



Turbonomic 8.0.6 Release Notes

January 19, 2020

This document describes issues that are addressed in Turbonomic 8.0.6 – Release Date: January 19, 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 8.0.6, 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, or open a ticket at:

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

What's New for Version 8.0.6

Version 8.0.6

- **Demand Driven Reservations**

When making placement decisions for reserved VMs, Turbonomic now considers resource utilization values set in VM templates, in addition to overprovisioning capacity. It then analyzes the current and historical utilization of cluster, host, and storage resources to identify the providers that can adequately handle demand when you deploy the actual VMs to your on-prem environment. With this feature, Turbonomic can make more accurate decisions and prevent congestion issues after you deploy the VMs.

For details, see "Place: Reserve Workload Resources" in the *User Guide*.

- **Cloud Workload Enhancements**

- This release introduces support for AWS *gp3* volumes. Turbonomic can recommend scaling and delete actions for these volumes to optimize performance and costs.

- When you set the scope to a cloud volume and then view the Details tab, you will now see the same utilization charts shown in pending actions. These charts highlight resource utilization percentiles for a given observation period and improvements in utilization as a result of executing actions.
- Turbonomic now supports the `InstanceType` and `ImageId` dimensions for the Amazon EC2 metrics that it collects via CloudWatch. You can add these dimensions to the JSON file that you deploy to configure CloudWatch. For details, see "Enabling Collection of Memory Statistics: AWS" in the *Target Configuration Guide*.
- Migrate to Cloud plans now require you to choose a billing account (AWS account or Azure subscription) before selecting a region as the migration destination.

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"> • Username: <code>turbo</code> • Password: <code>[your_private_password]</code> <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 113605

Two dimensions for Amazon EC2 metrics are now supported.

Turbonomic now supports the `InstanceType` and `ImageId` dimensions for the Amazon EC2 metrics that it collects via CloudWatch. You can add these dimensions to the JSON file that you deploy to configure CloudWatch.

- **Improvement:**

The Details tab for cloud volumes now includes utilization charts.

When you set the scope to a cloud volume and then view the Details tab, you will now see the same utilization charts shown in pending actions. These charts highlight resource utilization percentiles for a given observation period and improvements in utilization as a result of executing actions.

- **Improvement:**

AWS gp3 volumes are now supported.

This release introduces support for AWS *gp3* volumes. Turbonomic can recommend scaling and delete actions for these volumes to optimize performance and costs.

- **Improvement:**

For Migrate to Cloud plans, you now choose a billing account (AWS account or Azure subscription) before selecting a region as the migration destination.

Starting with this release, Migrate to Cloud plans now require you to choose a billing account (AWS account or Azure subscription) before selecting a region as the migration destination.

- **Improvement:**

Customer Issue 112447

For data export from Potential Savings charts, the data format for the SAVINGS column has been improved.

In previous versions, the SAVINGS column for the Potential Savings chart included the currency, the value, and the timeframe. For example, each field could show a string such as, `$85/mo`. The column heading now shows currency and timeframe, and each field only contains the value. This makes the data easier to exploit via processing.

Fixed Issues

- **Fixed Issue:**

Customer Issue 113940,113945,113950

For Azure, discovery of VM metrics can fail with metric response: Unrecognized field "code"

For Azure environments, VM discovery can fail with the error, `metric response: Unrecognized field "code"`. This can occur because Azure has changed the naming of some metrics, and Turbonomic requests the metrics by the old name.

- **Fixed Issue:**

Customer Issue 113703

Azure discovery can fail with Null Pointer Exception (rare).

Under rare circumstances, discovery of Azure environments can fail with a Null Pointer Error.

- **Fixed Issue:**

Customer Issue 113851

Incomplete entity data can delay or halt action execution.

Under rare circumstances analysis can get incomplete data for an entity that has an associated action. This can impact the execution of other actions generated by analysis.

- **Fixed Issue:**

Customer Issue 113846

For Hyper-V with VStorage, analysis can fail to generate actions.

For Hyper-V environments, if the VM supporting a database or application uses VStorage, then Hyper-V does not always reports zero for the VStorage capacity. In that case, analysis does not generate actions for the VM or the workload running on the VM.

- **Fixed Issue:**

Customer Issue 113845

For Azure, analysis can fail to apply RIs to M-series and MS-series workloads.

For Azure environments, Turbonomic can fail to apply RIs to M-series and MS-series workloads. This can occur because Azure has changed how it groups workload families with standard or premium storage support.

- **Fixed Issue:**

Customer Issue 113836

Plan results can show unusually high numbers of providers to support the requested workloads.

Under some circumstances, plans can generate an unusually high number of providers to support the given request for workloads. This can happen when analysis considers utilization of internal resources that do not have any consumers.

- **Fixed Issue:**

Customer Issue 113674

For Azure, discovery can fail with the error, `MismatchedInputException`.

For Azure environments, discovery can fail with the error, `MismatchedInputException`. This can happen when a call to Azure returns `CloudError`.

- **Fixed Issue:**

Cross-vCenter moves can fail when storage is shared.

