Workload Optimization Manager 2.2.4
Release Notes

July 19, 2019

This document describes issues that are addressed in Workload Optimization Manager 2.2.4 – Release Date: July 19, 2019. Starting with version 1.1.3, builds are cumulative. Applying 2.2.4 onto an earlier release (starting from 1.1.3) of Workload Optimization Manager 2.2.4 will include all previous fixes. Please see the Workload Optimization Manager documentation for earlier versions of the Release Notes.

For any questions, please contact Cisco Technical Support.

IMPORTANT: For Updates from Version 2.2.0

Because of changes to the SELinux configuration for the Workload Optimization Manager 2.2.0 deployment, you might need to temporarily disable SELinux on the Workload Optimization Manager server before you can execute a product update.

This requirement affects version 2.2.0, if you installed the 2.2.0 package. For example, assume you installed Workload Optimization Manager for version 2.1, and you never migrated to a new 2.2.0 deployment. Even if you have updated your 2.1 deployment to version 2.2.0, this requirement does not affect you.

However, if you initially purchased Workload Optimization Manager version 2.2.0, and installed that package, then this requirement does affect you. Also, if you have an earlier deployment (say 2.1) and you have updated the OS, this requirement might affect you.

If this requirement does affect your Workload Optimization Manager installation, and you try to perform an update to 2.2.1 or higher, then the update will fail with the error:

One of the configured repositories failed (Unknown)

To install the update in this case:

1. Open an SSH terminal session to your Workload Optimization Manager instance.
   Use the following default credentials:
   ■ Username: root
   ■ Password: vmturbo

2. Once the session is open, disable SELinux.
   Execute the command, setenforce 0
3. Execute the offline update.
   Follow the instructions for the update.

4. Once the update is complete, enable SELinux.
   Execute the command, `setenforce 1`

After a successful update to your 2.2.0 version of the Workload Optimization Manager server (say, from 2.2.0 to 2.2.1), you will not need to perform these steps for subsequent updates.

**Templates for UCS and HyperFlex Servers**

Workload Optimization Manager includes templates for UCS and HyperFlex servers that are offered via Cisco SmartPlays. You can use these templates when running plans to calculate future capacity requirements.

*Note:* The Cisco SmartPlay bundles can change, but these changes will not necessarily be reflected in the Workload Optimization Manager templates for this version. Before running plans, contact your support representative to be sure you have the correct template settings. Plans make calculations based on resource allocations that are specified in these templates. If you don’t have the latest template settings, your plans might not reflect the true values in the SmartPlay bundles.

**Configuring Kubernetes Targets for Workload Optimization Manager**

To set up a Kubernetes target for Workload Optimization Manager, you will deploy the Kubeturbo pod with specific configuration resources. These resources require your version of Workload Optimization Manager, mapped to a `TURBONOMIC_SERVER_VERSION`. Use the following table to map your version of Workload Optimization Manager:
What's New for Version 2.2

The 2.2 family of Workload Optimization Manager releases includes the following new features:

- **Price Adjustment for Cloud Environments**
  This release improves how we handle price adjustments. In previous versions, you could configure discounts for specific billing groups in your cloud environment. This release extends that feature to enable more general price adjustments, where you can specify a discount or an increase in cost. Further, you can drill into line items and override the overall adjustment as necessary.


- **Azure Rate Cards**
  For Azure environments, Workload Optimization Manager uses the published Microsoft rates to calculate costs for templates and services in the cloud. However, your environment can run workloads on an Azure environment that is managed by a specific Cloud Solution Provider (CSP). That CSP can offer its own price list for the Azure services. In this case, you can upload the CSP price list to create a Rate Card, and configure Workload Optimization Manager to use those rates for the affected Azure subscriptions.

  See "Azure Rate Cards" in the User Guide.
Cloud Planning Improvements

This release introduces the following features to enhance the value of running plans in your cloud environment.

- Plan Migrations to Azure Cloud Solution Providers
  This release introduces Azure Rate Cards. With these rate cards, when you plan a migration to a CSP that uses its own price list, the plan calculates the true cost of that migration. In this way, you can use a Migrate to Cloud plan to illustrate the value of moving to a subscription hosted by the given CSP.
  See "Migrating to Azure CSPs" in the User Guide.

- Plan migration of Physical Hosts to the Cloud
  With the introduction of the BareMetal target, you can configure a set of physical hosts for Workload Optimization Manager to discover, and treat as VMs. Then you can run a plan that migrates those VMs to the cloud.
  See "Bare Metal Hypervisor" in the Target Configuration Guide.

- Include Azure RI Purchases in Migrate to Cloud Plans
  Workload Optimization Manager can now recommend Azure RI purchases in migration plans.

- Consider Future RI Purchases in Optimize Cloud Plans
  When you run the Optimize Cloud plan, you can now set a purchase date for RIs. This date reflects when you intend to execute the recommendations that the plan calculates. As the plan calculates RI purchases, it will not include RIs that would be expired before that purchase date.
  See "Planning Cloud Optimization" in the User Guide.

- Scope to Billing Family in Optimize Cloud Plans
  With this release you can limit an optimization plan to a single AWS billing family. The plan scope includes all the accounts in that family, and the plan calculates RI purchases through the billing family's master account.

New analysis policies for management on the public cloud

This release includes new policy settings to improve the way Workload Optimization Manager calculates actions for workloads on the public cloud. For more information, see "Analysis Policies: VMs" in the User Guide.

- Consistent Resizing
  When you turn on Consistent Resizing for a group of VMs, Workload Optimization Manager resizes all the group members to the same size, such that they all support the top utilization of each resource commodity in the group. In addition, Workload Optimization Manager discovers the members of Azure Availability Sets and AWS Autoscaling groups, and automatically enables Consistent Resizing for these groups.

- Instance Store Aware Scaling
  For AWS environments, the template for your workload determines whether the workload can use an instance store, and it determines the instance store capacity. With this setting, you can ensure that resize actions respect the instance store requirements for your workloads.

Set Workload Optimization Manager Scope to AWS Billing Families

As Workload Optimization Manager discovers AWS billing families, it includes them as a type of group in the Search page. You can navigate to Search, choose Billing Families, and then set the Workload Optimization Manager scope to one or more billing families.

