Turbonomic 8.1.2 Release Notes

March 12, 2021

This document describes issues that are addressed in Turbonomic 8.1.2 – Release Date: March 12, 2021. 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 8.1.2, 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://support-turbonomic.force.com/TurbonomicCustomerCommunity/s/customer-support

What's New for Version 8.1.2

Version 8.1.2

- **Support for Oracle WebLogic and IBM WebSphere**

  Turbonomic now supports Oracle WebLogic and IBM WebSphere as targets, and can recommend resizing heap and thread pool capacity. Information about the resources required to ensure the performance of these targets will also be part of sizing the underlying infrastructure.

  For details, see:

  ◦ "Oracle WebLogic" in the *Target Configuration Guide*
  ◦ "IBM WebSphere" in the *Target Configuration Guide*

- **Integration with Azure Monitor Log Analytics**

  Turbonomic can now collect performance metrics for your Azure VMs via Azure Monitor Log Analytics. It discovers the Log Analytics workspaces that you have created and then retrieves data periodically. With this additional source of data, Turbonomic can analyze memory utilization for the VMs more accurately.

- **Chart Enhancements**

  For cloud environments, the **Necessary Investments** and **Potential Savings** charts have been enhanced for ease of use. In the ring chart or legend, you can now click an action type (for example, **Scale Volumes** or **Buy RI**) to display a filtered view of the actions list. In addition, when you click **Show All**, you will first see the actions that will incur the highest costs or introduce the most savings.

Configuration Requirements

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

Supported MariaDB Version

For its default historical database, Turbonomic currently supports MariaDB version 10.5.6. This support includes comprehensive testing and quality control for Turbonomic usage of the historical database.

If you are running Turbonomic installed as an OVA, and using the database that is included in that OVA installation, then *you must use version 10.5.6*. For versions of Turbonomic that you installed as an OVA *before* version 8.0.6, it is likely that you need to update your MariaDB.

For information about updating your MariaDB instance, see "Verifying your MariaDB Version" in the latest version of the *Turbonomic Installation Guide*.

Required DB Capacities

For Turbonomic versions 8.0.6 or later, your historical database must provide certain storage size capacities. For MariaDB or MySQL installations, you must ensure your database provides the necessary messaging and logging capacity.

If you installed Turbonomic as an OVA, and use the included MariaDB for the historic database, the easiest way to set the correct capacities is to update your Turbonomic to version 8.0.7 or greater. For more information, see "Increasing your Database Capacities" in the latest version of the *Turbonomic Installation Guide*.

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`.

External DBs and Turbonomic Updates

If you have deployed Turbonomic with an external database server, for some updates you might need to manually create a new database and user for that deployment. This is important if your external database server is multi-tenant, or if your deployment does not grant administrative privileges to Turbonomic.

> **NOTE:**
>
> *If your external database server is multi-tenant, or if your database server does not grant administrative privileges to Turbonomic, then you must continue with this configuration requirement.*
>
> Azure database services are multi-tenant. If you deployed an external database on Azure, this configuration requirement applies to you.
>
> If you deployed your database server in a way that grants Turbonomic privileges to create new databases and new users, then the update will automatically create the required database. This configuration requirement does not apply to you and you do not need to take any action.

For some Turbonomic updates, the updated version includes new databases on the historical database server. If you are updating to one of these versions, then you must *first* create the new database, and a user account with privileges to access that database.

This table lists the Turbonomic versions that require new databases. If you are updating from an earlier version to one of these, you must create the indicated new databases. For example, if you are updating from version 8.0.0 to 8.1.1, then you must create the `depository` database and the `market` database.

Turbonomic Version:	New Databases:	Notes:
8.0.1	`repository`	If you are updating from a version earlier than 8.0.1, you must create a database named `repository`, and a user account named `repository`.
8.1.1	`market`	If you are updating from a version earlier than 8.1.1, you must create a new database named `market`, and a user account named `market`.

> **NOTE:**
>
> If you have already updated to one of these versions of Turbonomic, and you did not perform the steps to update your external DB, please contact your support representative.

