turbonomic supports automation for VM Move actions. However, it does not state that you can automate VMotion to hosts, but for storage moves on Nutanix Turbonomic only supports the Recommend action mode.

- **Known Issue:**

When reviewing plan results, under rare circumstances the plan's actions list can show duplicate entries.

- **Known Issue:**

For Azure environments, Turbonomic does not discover the Brazil Southeast region. Azure provides this region only to give business continuity and disaster recovery to workloads in Brazil South that require data residence.

The user interface does not display the Brazil Southeast region in any lists or charts. Also, if you do have workloads on that region, Turbonomic will not discover those workloads.

- **Known Issue:**

**Customer Issue 112461**

If you have configured MySQL 5.7 as an external database for your Turbonomic installation, under some circumstances you can experience poor performance when working with dynamic groups. This can happen when you use extensive regular expressions as filters to generate the dynamic groups.

If you experience poor performance with dynamic groups, consider making them static groups, or consider using MariaDB as your database.

- **Known Issue:**

**Customer Issue 112327**

Under some circumstances, when you download the data for Pending Actions, the download does not match the data that you see in the Pending Actions chart. This can happen when the categories that the Pending Actions chart uses to group actions do not contain the correct actions. The actions are all correct, and the downloaded data groups the actions correctly.

- **Known Issue:**

When you download a CSV file from an Actions chart, the CSV file only contains the list of actions that show in the current page of data. As a result, if the actions for the current scope of the chart exceed the number of entries in the page, the CSV data will be incomplete.

- **Known Issue:**

For ServiceNow environments, Turbonomic fails to save any automation policy that sets the Action Type to **Request Approval from ServiceNow**.

- **Known Issue:**

For AppDynamics environments, Turbonomic cannot discover databases if the target authentication uses `OAuth` for credentials.

- **Known Issue:**

Under some circumstances, the logs can show the following error:

```
The following settings don't have a mapping in the API component. Not returning them to the user. Settings: [remainingGcCapacityUtilization, responseTimeCapacity, autoSetResponseTimeCapacity, transactionsCapacity, autoSetTransactionsCapacity]
```

This occurs because these settings have been deprecated.

- **Known Issue:**

For existing dashboards that include the Capacity And Usage chart for databases, after an upgrade to 7.22.7 or later, the chart can appear empty.

Starting with version 7.22.7, Turbonomic tracks the DTU and Storage Amount commodities for databases. Charts that you configured for earlier versions will not include these commodities. To correct this, edit the charts to display the DTU and Storage Amount commodities. Also, when you create a new Capacity and Usage chart for databases, you must configure it to show these commodities.

- **Known Issue:**

For Application Component automation policies, the user interface allows you to make conflicting settings. The Action Generation setting can show incorrect values that you can choose for the policy. As a result, you cannot save the policy.

- **Known Issue:**

For ServiceNow environments, the Turbonomic user interface allows you to set orchestration for actions that the ServiceNow integration does not support. If you configure orchestration for these actions, then either the action never generates a ServiceNow CR, or the action can fail when the CR is approved.

The actions you can configure but will not generate a CR are:

- Storage Suspend
- VSan Storage Resize

Note that storage resize for a VSan is accomplished by provision/suspend of Host. You should not configure ServiceNow orchestration for VSan Storage Resize. However, Host Provision is not currently supported for ServiceNow orchestration (see next).

- Host Provision
- File Delete
- Application Component - No actions are supported

The actions you can configure but that can fail include actions that you must also configure for execution on the affected targets. These actions include:

- Host Suspend

For this action to succeed, it must be enabled in the given hypervisor, and there must be no VMs currently running on that host.

- Storage Provision

Currently Turbonomic can only execute a CR for this action on Pure and Dell Compellent storage.

- **Known Issue:**

For updates from versions earlier than 7.22.4, the update does not fully migrate policies for Application and Application Server entities.

Starting with version 7.22.4, the supply chain for applications has changed. Application and Application Server are now represented by the Application Component entity type. If you had created policies that affect these older entity types, then many of the settings will revert to their defaults. Before updating to the new version, you should check for affected policies and record the settings.

- **Known Issue:**

When you create reservations (in the Placement page), if you provide a Network constraint the reservation does not recognize that constraint. The user interface displays a notification that the reservation cannot be created. However, the platform does create the reservation, and it does not include the network constraint.

- **Known Issue:**

For Azure environments, when you inspect resource groups, Turbonomic does not currently show the billed costs for those resource groups.

- **Known Issue:**

**Customer Issue 111396**

For cloud environments, under rare circumstances Turbonomic can recommend resizing a VM to an instance type that is older and less capable than an equally priced instance type.

Under most circumstances, when a cloud provider offers a new instance type that is meant to replace an older type, the provider offers it at a lower cost. In at least one instance we have seen a case with identical costs for the newer and older instance types. If this occurs, and capacity and cost are equal, Turbonomic cannot ensure that it chooses the newer instance type.

To work around this issue, you can create an Action Automation policy that excludes the older instance type.