Improved Discovery of Database Information

For AppDynamics and MS SQL targets, Workload Optimization Manager now discovers the database type (MS SQL, MySql, Oracle), and when possible it discovers the database version as it discovers database
entities. You can filter by this information when creating groups, and Workload Optimization Manager displays this information in the user interface.

- Improved Charts in the User Interface

  - Improvements for the Cloud Cost Comparison Chart
    Workload Optimization Manager analyzes your cloud environment to calculate the best placement and scaling of workloads, and to recommend the actions to optimize your environment. The Cloud Cost Comparison chart compares your current costs with the costs you would see if you execute the pending actions. We have redesigned the chart to make it easier to read, and to display more relevant information.
    
    You can see this chart in the Cloud View of the Home Page, the Optimize Cloud plan results, and the Migrate to Cloud plan results.

  - Display Cost in RI Utilization Charts
    RI Utilization charts show utilization of your RI inventory in terms of Normalized Factor Units (nfu). With this release the charts include an option to display utilization in terms of dollar amount.

- Workload Resize and Move Improvements on the Cloud

  - Workload Processor Compatibility
    Workload Optimization Manager recognizes processor types that you currently use for your workloads. For move or resize actions, Workload Optimization Manager keeps your workloads on instance types with compatible processors. For more information, see "Azure Template Requirements" in the User Guide and "AWS Template Requirements" in the User Guide.

  - Recovery for Failed Resize and Move Actions
    For workload on the public cloud, if Workload Optimization Manager tries to execute a move or a resize action but the action fails, then Workload Optimization Manager places the affected VM in a special group named Cloud VMs with Failed Sizing. You can review the group, and inspect individual VMs to troubleshoot the cause of the failure. As soon as Workload Optimization Manager successfully executes a move or resize on a VM in this group, it then removes the VM from the group. For more information, see "Cloud VMs with Failed Sizing" in the User Guide.

- More Supported Versions of Hypervisor Platforms and Targets

  With this release, Workload Optimization Manager supports installation on VMware vCenter Server 6.7. In addition, this release adds target support for Microsoft SQL Server 2017.

- New Targets

  This release of Workload Optimization Manager introduces the following new targets:

    - Dynatrace Server
      Workload Optimization Manager now supports discovery of applications that are managed by the Dynatrace platform. Workload Optimization Manager includes the discovered information about these applications in its calculations for VM actions.
      See "Dynatrace" in the Target Configuration Guide.

    - Bare Metal Hypervisor
      You can configure Workload Optimization Manager to discover specific physical hosts that you have in your on-prem environment. When Workload Optimization Manager discovers them, it treats them as special host-proxy VMs. Workload Optimization Manager cannot execute any real-time actions on these host proxies. But you can run plans to migrate these proxies onto the public cloud.
      See "Bare Metal Hypervisor" in the Target Configuration Guide.
Configuration Requirements

For this release of Workload Optimization Manager, you should satisfy the following configuration requirements.

Update the Install Script Version

To update from version 1.2.1 to any later version, you must set the version of the install script that Workload Optimization Manager runs to perform the update. These steps are also included in the Installation Manual.

Note:

You must perform these steps when updating from 1.2.1 to a later version. You do not need to perform these steps when updating from versions 1.1.3 through 1.2, and you do not need to perform these steps when updating from version 1.2.2 or later. If you perform these steps when they’re not needed they will have no ill effect, and the update will execute correctly.

1. Log into a shell session on the Workload Optimization Manager instance.
   SSH into the Workload Optimization Manager instance as root (the default password is vmturbo).
2. Execute commands to set the version for the update script.
   In the shell session, execute the following commands:
   ```
   sed -i "s/vmt-/cwom-/g" /srv/www/cgi-bin/vmtadmin.cgi
   sed -i "s/vmturbo_temp/cisco_temp/g" /srv/www/cgi-bin/vmtadmin.cgi
   sed -i "s/tmp/vmturbo/tmp/cisco/g" /srv/www/cgi-bin/vmtadmin.cgi
   ```

Security Requirements for Browsers

For web browsers to communicate with Apache, the Apache configuration requires TLS version 1.1 or later. To use versions of Microsoft Internet Explorer 9 and 10, you must enable TLS 1.1 or later (in Internet Options > Advanced).

Updating the Tomcat Server

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

After you update the Tomcat server:

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

Transport Layer Security Requirements

Starting with version 5.4, by default Workload Optimization Manager 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 Workload Optimization Manager tries to connect with the target service. When you go to the Target Configuration view, you will see a Validation Failed status for such targets.

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

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

- No appropriate protocol
  To correct this error, ensure that you have enabled the latest version of TLS that your target technology supports. If this does not resolve the issue, please contact Technical Support.

- Certificates does not conform to algorithm constraints
  To correct this error, refer to the documentation for your target technology (for example, refer to NetApp documentation) for instructions to generate a certification key with a length of 1024 or greater on your target server. If this does not resolve the issue, please contact Cisco Technical Support.

Enabling HTTP and HTTPS Proxies

Workload Optimization Manager supports the use of HTTP and HTTPS proxies for internet communication. However, you must edit the Tomcat Server configuration file to add the required system variables.

The file you must edit is on your Workload Optimization Manager server at `/usr/libexec/tomcat/server`

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

```bash
FLAGS="\$JAVA_OPTS\ $CATALINA_OPTS"
OPTIONS="-Dcatalina.base=$CATALINA_BASE ...
```

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

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

The resulting OPTIONS statement should be similar to the following:

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

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

For further assistance, contact Technical Support.

**Enabling IOPS and Network Monitoring for OpenStack Mitaka**

The Target Configuration Guide gives instructions to connect to OpenStack targets. However, if you are running OpenStack Mitaka, you must perform additional configuration on the Mitaka platform to enable IOPS and Network data collection from Physical Machines.

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

To connect to EMC VNX and VMAX disk arrays, Workload Optimization Manager uses EMC SMI-S providers that have the given disk arrays added to them. Note that VNX and VMAX support different versions of SMI-S Providers:

- **VNX**
  For VNX and VNX2 arrays, use SMI-S version 4.6.2, based on Solutions Enabler 7.6.2. We have verified Workload Optimization Manager control of VNX block storage using SMI-S version 4.6.2 as a target.