To create the databases and users, you will:

- Manually create each required database

  This includes creating the database in your DB instance, creating a user to access the database, and granting privileges to the user.
- Manually add each required database to your cr.yaml file

  The cr.yaml file declares entries for each component database. 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 each new database.

To create a new database:

1. Connect to your external 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, where **<New_Database>** matches the database name in the table above:

    ```
    create database <New_Database>;
    ```

    For example, to create a new `market` database, execute:

    ```
    create database market;
    ```

3. Create the account that Turbonomic will use to access the database where **<New_Database>** matches the database name in the table above:

    ```
    create user '<New_Database>'@'%' identified by 'vmturbo';
    ```

    For example, to create a user for the `market` database, execute:

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

    > **NOTE:**
    > The value **vmturbo** is the default password that Turbonomic 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 new user account, where **<New_Database>** matches the database name in the table above:

    ```
    GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP, REFERENCES, INDEX, ALTER, CREAT
    E TEMPORARY TABLES, LOCK TABLES, EXECUTE, CREATE VIEW, SHOW VIEW, CREATE ROUTINE, A
    LTER ROUTINE, EVENT, TRIGGER ON <New_Database>.* TO '<New_Database>'@'%';
    ```

    For example, to set account privileges for the `market` user, execute:

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

5. Flush privileges to make the privileges take effect:

    ```
    flush privileges;
    ```

Now that the new database is created in your external DB service, you must declare access to it 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:
Open a SSH terminal session on your Turbonomic instance Log in with the System Administrator that you set up when you installed Turbonomic: • Username: `turbo` • Password: `[your_private_password]` Then edit the file: `/opt/turbonomic/kubernetes/operator/deploy/crds/charts_v1alpha1_xl_cr.yaml`	Open the following file for editing: `deploy/crds/charts_v1alpha1_xl_cr.yaml`

2. Add the credentials for the matching pod to access the new 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, **yourDB** is the qualified name of your external DB or your multi-tenant DB partition, and **<New_Database>** is the name of your new database. Declare the following in the entry you add:

```
  <New_Database>:
    <New_Database>DbUsername:  <New_Database>@yourDB
    <New_Database>DbPassword:  vmturbo
```

   For example, if you added the `market` database, the resulting cr.yaml file should be similar to:

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

```
      history:
        historyDbUsername: history@yourDB
        historyDbPassword: yourPassword
      plan-orchestrator:
        planDbUsername: plan@yourDB
        planDbPassword: yourPassword
      topology-processor:
        topologyProcessorDbUsername: topology_processor@yourDB
        topologyProcessorDbPassword: yourPassword
      repository:
        repositoryDbUsername: repository@yourDB
        repositoryDbPassword: yourPassword
      market:
        marketDbUsername: market@yourDB
        marketDbPassword: yourPassword
```

After you have done this, you can update to the latest version of Turbonomic. (Note that upgrading applies changes to the version information in this 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:**

  You can now set the nginx external traffic policy via the cr.yaml file.

  By default, Turbonomic sets the external traffic policy for nginx to `Local`. This is correct for installations on a VM image (OVA installations). For multi-node installations, if you want to use the provided nginx ingress, then you might need to make a different setting, such as `Cluster`.

  The cr.yaml file now includes a setting for nginx. For example, to set the policy to `Cluster`, you would specify the following:

```
nginx:
    externalTrafficPolicy: Cluster
```

If you do not specify `externalTrafficPolicy`, then the installation defaults to `Local`.

- **Improvement:**

  Customer Issue 113170

  Container actions in CSV files now include namespace information.

  When you download the list of pending actions for Container Specs, Workload Controllers, and Container Pods, you will now see namespace information in the CSV file. This helps you distinguish workloads with the same name but belonging to different namespaces.

Fixed Issues

- **Fixed Issue:**

  Customer Issue 114612

  For Azure, license cost for RHEL VMs can be incorrect.

  For Azure environments, the calculation of license cost per hour can be off by factors. This can result in high cost per hour. As a result, shown saving or investments can be incorrect.

- **Fixed Issue:**

  Customer Issue 114487

  Container control entities do not display when you log in with the Shared Observer user role.