For vCenter Server environments, if a storage provider on the destination vCenter Server is shared by two or more different vCenter Server instances, then a cross-vCenter action to move a VM from one vCenter to the other can fail to execute.

- **Fixed Issue:**

Customer Issue 113766

For environments that do not support IP V6, the UI pod can crash.

When installing Turbonomic on a Kubernetes platform that does not support IP V6, the UI pod can crash. To support older versions of Kubernetes, the pod must not support IP V4.

- **Fixed Issue:**

Customer Issue 113769

For Azure, unnecessary calls to Azure can exceed the Azure API Call Limit.

For Azure environments, unnecessary calls to Azure can exceed the Azure API Call Limit.

- **Fixed Issue:**

Customer Issue 113756

For Azure PaaS databases, analysis can recommend scaling storage to a size below the allocated storage.

For Azure environments with PaaS databases, Turbonomic can recommend scaling the storage down to a size that is less than the allocated storage for that database. Analysis should scale down to the greater of either the allocated storage, or the desired storage as calculated by analysis of the storage needs.

- **Fixed Issue:**

Customer Issue 113652

Tie-break rules for automation policies can fail to take effect.

You can apply multiple automation policies to the same scope. This is considered a tie, and the tie-break rules determine that the most conservative settings will win. However, for action modes, the tie-break can fail to take effect, and the more aggressive setting can win. For example, if you have `MANUAL` and `AUTOMATED` for the same action on the same scope, under some circumstances the `AUTOMATED` setting can take effect.

- **Fixed Issue:**

Customer Issue 100370,105696

Charts show Storage IOPS as decimal values. IOPS should be whole numbers.

Charts that show IOPs should not show the values as decimals. Display and analysis should only use integer values for IOPS.

- **Fixed Issue:**

Customer Issue 113466

For vCenter Server, details for actions based on DRS can show the policy UUID rather than the policy name.

For vCenter Server, details for actions based on DRS can show the policy UUID rather than the policy name.

- **Fixed Issue:**

Embedded Reports can generate invalid SQL requests.

The Embedded Reports for Turbonomic generate SQL requests based on user interactions with the dashboards. Under some circumstances these interactions can generate invalid SQL requests.

- **Fixed Issue:**

For reservations you create, the reservation does not recognize Network constraints.

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.

- **Fixed Issue:**

Customer Issue 113227,113344,113476,113936

For very large environments, the performance for incremental discovery can be unacceptable.

For very large environments, the performance for incremental discovery can be unacceptable. Analysis must optimize incremental discovery.

- **Fixed Issue:**

Customer Issue 113127

Documentation incorrectly says that Azure EA targets show a star next to the target name.

The Target Configuration Guide incorrectly says that Azure EA targets show a star next to the target name.

- **Fixed Issue:**

Customer Issue 113034

For clusters with a wide variety of host sizes, actions can overload the larger hosts.

Assume you have merged clusters that have a wide range of host capacities. For example, assume Type A hosts have 5 times the memory capacity of Type B hosts in the cluster. In that case, analysis can move workloads to the Type A hosts, and leave the Type B hosts underutilized.

- **Fixed Issue:**

Customer Issue 112761

For Nutanix AHV environments, under some circumstances a resize action from Turbonomic fails to execute.

- **Fixed Issue:**

Customer Issue 111346

For Cloud Zones scope, the Cloud dashboard includes the unsupported Necessary Investments chart.

When you scope the Cloud dashboard to cloud zones (click the Zone level in the Supply Chain), the dashboard includes the Necessary Investments chart. This chart is not supported for the Zones scope. This chart should be removed for this scope in the dashboard.

Known Issues

- **Known Issue:**

For on-premise plans, the user interface does not display all the controls to enable or disable suspension of Host or Storage entities.

When configuring on-prem Optimize or Add VM plans, you can specify whether to enable or disable suspension of host or storage entities. However, the user interface does not include the additional controls to set the suspension to specific groups within the plan scope. You can only enable or disable suspension for the full scope of the plan.

- **Known Issue:**

Customer Issue 113954

Turbonomic does not receive pricing data for S3 database sources. As a result, actions for S3 databases can be invalid.

Due to a temporary issue with Microsoft Azure Enterprise Agreement subscriptions, Turbonomic does not receive pricing data for S3 database sources. As a result, the user interface does not show pricing data for instances of S3 databases, and actions for S3 databases can be invalid.

While this issue Enterprise Agreements persists, you should set all actions on S3 databases to MANUAL or RECOMMEND.

- **Known Issue:**

You cannot re-execute Migrate To Cloud plans that were configured on earlier releases of the platform.

Migrate to cloud plans created on Turbonomic versions 8.0.5 or earlier cannot not be re-executed. Starting with version 8.0.6 or earlier, the plan configuration requires a specification of the destination account for the migration.

- **Known Issue:**

Dashboards do not restore to original layouts after edits to charts.

After you edit a dashboard in Turbonomic, you can click to restore the original dashboard layout. However, the restore does not execute.

If this occurs, after you click to restore, refresh the browser.

- **Known Issue:**

For placement reservations, the CPU capacity in the affected cluster does not match the CPU capacity you see via external monitoring.