- **VMAX**
  For VMAX arrays, use SMI-S version 8.1, which is included in Solutions Enabler 8.1 – We have verified Workload Optimization Manager control of VMAX storage arrays using SMI-S version 8.1 as a target.

**Fixed Issues**

- Fixed: For environments with HPE 3Par and HPE OneView, the discovery of 3Par is incomplete.
- Fixed: For Azure environments, import of Custom Service Provider rate cards is case-sensitive. As a result, after importing some rate cards Workload Optimization Manager does not display costs.
- Fixed: For environments with HPE 3Par, if you disable resize actions and the storage runs out of capacity, Workload Optimization Manager should recommend provision actions. However, it continues to recommend resize actions.
- Fixed: In AWS environments, for some instance types Workload Optimization Manager fails to get the on-demand pricing. As a result, the price is zero and actions to switch to an RI can appear as an investment instead of a savings.
- Fixed: When you subscribe to a report, you can specify to receive it in both PDF and XLS formats, in just PDF, or in just XLS. However, you always receive the subscribed report in both PDF and XLS formats.
- Fixed: When you download a CSV file for the pending actions, public cloud actions do not include the volume ID when appropriate.
- Fixed: Under some circumstances when calculating actions to address host and storage capacity, the real-time market generates sets of actions that differ from the actions for plans. This can happen even though for the affected entities the action sets should be the same.
Fixed: Under some circumstances, the Top Accounts chart can show inaccurate numbers for the top account. This top account can show numbers that include actions for all the accounts in the environment. For example, that one account can show unusually high savings.

Fixed: In public cloud environments, if incremental discovery temporarily fails for a VM then Workload Optimization Manager considers the VM to have been removed from the environment. Part of this includes removing the historical data. Without the historical data, when discovery succeeds again for that VM, analysis based on Aggressiveness and Max Observation Period can be imprecise or incorrect. This can result in duplicate resize actions, or other action anomalies.

Fixed: In Azure environments, if ongoing discovery fails to gather the full set of environment data (for example, if the connection to an Azure subscription times out), then resize actions can fail with a Null Pointer exception.

Fixed: When using the Placement feature, placement of VMs that use multiple datastores can result in exceeding the available capacity of Storage Provisioned.

Fixed: In Azure environments, under some circumstances periodic discovery posts an EntityPostParsers error to the log. This can occur when discovery gets incomplete data from the Azure subscription.

Fixed: The Cost Breakdown by Tag chart does not display any data when it has a global scope. The chart does display data for scoped views.

Fixed: The Highest Amount of Unused Storage report has an incorrect title. This report shows the highest amount of wasted storage. As a result, the report should be renamed Highest Amount of Wasted Storage.

Fixed: Under some circumstances an error occurs in the Workload Optimization Manager web server which results in logging the user out of the current user session.

Fixed: For public cloud environments that include workloads running on dedicated hardware, Workload Optimization Manager does not discover those workloads, which excludes them from analysis and display. However, Workload Optimization Manager does discover RIs for those dedicated workloads. As a result, the RI Utilization statistics can be incorrect.

Fixed: For environments that use Don’t Place policies, under some circumstances Workload Optimization Manager can stop generating actions.

Fixed: In AWS environments under some circumstances CloudWatch returns data that results in negative values for some metrics. As a result, Workload Optimization Manager displays incorrect data. To fix this issue, Workload Optimization Manager ignores CloudWatch data that results in negative metric values.

Fixed: For AWS environments that use tags to identify and group entities, under some circumstances Workload Optimization Manager can show incorrect expenses for the given entities.

Fixed: In cloud environments, when resizing a workload Workload Optimization Manager uses profile information from the resize-to instance to generate the action. If the environment does not return valid profile data, then Workload Optimization Manager incorrectly uses the resize-from profile for the action target. As a result, the action resizes an instance from its current type to the same type. For example, the action resizes from t3.nano to t3.nano. In this case, analysis should not create an action.

Fixed: In Nutanix Acropolis environments, under some circumstances Workload Optimization Manager stops discovering changes to the Nutanix Acropolis entities.

Fixed: For Azure environments, under some circumstances Workload Optimization Manager gets incomplete rate card data. As a result plans that need Azure pricing fail to run.

Fixed: In XenServer environments, under some circumstances Workload Optimization Manager displays IO Throughput utilization to be greater than 100%.

Fixed: For NetFlow environments that use IPv6, Workload Optimization Manager does not discover the full data for the environment.
Fixed: If you create a schedule for a policy, and the schedule window is already open at the time that you
save the policy, then the schedule does not take effect until the following schedule window.

For example, assume you create a policy with a schedule for every day, from 5:00 am to 7:00 pm. Now
assume you create and save that policy at 9:00 am. Before this fix, such a policy would not go into effect until
5:00 am the following day. With this fix, the scheduled policy will take effect immediately.

Fixed: For Azure environments that suspend and restart VMs, under some circumstances Workload
Optimization Manager fails to restart a VM that has been suspended. When it fails to restart the VM, overall
discovery for the Azure environment also fails.

Fixed: In AWS environments, when a workload is idle for a long period of time that VM no longer appears
in the billing data. For such a VM Workload Optimization Manager can show the wrong OS type in the user
interface, and it can use that OS type for further analysis.

Fixed: When using filters to specify groups, the filters are not case sensitive. For example, if you filter by tags,
filtering should be case sensitive so that MyTag and myTag do not both meet the same filter criterion.

Fixed: When calculating workload placement on the Placement page, performance is unacceptably slow.

Fixed: When calculating workload placement for VMs that require multiple disks, it is possible that some
of those disks are identical in size. In this case, the placement calculation can eliminate these apparent
duplicates, resulting in placing the VM with fewer disks than it requires.

Fixed: In AWS environments with many accounts, the Top Accounts chart lists some accounts by their IDs
and not by their names.

Fixed: The Storage Associated with Dormant VMs report displays duplicate rows for the same VM.

Fixed: When exporting a list of Pending Actions as CSV, if items in the list contain incomplete data then the
CSV export can fail.

Fixed: For Pure Storage environments, the user interface identifies storage controllers by model number. The
user interface should display the storage controller name.

Fixed: Storage Access charts display IOPS in the Y axis. If the IOPS value is high (requires 5 digits) then the
chart truncates the value, making the Y axis unreadable.