- **Known Issue:**

**Customer Issue 111019**

API responses including templates imported from vCenter targets will not have the "type": "disk" key/value pair.

- **Known Issue:**

For Azure environments, analysis currently does not generate resize actions for SQL Server databases.

- **Known Issue:**

The All Actions chart does not include pending actions for databases or database servers.

- **Known Issue:**

**Customer Issue 110123**

There is a memory limit for the data you can download from the All Actions chart. For example, assume you have executed many actions over time in your environment. As a result, the list of all executed actions might exceed the data limit. In that case, downloading a CSV file from the All Actions chart will fail.

- **Known Issue:**

Under rare circumstances the Turbonomic platform stops responding. This occurs when `etcd.service` fails. When it does occur, you should see the following error:

```
Error response from daemon: endpoint with name etcd1 already exists in network host
```

To recover from this situation, restart the docker service for the Turbonomic platform. execute the command:

```
sudo systemctl restart docker.service
```

- **Known Issue:**

You may now add ActionScript targets from both the Target Addition dialog in the UI and the Turbonomic API.

- **Known Issue:**

When you use the **PLACE** page to set up a reservation or a deployment, you choose the templates to represent the workload you will deploy. The templates you choose must include an **Image** specification that gives the path to the VM package, and optional placement constraints.

Typically, you will use templates that are discovered through your hypervisor targets. Along with discovering resource capacities for the given VM, Turbonomic should also discover the Image specification for a given discovered template. However in this version, Turbonomic does not discover the Image descriptions. In addition, discovered templates and their image specifications are read-only. For this reason, you cannot set up placement or reservations using discovered templates.

- **Known Issue:**

If you run the Alleviate Pressure plan in Turbonomic 7, and then compare it to the same plan and scope in a 6.1 release, then the display of instances in the supply chain are not identical for both versions.

- **Known Issue:**

Ring charts that show the utilization of different resources show a yellow segment whenever the Reserved Capacity for the resource is zero. For some resources there is no concept of reserved capacity, yet the ring chart still shows a yellow segment.

- **Known Issue:**

For cases where actions indicate provisioning new hosts, the Optimized Improvements chart does not include the hosts to provision in the After Plan section.

- **Known Issue:**

**Customer Issue 99189,99805**

In vCenter environments, you might see unusually high storage latency values or excessive recommendations to provision new storage. There is a known problem with the storage latency values that vCenter Server versions 6.5.u1x and earlier return via the API. These versions can return unusually high storage latency values.

Turbonomic considers storage latency when calculating whether to move a VM to existing storage, or whether to provision new storage. Because of this known problem, Turbonomic can incorrectly recommend provisioning storage when moves are appropriate.

If you encounter this problem, then you should create a policy that disables storage moves for VMs that are managed by vCenter Server versions 6.5.u1x and earlier. To create this policy:

- Create a VM group that contains all the affected VMs. Note that Turbonomic automatically creates a group named `VMs_vCenter` that you might be able to use.
- Create a new VM automation policy. This policy will disable storage move actions.
- Set the group that you created to be the policy scope.
- Under **Action Automation** add the `Storage Move` action and set it to `Disabled`.

- **Known Issue:**

In cases where actions recommend that you suspend hosts, the Optimal Improvements chart should indicate no utilization on the hosts to be suspended. Under some circumstances, the chart can show utilization on these hosts. The result is incorrectly low values for utilization on the other hosts in the current scope.

- **Known Issue:**

Turbonomic generates special average or max utilization templates that it uses when calculating cluster headroom. You should not edit these templates, because Turbonomic will overwrite your changes the next time it generates the templates. However, the Template Catalog presents these templates as editable.

- **Known Issue:**

You should never use duplicate names for groups of the same entity type. However, the user interface does not validate group names to keep you from creating a duplicate name.

- **Known Issue:**

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.

- **Known Issue:**

For AWS environments, under very rare circumstances you can have RIs on payment plans that do not resolve to 1-year or 3-year terms. In this case, AWS does not return pricing data for those RIs. Turbonomic does not include such RIs in its calculations of RI utilization or RI cost.

- **Known Issue:**

**Customer Issue 105693**

The Headroom chart for All On-prem Hosts does not agree with the Top Clusters chart.

Turbonomic generates the All On-prem Hosts headroom data in a nightly plan. When the plan runs, this data is correct. In the course of the day, this data can become stale. To accurately track your cluster usage, you should use the Top Clusters chart.

- **Known Issue:**

For vCenter Server environments, Turbonomic does not recognize DRS rules for VM restart dependencies that are based on `ClusterDependencyRule`. You might be able to achieve a similar effect by expressing dependencies via `ClusterVmHostRule` or cluster affinity or antiaffinity rules.

- **Known Issue:**

**Customer Issue 109389**

In vCenter Server environments that have Instant Clone VMs, under some circumstances Turbonomic cannot move these VMs to other hosts in the cluster, even though you can manually migrate them via the vCenter Server user interface.