  When you log into Turbonomic with a Shared Observer user account, the user interface does not display Container Spec, Workload Controller, Namespace, or Container Cluster entities in the supply chain.

- **Fixed Issue:**

  Customer Issue 114462

  For Azure, if a VM is in the STOPPED state, then volume scaling actions can fail.

  In Azure environments, a VM can be in a STOPPED or STOPPING state. If the VM is in one of these states, a volume scale action on a related volume can fail to execute.

- **Fixed Issue:**

  Customer Issue 114440

  For Hyper-V, even if a VM has Memory Hot-Add enabled, memory resize actions can cause a reboot of the VM.

  For Hyper-V environments, Turbonomic memory resize actions can cause a reboot of the VM, even if the VM has Memory Hot-Add enabled.

- **Fixed Issue:**

Customer Issue 114422

When creating a template, the user interface incorrectly gives you a setting to assign an image to the template.

When creating a VM template, the user interface includes a field to specify a VM image for that template. However, Turbonomic does not support adding images to a template. Saving the template fails.

• **Fixed Issue:**

Customer Issue 114319

For Hyper-V, memory resize down actions should be disruptive, but they are not disruptive in all cases.

For Hyper-V VMs, all memory resize down actions should be disruptive, and require a reboot of the VM. However, under some circumstances memory resize down actions do not cause a reboot.

• **Fixed Issue:**

Customer Issue 114302

For Hyper-V, disruptive actions do not gracefully shut down the VM.

For Hyper-V environments, VMs can be deployed with a graceful shutdown method. When Turbonomic needs to reboot a VM for a disruptive action, it does not use the graceful shutdown when available.

• **Fixed Issue:**

Customer Issue 113589,114100,114500

For Virtual Machine Manager (VMM), if discovery does not recognize the cluster coordinator host, then discovery fails for the full VMM cluster.

VMM clusters include a *cluster coordinator* host. If Turbonomic fails to discover the cluster coordinator for some reason (failed connection, for example), then discovery for the complete cluster fails.

• **Fixed Issue:**

For Azure, you should exclude VM tiers with constrained vCPU from scopes that do not use constrained vCPUs.

For Azure environments, certain tiers of VM workloads specify vCPU constraints as a way to reduce software licensing costs. However, the costs that analysis can discover for licensing of OS and some other software does not consistently show the appropriate savings.

• **Fixed Issue:**

For Azure, cost discovery can fail when connecting to the target through a proxy.

For Azure environments where Turbonomic is configured to use a proxy for connections to the Azure target, under some circumstances discovery can fail to get cost data. This can occur when the proxy is via HTTPS, or it requires authentication to connect with an Azure EA target.

• **Fixed Issue:**

Customer Issue 113406

For Embedded Reports, the Right Size report does not include actions for VMs that are not members of a cluster.

For Embedded Reports, the Right Size report does not include actions for on-prem VMs that are not members of a cluster.

- **Fixed Issue:**

  Customer Issue 112581,113250

  When you export data from the Top Virtual Machines chart, the exported data only includes up to 50 entries.

  From the Top Virtual Machines chart (or other Top Entities charts), you can click **Show All** to see data for all the entities in the scope. When you download data (in CSV format) for that table, the download only includes 50 entries. It should include the full data for that scope.

Known Issues

- **Known Issue:**

  We now support WebSphere and WebLogic targets, but they are not enabled by default.

  For installations of or updates to Turbonomic 8.1.2, the product supports WebSphere and WebLogic targets. However, these targets are not enabled by default in your Turbonomic. To enable these targets:

  1. Log into the Turbonomic VM.

     Use SSH to log in to the Turbonomic VM using the `turbo` account and password.
  2. Open the cr.yaml file for editing. For example:

     ```
     vi /opt/turbonomic/kubernetes/operator/deploy/crds/charts_v1alpha1_xl_cr.yaml
     ```
  3. Search for the list of enabled probes.

     This will include all the probes that are configured for your current installation. The list will be similar to:

     ```
     appdynamics
       enabled: true
     aws
       enabled: true
     azure
       enabled: true
     hyperfles
       enabled: true
     ...
     ```
  4. Add the probes that you want to enable to this list.