Fixed: The AWS Target Configuration form requires values for the Access Key and Secret Access Key fields.
However, for targets based on IAM Role, AWS does not use this information. It is confusing and error prone
to require a value when you provide an IAM role for a target.

To fix this issue, Workload Optimization Manager treats Access Key and Secret Access Key as optional fields.

Fixed: The counts for actions executed do not agree in different charts. For example, the Workload
Improvements chart includes failed actions, while the All Actions chart only shows succeeded actions.

For this fix, when counting executed actions Workload Optimization Manager no longer includes failed
actions. As a result, the Workload Improvements chart now shows only succeeded actions.

Fixed: The Risks Avoided chart shows the count of risks as decimal values. These values should always be
integers.

Fixed: When you scope the Workload Improvements chart to a group, the chart does not show valid data for
that scope.

Fixed: The Headroom chart for All On-prem Hosts shows incorrect data. For this version, the chart shows the
correct data immediately after the nightly plan to calculate headroom completes. However, because the data
updates daily, the data can fail to show the most recent changes in your environment.

In addition, there is a known issue where the data in this chart does not agree with the data in the Top
Clusters chart. See the Known Issue, The Headroom chart for All On-prem Hosts does not agree with the Top
Clusters chart. (page 12).
Fixed: In Azure environments that include AppDynamics application management, under some circumstances Workload Optimization Manager can stop generating actions for the environment. This can occur when a VM powers off, and the resulting analysis assumes the hosted application has been removed from the environment. After the VM powers on again, Workload Optimization Manager can fail to create actions.

Fixed: In the Search view you can enter strings to filter lists of entities or groups. However, search does not accept the backslash character (\), or other characters that are treated as special characters for regex evaluations.

Fixed: In AppDynamics environments that include virtual datacenters (VDCs), under some circumstances Workload Optimization Manager can show all the hosts in the VDC as being hosts in the AppDynamics supply chain.

Fixed: In the API for plan scenarios, you can make subsequent PUT calls to modify the scenario data. If you make subsequent PUT calls to the same setting, that should change the setting; for example changing the setting from false to true. However, the subsequent calls accumulate. In this example, the same setting would be both false and true.

Fixed: For the Optimized Improvements chart, under some circumstances the Before display does not include plots for the complete set of metrics.

Fixed: For JBOSS targets, if an application server delivers invalid data to the probe, under some circumstances the probe stops resizing commodities for the affected application server. This can result in the resource utilization exceeding capacity, yet Workload Optimization Manager does not recommend resizing or provisioning.

Fixed: When you scope the home page to a view of a cloud account, the view should not indicate "Virtual Machines", it should indicate "Workloads". This is because a cloud account can support multiple types of workloads. However, if you scope to a cloud account that does not currently include databases, then the user interface indicates "Virtual Machines".

Fixed: The Reports page does not always give access to reports that you generated in the past. To see reports you have generated in the past, you must generate a new report of the same type.

Fixed: In public cloud environments, when calculating placement for workloads on the cloud Workload Optimization Manager can recommend placing an instance type to a zone or region that does not support that instance type. If you actually place the workload, the placement appears to succeed, but the user interface does not show the associated template for the placed workload.

The fix for this issue is to not allow placement of the instance type in a region that does not support that type. If you attempt to execute the placement, it fails with the notification, The requested template is not available in the region.

Known Issues

For OpenStack environments, after you update Workload Optimization Manager to version 2.2.4, you must recreate any custom policies that you created for scopes of your OpenStack entities. This is because the internal IDs that Workload Optimization Manager uses to track these entities have changed.

In AWS environments, under certain circumstances VM resizing can fail. If the restart of the VM initially fails, Workload Optimization Manager waits 30 seconds and tries to restart again. Workload Optimization Manager will try to restart up to four times. If the restart still fails, Workload Optimization Manager assumes the VM cannot start up with the new template, and it restarts the VM with the old template.
Before you run reports that list resize actions for VMs, you must first run the VM Rightsizing Recommendations report. By default, Workload Optimization Manager does not store historical data for VM rightsizing. For that reason, reports that can show rightsizing history for VMs do not include the rightsizing data by default. However, once you run the VM Rightsizing Recommendations report, Workload Optimization Manager generates this historical data, and continues to store it. Subsequent runs of other rightsizing reports will then include this data.

The Headroom chart for All On-prem Hosts does not agree with the Top Clusters chart.
To generate data for the headroom chart for All On-prem Hosts, Workload Optimization Manager uses data that is generated for the deprecated Classic user interface. The purpose of this data does not match the purpose of the chart. As a result the values in the chart do not always agree with the values in other related charts. Workload Optimization Manager 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.

For vCenter Server environments, do not create your own automation policies for clusters that are affected by vCenter HA settings.
In vCenter Server environments, Workload Optimization Manager discovers HA cluster settings, and imports them as automation policies for the affected clusters of entities. If you create a different automation policy for the same cluster, then you can get unexpected results.
For example, assume the cluster MyHosts has been configured to support HA in the event of host failure. Then, assume you create an automation policy for the MyHosts cluster that sets maximum utilization of vCPU to 75%. In that case, you can see unexpected results for Workload Optimization Manager analysis, and for the display of the affected settings.
To avoid this problem, you should understand the vCenter settings for the clusters in your environment. For any clusters that include HA settings in vCenter, you should ensure there are no user-created automation policies for the same clusters.

When you create an Optimize Cloud plan, you should always configure the plan via the Optimize Cloud wizard. If you start the plan from a session scope, it is possible that you can include scopes that are invalid for this type of plan. Also, if you are planning for scopes that include billing families, it is possible that you can see inconsistent results.
For this reason, with Optimize Cloud plans you should always navigate to the Plan view, select Optimize Cloud, and specify the plan scope through that wizard.

For public cloud, if you have private cloud targets in your inventory (for example, VMM or vCloud Director) then Workload Optimization Manager can display private cloud entities in lists of AWS billing families or Azure subscriptions. For example, when configuring a Migrate to Cloud plan, you can configure pricing for the plan. For that step, the user interface lists the AWS billing families and Azure subscriptions that are available for the plan scope. However, this list also includes entities from the private cloud environment.