When you create placement reservations, the CPU capacity in the affected cluster does not match the CPU capacity you see for that cluster via external monitoring. The values that Turbonomic are off by a determined factor.

- **Known Issue:**

In the user interface, charts can incorrectly show 100% utilization of resources.

For VMM/Hyper-V 2019 environments, when Turbonomic is unable to retrieve accurate vMem utilization data for VMs for some reason, it might show 100% vMem utilization in the Capacity and Usage chart. It will, however, disable resize down actions in the background as a safeguard against incorrect actions.

- **Known Issue:**

Customer Issue 113739

Optimize Cloud plans can give inaccurate RI recommendations if you disable all actions.

If you turn on the Disable All Actions setting in the global default policy and then run an Optimize Cloud plan with VM scaling and RI purchases enabled, the plan results show inaccurate RI recommendations.

Turn off Disable All Actions to resolve this issue. Be aware that after you turn off this setting, it will take Turbonomic a week to reflect accurate results in Optimize Cloud plans.

- **Known Issue:**

For policies that exclude certain cloud tiers, when the cloud provider adds new tiers they can appear as included in the policy.

For public cloud environments, when you make a policy to include only certain tiers (VM or Storage types) of entities, if the service provider deploys new tiers then those will also be included in your policy.

This can be unexpected. For example, assume you create a policy to include only one VM type. Then if your service provider introduces new VM types, your policy will subsequently include those new types.

You should periodically check your policies to see if new tiers have been added to the INCLUDE list.

- **Known Issue:**

When you generate placement and reservations, you must be sure the associated Headroom calculations reflect changes to your environment.

When creating placement and reservations, analysis makes use of the last-generated Headroom data. This data is generated in nightly-run headroom plans. If you have changed your environment by adding targets or changing policies, then you should wait until the next run of headroom plans for the affected scope before you create placement or reservations.

- **Known Issue:**

For AWS environments, cost data is unavailable for the new EBS volume type named GP3.

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 environments with SNMP targets, analysis can show incorrect values for memory.

For environments that include SNMP targets, under some circumstances Turbonomic can discover incorrect memory values for Linux systems. This can occur for the systems that use the net-snmp package, version 5.7.2-43.el7. You should use versions less than 5.7.2-43.el7, or greater than or equal to 5.7.2-47.el7.

- **Known Issue:**

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

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:**

Customer Issue 113685

After modifying a dashboard, Reset appears to fail.

After you have modified one of the main dashboards (Application, Cloud, or On-Prem), you can click **Reset** to return the dashboard to its original configuration. However, the user interface shows that the reset process has failed.

To view the updated dashboard after performing a **Reset**, reload the browser's view of the dashboard page.

- **Known Issue:**

Changes to a policy do not immediately show up in the user interface view of the affected scope.

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

The process to change the platform's IP does not work as described in the Installation Guide.

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:**

Customer Issue 113340

Hitachi Vantara targets can incorrectly show multiple compliance actions.

For Hitachi Vantara environments that enable storage replication, Turbonomic can generate repeated actions of the type, `Reconfigure Storage to Provide Extent`. In addition, replica storage entities and their providers can show incorrect utilization values.

- **Known Issue:**

When creating an automation policy, you can assign two or more schedules to the Action Execution Schedule setting. If the action is one that cannot be executed by Turbonomic, then for Service Now integrations the action appears in the Change Requests for display, only. Also, such an action is *only* affected by the first schedule in the policy.

- **Known Issue:**

For Azure environments, delays in updates to billing information can result in analysis that uses partial billing data for RIs in undiscovered subscriptions.

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 Migrate to Cloud plans, under rare circumstances the plan's actions list can show duplicate entries.

For Migrate to Cloud plans, under rare circumstances the plan's actions list can show duplicate entries.

- **Known Issue:**

For Azure environments, discovery does not support the Brazil Southeast region.

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, you can experience poor performance when working with dynamic groups.

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

When you download the data for Pending Actions, the download might not match the data that you see in the Pending Actions chart.

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.

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, the platform cannot discover databases if the target authentication uses OAuth for credentials.

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

- **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 user interface allows you to set orchestration for actions that the ServiceNow integration does not support.

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:**

The user interface does not currently show the billed costs for those Azure resource groups.

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 analysis 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:**

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

For Azure environments, Turbonomic 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.

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.

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 etcd.service can fail.

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 must use certain templates when using PLACE to set up reservations or deployments.

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:**

For resources that do not support Reserved Capacity, charts can show them with zero reserved capacity.

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:**

Optimized Improvements for plans do not include hosts to provision.

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 high storage latency, or excessive storage provision.

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:**

The Optimal Improvements chart can show incorrect data for hosts to be suspended.

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:**

Do not edit Average or Max Utilization templates.

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:**

Do not use duplicate names for groups of the same entity type.

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 AWS payment plans that are not 1-year or 3-year terms, AWS does not return pricing data.

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:**

For vSAN environments, under some circumstances a plan that is scoped to a datacenter can fail.

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:**

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

The Headroom chart for All On-prem Hosts does not always 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.

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.