     To enable both WebSphere and WebLogic, add:

     ```
     websphere
       enabled: true
     ```

```
    weblogic
      enabled: true
```

5. Save and apply your changes to the platform.

    After you save your changes, use `kubectl` to apply the changes:

    ```
    kubectl apply -f \
    /opt/turbonomic/kubernetes/operator/deploy/crds/charts_v1alpha1_xl_cr.yaml
    ```

- **Known Issue:**

   The Onboarding wizards can sometimes fail to close.

   When you first install Turbonomic, the user interface displays onboarding wizards to walk you through setting up your license, and configuring your first target. Under some circumstances, the button to end the wizard's work flow does not close the wizard. That can result in blocking you from continuing on with your Turbonomic session.

   If the onboarding wizard does not close when you click **End Setup**, refresh the browser. That should close the the wizard and leave you on the last user interface page that you visited.

- **Known Issue:**

   For Hyper-V, Hardware Replace plans that use HCI Host templates can give inconsistent results.

   For Hyper-V environments, if you run a Hardware Replace plan that replaces hosts with HCI Host templates, the results can be inconsistent. Under some circumstances the plan can fail to place all the VMs in the plan scope.

- **Known Issue:**

   For plans that were run in earlier versions, the plans cannot load Azure RI Buy actions when you view them in later versions.

   For plans that were run in versions 8.0.7 or earlier, the plans cannot load Azure RI Buy actions when you view them in later versions.

   Because of anomolies that can appear in the RI pricing data that Azure sends to Turbonomic, it was necessary to change the pricing data that analysis uses. This has no impact on real-time analysis. However, if you load an plan that was run in an earlier version, and that plan includes Buy RI actions, then those actions will not appear in the plan.

- **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:**

   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:**
- **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. Wen 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:**

  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 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 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 groups 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:**

  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:**

  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:**

  Customer Issue 105693

  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:**

  Customer Issue 107699,108212,109349,110474,110896,112196,112639,112749,112790,113104,114386

  Hardware Refresh plans to replace hosts can give unexpected results.

  When you run a plan to replace hosts in a cluster, the results can incorrectly show that you need more hosts than you would expect. This can occur for two reasons:

  ◦ If the host template for the replacements does not use CPU specifications from the catalog, then the calculations for host capacity can be incorrect.
  ◦ When placing VMs on the replacement hosts, analysis assumes all the VM peaks can occur at the same time. This results in excessive utilization of peaks capacity in the plan.

  To configure a plan in a way that avoids these problems, you can:

  ◦ Make sure the plan scope is for a single cluster.

    This is the typical use case for a Replace Hosts plan. Record the cluster name, because the name will come in handy in later steps.

  ◦ Always use the **Select from Catalog** option when you create your Host template.

    If the catalog does not include the CPU specifications that you want, choose an entry that is as close as possible.

To adjust the number of cores, you can then specify a different number of sockets. For example, assume you choose a CPU spec that includes 4 cores of a given core frequency, but you actually want 32 cores. You can choose that spec, and then set **Sockets** to 8 to achieve that number.

- ◦ Turn off **Scale** for the VMs.

   After you choose the host template to use, click **NEXT: VIRTUAL MACHINE ACTIONS**. Then turn off the **Scale** option.

   When replacing hosts, it's important to *not* scale the VMs, so you can see how the hosts can support your given workload.

- ◦ Replace all your VMs with a Cluster Average template.

   Click **SKIP TO CONFIGURATION** to display the plan configuration, and open **Replace/Virtual Machine**. Display **Clusters** and click **Select all**. Then click **NEXT** to choose the VM template.

   To choose the VM template you will replace with, type your cluster name in the Search box. The Templates list will show an AVG template for that cluster. For example, if your cluster name is MyCluster1, then the template name would be `myDomain.com::AVG:MyCluster1`. This template captures the average VM utilization over the last ten days.

   Choose this template and click **SUBMIT**.

- ◦ You can now run the plan.

- • **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.