**IMPORTANT:**
Do not select these private cloud entities when they appear in lists for public cloud settings. If you execute public cloud functions with these private cloud entities, you might get unexpected results.

When upgrading from a version earlier than 2.2.2, the upgrade can lose some policies that include user-created groups in their scopes. This is because the way Workload Optimization Manager manages group identities has changed. If you lose such policies, then you should create new groups and create new versions of those policies.

The supported URL structure for API calls takes the form, `https://{Your_Turbonomic_IP}/api/v2/{resource_name}`. However, the Swagger-UI generates deprecated URLs when it shows the links in a response and when it shows the request URLs. These deprecated URLs take the form, `https://{Your_Turbonomic_IP}/vmturbo/rest/{resource_name}`.
As you implement scripts for production use, you should be sure to use the supported URL structure.
When you configure a schedule window for a resize action, to ensure Workload Optimization Manager will execute the action during the scheduled time, you must turn off the Enforce Non Disruptive Mode setting for that scheduled policy. Even if you turn the setting off for the global policy, you still must turn the setting off for your scheduled policy. Otherwise Workload Optimization Manager will not execute the resize action.

For schedule windows in policies, there are circumstances that can cause the schedules to fail when your system makes the change between daylight savings time and standard time.

Assume you create two or more policies that are scheduled back-to-back (start time of the next policy is less than an hour away from the end time of the previous policy) on the days for the daylight savings time change. In this case, policy creation can fail with an overlapping schedule error. In order to avoid this error, either exclude the daylight savings date or move the schedule for one of the policies by 1 hour.

For Azure environments, when you deploy an instance of Workload Optimization Manager to Azure, it is possible that the initial boot can time out. As a result, the initial boot of the VM fails. If this occurs, try to boot the VM again, and log in as usual. As of this writing, this has only been observed for the initial boot. If the problem persists, please contact Technical Support.

In AWS environments, to scale an instance Workload Optimization Manager can recommend changing a current instance to a different instance type. Note that AWS maintains a limit of EC2 instances per region. Workload Optimization Manager does not currently get reliable information about the limits for specific instances, compared to the number of instances currently online. As a result, Workload Optimization Manager can recommend actions to move a workload to an instance that exceeds the limit. In this case, the resize action will fail.

For public cloud environments, Workload Optimization Manager does not support specialized pricing for dedicated instances or dedicated host tenancy. If it includes these instances in its calculations, then the pricing will be incorrect. This causes the resulting placement, scaling, or RI recommendations to be incorrect. For this reason, Workload Optimization Manager does not discover and represent dedicated instances in its topology.

In Hyper-V environments, under some circumstances a host in a cluster can have multiple D: drives. In this case the target (Hyper-V or VMM) does not return valid data for that host, and discovery for the cluster fails. Because this is an issue of incomplete or invalid data returned by the target hypervisor, there is no known workaround that you can perform through Workload Optimization Manager.

If you experience incomplete host cluster discovery in Hyper-V, and you suspect this issue, please contact your Hyper-V support for possible ways to reconfigure your environment.

In Hyper-V environments, it’s possible that your environment uses Server Message Block (SMB) storage. You should be aware that Workload Optimization Manager Hyper-V discovery does not support SMB storage. To manage SMB storage, Workload Optimization Manager requires a VMM target, and that VMM instance must manage the Hyper-V hypervisors and the SMB storage that they use.

If you manage a Hyper-V plus SMB environment via Hyper-V targets, then the data Workload Optimization Manager collects for SMB will be incorrect.

In Hyper-V environments, you must be sure that all the VMs have unique IDs.

Hyper-V supports the export of a VM, so that you can create exact copies of it by importing those exported files. The feature includes the option to choose the Import Type. The Copy import type creates a new unique ID for the imported VM. When importing VMs in your environment, you should always use the Copy import type.

Workload Optimization Manager uses the unique ID to discover and track a VM. If your environment includes multiple VMs with the same ID, then discovery will assume they are the same VM. As a result, the counts for VMs will be incorrect.
■ Storage costs, as reported in the Cloud Cost Comparison chart, include costs incurred from Azure boot diagnostics storage at the normal rate for unmanaged disks.

The Cloud Services Storage cost for Azure targets, which is derived from the Azure Billing API, does not currently include costs from boot diagnostics storage. Documentation for Azure boot diagnostics storage does not specify whether it is charged at the normal unmanaged disk pricing level or at a reduced rate. We are currently seeking clarification from Microsoft.

■ In Azure environments you can create disk storage and blob storage. The Wasted Storage report can show blobs as wasted storage, and you can read that to mean you should delete the blob to save costs. However, listing a blob as wasted storage is ambiguous, and in some cases a VM can actually use that storage. When you run a Wasted Storage report, review it carefully before deleting any stores. In the case of blob storage, be sure that storage is not attached or in use by any of your workloads.

■ In the Template Catalog you can see a list of all the VM templates that have been specified or discovered for your installation. Included in the catalog are templates that calculate average consumption for VMs in clusters. The template names include the name of the cluster they have been calculated for. If you installed Workload Optimization Manager 2.1, then you might see templates for clusters that are not in your environment. You can see these templates even after upgrading to a later version.

You should ignore these templates. Workload Optimization Manager will not automatically use these templates in any calculations. If you want to remove these templates from your installation, you can edit the file, /srv/tomcat/data/topology/ServiceEntityProfiles.profiles.topology to remove the associated entries. For assistance, please contact Technical Support.

■ Starting with version 2.2.1, Workload Optimization Manager corrects a Swagger validation issue. The corrected Swagger now supports integration with Swagger development frameworks such as IBM API Connect.

To access the corrected swagger data, if you have updated from an earlier version of Workload Optimization Manager then you must restart your apache HTTPD server. Then you can access it via the approved URL. For example, to access the Workload Optimization Manager Swagger-UI, navigate to https://[Your_Workload_Optimization_Manager_IP]/apidoc/v2.

You can still access the swagger via the deprecated path (does not include an API version in the path). For example, you can navigate to https://[Your_Workload_Optimization_Manager_IP]/apidoc to see the Swagger-UI. This will work even if you do not restart the apache HTTPD.

For API developers, note that you can use the API to install multiple license files in a Workload Optimization Manager instance. However, you cannot use Swagger to install multiple license files. This limitation exists for users of Swagger-UI, and for developers using the Workload Optimization Manager swagger through a development framework.

■ Earlier versions of Workload Optimization Manager include a control to set a specific target percentage for RI coverage for a scope of your environment. You could make this setting for real-time analysis and for Optimize Cloud plans. With this version you can no longer make the Target RI Coverage setting.

■ For targets that you have configured and validated, it is possible that changes to the configuration of the remote service can cause the Workload Optimization Manager connection to it to fail. However, the user interface still shows the connection as valid.

For example, you can configure a target to discover a scope of databases via a given port. Then if the access port for one of the databases changes, Workload Optimization Manager will no longer be able to connect to that database. As a result, subsequent discovery and monitoring of that database will fail. However, the user interface will still show it as a valid target.

■ In Migrate to Cloud plans, Workload Optimization Manager identifies workloads that can run on RIs, and recommends migrating the workloads to these RIs. The plan assumes that an RI will always be less expensive than the on-demand counterpart, however this is not always the case. Because of some billing details from the service provider, the plan can recommend migrating to an RI that is more expensive than running on-demand.
This version of Workload Optimization Manager includes changes to the Cloud View on the Home Page. For example, the Cloud View no longer includes the Cloud Cost Comparison line chart. However, after you update to this version the Home Page continues to show the old view, and the Cloud Cost Comparison line chart can show stale or incorrect values.

After updating to this version, you should click Reset View (at the top-right of the home page) to display the default layout for the Cloud View.

For Azure environments, the user interface can show storage entities for Standard SSD, even though these entities are not active in the environment. Workload Optimization Manager does not consider these entities in its analysis.

To calculate whether to purchase RIs, either in real-time analysis or in Cloud plans, Workload Optimization Manager requires a full week of historical data to determine which VMs are good candidates for RI pricing. However, if you recently installed an evaluation copy of Workload Optimization Manager, it is likely that you have not gathered a full week of historical data.

For versions 2.2 and later, you can configure Workload Optimization Manager to recommend RI purchases with less than one week of data. To set up this configuration, contact your sales representative, or Technical Support.

Note that this configuration is for simulating RI Purchase decisions. If you install Workload Optimization Manager for a production deployment, you must be sure to reset the configuration to the default. After resetting the configuration, Workload Optimization Manager will use a full week of historical data when calculating RI Purchase actions.

Fixed - Needs Restart: Performance for the user interface is unacceptable because the browser does not cache images and other assets.

To enable this fix, you must restart the Apache HTTPD server after you upgrade from an earlier version to version 2.2 or later.

For Azure environments that configure Consistent Resizing for a scope, if you run a Migrate To Cloud plan to migrate the VMs to AWS, then the plan actions do not maintain consistent resizing for the VMs.

The Policy Settings for VMs include a setting named Enable High Availability. The documentation states that this setting sets the minimum number of VMs to place in a given scope. However, this setting has no effect.

Reports fail to generate when you change the Workload Optimization Manager port from 443 to some other valid port number. If you want to enable reporting after you set a custom port, contact Technical Support.

The user interface includes Action Policy settings that Workload Optimization Manager analysis does not support. These settings are:

- VM Action Policy: OperationalConstraints/Storage Latency SLA Value
- Application Action Policy: Application Server Discovery/SLA Capacity

For environments that make use of Price Adjustments or Azure Rate Cards, whenever you add, remove, or change a Price Adjustment or Rate Card that is in use, you must allow sufficient time for Workload Optimization Manager to fully discover all of the affected environment, and to propagate the changes throughout that environment. In an average environment, this can take up to 30 minutes. As an alternative, you can manually execute rediscovery for the affected cloud subscription or account.

In Azure environments, Workload Optimization Manager discovers Resource Groups and presents them in the user interface as groups. It also discovers Cloud Solution Provider business accounts, and Azure subscriptions.

One thing you can do is to create your own groups of these discovered resource groups, business accounts, or subscriptions. When you upgrade from a version earlier than 2.2, the upgrade cannot retain these types of groups that you have created. If you had created groups of resource groups, business accounts, or subscriptions in the earlier version, then you must create them again after the upgrade.
As you update Workload Optimization Manager from a version that is earlier than 2.2, it is possible for the upgrade to log errors that contain statements similar to ERROR [main] [PoliciesConfigTopologyMigrationScript] : Setting invalid boolean value ActionScriptManager attr terminatePM to 'false'. This can occur as the upgrade encounters invalid values in your Workload Optimization Manager policies.

Earlier versions of Workload Optimization Manager silently ignored these errors, and used the default value whenever it encountered an invalid setting. Starting with version 2.2, Workload Optimization Manager logs the errors, and sets the affected value to its default.

If you encounter these errors, you should review your policies to make sure they are as you intend. You can look at the log messages to see the type of setting that is affected. In the above example, you can see that a Terminate PM setting was invalid, and it is now set to false.

While configuring or running Migrate to Cloud or Optimize Cloud plans, you can encounter various issues with the user interface:

- Using Advanced Configuration
  Plan configuration includes Advanced Configuration, which sets up whether to include RI purchases, and which purchase profile to use. If you make these advanced settings and then navigate to make other plan configurations, your advanced settings will be lost. Advanced settings should be the last step of configuring your plan, and your should execute the plan from that screen.

- Re-running a Migrate to Cloud Plan After Workload Optimization Manager Restart
  In this circumstance, the plan scope includes the workloads that had already been migrated in the first run of the plan. After a restart, be sure to check the plan scope before re-running a migration plan.

- Re-running a Migration Plan After Adding Workloads to the On-prem Environment
  After you run a migration plan, assume you have added workload to the on-prem environment. If you then re-run the plan, its scope will include the new on-prem workloads. Be sure to check the plan scope before re-running a migration plan.

For Azure environments, there is a known issue with access to the data for VMs in the Germany regions. Specifically, the environment does not reliably return pricing information for Managed Standard SSD disks. As a result, Workload Optimization Manager might not display accurate costs for workloads in these regions.

In AWS environments, for some templates the AWS API returns template values that do not match the AWS documentation. Specifically, the values for IO and Network bandwidth can differ from the values stated in the AWS documentation. These values do not affect the actions that Workload Optimization Manager calculates for workloads on the cloud. However, for the affected templates the user interface can display bandwidth values that do not match the values you expect to see.

When running Optimize Cloud plans, you should not add workloads to the plan. Adding a workload to this type of plan can give you inconsistent results.
In vCenter environments, to support VM moves across vCenter Server boundaries, the documentation instructs you to create merge policies to merge host clusters and to merge storage clusters. This enables Workload Optimization Manager to treat the merged clusters as one pool that it can move VMs into. In this way, you can move VMs from one datacenter into another.

However, the documentation does not tell you to also create a merge policy for the affected datacenters. If you do not create this datacenter merge policy, then after executing moves across datacenters, Workload Optimization Manager will post Reconfigure actions for the affected VMs.

Before enabling cross-vCenter moves, be sure to create the necessary merge policies for the affected datacenters.

If you already enabled cross-vCenter moves and then encounter this problem of Reconfigure actions:

- First create the necessary merge policies for the affected datacenters
- Then restart your Workload Optimization Manager

When you configure a Cisco HyperFlex target, you can specify target credentials for the root user. For Workload Optimization Manager versions 2.0.3 and earlier, the root username must be set as root. For later versions, the username must be set as local/root.

Because of this change, as you upgrade to a later version, HyperFlex targets with a root account will fail to validate until you edit the target to specify local/root.

After completing an online upgrade, the User Interface continues to show the “Getting Ready” message. To remove the message and display the Login page, refresh the browser.

For a Migrate to Cloud plan, when migrating from AWS to Azure, the plan does not place Spot Instances from the AWS environment.

After you have enabled Datastore Browsing, you might want to disable it again. Under some circumstances, even though you change the setting and then restart the tomcat server, Workload Optimization Manager continues to execute datastore browsing.

If this situation arises, please contact Technical Support for assistance.

Also note, after you disable datastore browsing, it can take up to 10 minutes for the change to take effect, even after a tomcat restart.

For the Optimize Cloud plan, as it calculates NFUs and other metrics Workload Optimization Manager introduces rounding errors. For smaller environments the error is on the order of 0.02. However, for larger environments the error can multiply into a significant range.

Affected plans are still useful. However, for a large planning scope the plan can show exaggerated RI Buy recommendations. To get more precision in your Optimize Cloud plans, run them on a smaller scope of workloads.

In AWS environments, when you scope to a region then Workload Optimization Manager does not show any pending cloud-based actions. To see all of your cloud actions, set the scope to something other than an AWS region.

In VMM environments, when a VM storage is on an SMB share and it also has an ISO image, then Workload Optimization Manager will not recommend storage moves from the SMB share for that VM.

In the classic version of Workload Optimization Manager the user interface displays an audit log that lists all the actions that have been taken in your environment.

In earlier versions, for vCenter environments this log included actions that were taken by the vCenter Server. For example, if a user used vCenter to move a VM, or if DRS rules made a change, the audit log would show those actions.

Starting with version 2.0, the audit log no longer shows these external actions.

When running plans to migrate workload to the cloud, be sure to choose the Migrate to Cloud option, and do not use the Workload Migration option. If you use Workload Migration, you can successfully set up a migration to the cloud, but the resulting plan might not choose the least expensive regions for workload placement.
In some vCenter Server environments that include unusual configurations for vCenter, discovery of VMware vSphere Storage Policy Based Management can time out and fail to complete. If you encounter this situation, please contact Technical Support.

For AWS environments that include Third Party Marketplace AMIs, Workload Optimization Manager can recommend scaling to an instance type that is not supported for a given Marketplace AMI. As a result, the scaling action can fail.

As part of its intelligent workload management, Workload Optimization Manager can recommend scaling the instance to a different instance type. However, Workload Optimization Manager chooses from the full set of available instance types, and does not recognize whether the recommended type is supported for the given Marketplace AMI. For this reason, the scaling action can fail.

To avoid this situation, create an Automation Policy for a group of related Third Party Marketplace instances, and then set the Excluded Templates scaling constraint to exclude any unsupported instance types.

When using the API to deploy reservations (using Deployment Profiles and Reservations endpoints), the placement calculations can fail to respect network constraints. This occurs when one or more networks have the same name. The API can fail to recognize the network constraint, even if you identify the affected networks via UUID values.

In OpenStack environments, when you set up reservations to deploy workloads via OpenStack templates you must constrain the deployment to the OpenStack datacenter.

When you define the workload to deploy, you specify a template to deploy and any constraints that you want Workload Optimization Manager to respect. To deploy an OpenStack template, turn on the Limit initial placement to locations you specify constraint, and manually choose the datacenter or datacenters that support the OpenStack template.

Workload Optimization Manager now requires HTTPS to connect to the user interface, and to connect to the API. Also, API connections no longer accept clear-text authentication, so you cannot include authentication in URLs to execute API commands. Instead, you should use curl commands to execute API commands.

To support HTTPS, Workload Optimization Manager includes a self-signed certificate by default. We recommend that you install a certificate from a trusted Certificate Authority. If you do not install a trusted certificate, you can still use curl to execute API commands if you include the -k flag.

After editing the IP address of a Workload Optimization Manager target or deleting a Workload Optimization Manager target, we recommend that you restart Tomcat in order for the Supply Chain to correctly reflect the changes.

Workload Optimization Manager policies include a default policy named Global Actions Mode. You can use this policy to globally disable all actions in Workload Optimization Manager. If you turn on the setting to disable all actions, then Disabled takes effect for all actions. However, in the default policies the action modes remain as you have set them. The user interface does not show that you have globally disabled these actions.

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

In AWS environments that use RI templates across access regions, you should be sure to have a single master account, and include that master and all sub accounts as Workload Optimization Manager targets.

If you experience situations where RI actions seem to recommend templates that are not available in the indicated regions, verify that you have included all the sub accounts as targets. If the problem persists, contact Technical Support.

After executing Settings : Maintenance Options : Export Current Environment, the user interface sometimes shows that the export failed even though the export is still running successfully.

If you are exporting a large topology, the user interface response can time out and show this warning after 60 seconds, even though the export continues to run.

If you experience this situation, restart the Workload Optimization Manager server. This restarts the HTTP server with a 10 minute timeout setting, which should be sufficient to export most environments. If the problem persists after a restart, contact Technical Support.
Storage Suspend actions appear grouped with Delete Wasted Files actions in the Delete category of pending actions.

For example, assume you are viewing the On-prem Overview on the Home Page, and the Pending Actions chart does not list Suspend Storage actions. However, if you hover on the Storage tier of the Supply Chain, the tooltip shows that you have actions to execute on Storage. These actions would be to suspend storage.

When viewing the overview, it is always a good idea to hover on any tier of the Supply Chain that is not completely green. The tooltip gives you extra information about that tier, including a count of actions.

To see the specific storage actions, click the Storage tier in the Supply Chain, and then view the Actions list.

When running a Replace Workload plan to replace certain VMs with a template, under some circumstances the plan replaces the VM with a copy of an existing VM. For this reason, you should not configure a Replace Workload plan.

To get the same effect as a Replace Workload plan, you should configure the plan to remove the VMs you want to replace, and then configure it to add instances of a template or VM copy. For example, remove three VMs, and then add three instances of a VM template.

For Load Balancer entities, the Transactions Per Second data can be incomplete.

When setting up a custom plan, the user interface allows you to set a scope that includes public cloud entities. If you run such a custom plan, you can see unexpected or incorrect plan results. You should not set a scope that contains public cloud entities.

To run plans for the public cloud, choose the Migrate to Public Cloud or the Optimize Cloud plan type.

In order to add an ACI Target, your Workload Optimization Manager instance must be using Market 1, which is disabled by default. If you require ACI Integration, please contact Workload Optimization Manager Technical Support.

Workload Optimization Manager includes Automation Policies that you can create to modify the analysis of elements in your environment. This includes Scaling Constraints, which can include setting up templates to exclude when resizing workloads on the cloud. Note that the Excluded Templates option is not available for default policies for VM, Database, and Database Server templates.

To set up excluded templates, define a scope of entities and create an Automation Policy for that scope.

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.

Workload Optimization Manager considers storage latency when calculating whether to move a VM to existing storage, or whether to provision new storage. Because of this known problem, Workload Optimization Manager 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 Workload Optimization Manager 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.

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.
Workload Optimization Manager can automate resize actions for datastores. However, after executing the action, the hypervisor that is stitched to the datastore requires a refresh before it can recognize that change. Because Workload Optimization Manager uses the hypervisor to discover the datastore, then Workload Optimization Manager will not recognize the change either. As a result, Workload Optimization Manager might recommend the same action again, even though the datastore has already been resized.

To avoid this situation, Cisco suggests that you set the Action Mode for storage resize actions to be Recommend.

In action scripts, you can get the internal name of a VM and use that to assemble calls to the API that work with the given VM. However, with the JSON API you must use the VM's UUID to access it via the API call to entities. Calls that use $VMT_TARGET_NAME with the XML API must now use $VMT_TARGET_UUID.

For example, the following code creates the URL base for a call to the API that will get the actions associated with the action script's target VM:

```
URL="/vmturbo/rest/entities/$VMT_TARGET_UUID/actions"
```

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

To ensure that Workload Optimization Manager recommends the most appropriate actions for AWS environments, you must make specific settings for default policies in your Workload Optimization Manager installation. After adding an AWS target, then perform these steps:

- Click Settings: Policies to navigate to the Policy Management page.
- Ensure datastore browsing is enabled for the Storage Defaults policy. Find the Storage Defaults policy and make sure that the option for Datastore Browsing is ON.

In AWS environments, Workload Optimization Manager discovers data from a given AMI to determine the OS of an associated VM. The OS influences cost calculations. If you delete the AMI from your environment, then Workload Optimization Manager cannot discover the OS, and so it assumes a free Linux OS. This can result in incorrect calculations of cost in plans and in evaluations of real-time costs.

After restarting the Workload Optimization Manager server, users must log into new sessions in order to continue using the user interface or the API.

For Migrate to Cloud plans, when you migrate a VM that has an attached ISO image, the plan shows a move of a non-existent 0GB disk. This 0GB disk is a representation of the ISO image, and you can ignore the move action. The other plan actions for the VM are correct.

For Tomcat, SQLServer, WebSphere, and other application or database targets that use a scope to identify target instances, Workload Optimization Manager can fail to validate or discover the targets. If you add a target via scope, and that scope does not have any VMs to host the target applications, then the target will not validate. If you later add hosts for the applications to that scope, Workload Optimization Manager does not dynamically recognize the change and then validate and discover. Even if you execute a Validate command for that target, Workload Optimization Manager can validate but it will not run discovery.

To avoid this problem, make sure your applications are running on hosts before you configure the target. If you have encountered this problem (you added hosts to a scope after configuring the target), delete the target from Workload Optimization Manager and set a new target with this scope.

When you set up action orchestration in an Automation Policy, you should be sure that the scope for this policy does not include conflicts with individual entities. If a single entity is in two scopes, and one scope enables orchestration while the other scope does not, then Workload Optimization Manager arbitrarily chooses either orchestration or a Workload Optimization Manager action mode.

For example, assume two groups – GroupA and GroupB, and assume a host named MyHost is in both groups. If you configure action orchestration for hosts in GroupA but you do not for hosts in GroupB, then you cannot be sure that Workload Optimization Manager will call the action orchestrator for actions on MyHost.
Assume you have application or database servers as targets, and they use dynamic groups to define their scopes for monitoring. If you add new application or database servers to these dynamic groups, or if you shut down and then restart an existing server, then Workload Optimization Manager fails to discover the change and these servers will not appear in the user interface. To resolve this problem, execute a manual rediscovery of the affected target.

Under some circumstances when using the Deploy View, the user interface can fail to respond. After you request a placement, if the placement recommendation does not appear within one to two minutes, reload the browser running Workload Optimization Manager to reset the user interface.

Assume you set up a scope that is less than a full datacenter. If you ignore hyperthreading in that scope and then restart tomcat for the Workload Optimization Manager application, then Workload Optimization Manager does not calculate the CPU capacity correctly for the affected scope of hosts. If this problem occurs, perform a full rediscovery to show correct CPU capacity.

When you reserve resources for VMs that you will deploy in the future, Workload Optimization Manager initially calculates these reserved resources as CPU Provisioned, Memory Provisioned, and Storage Provisioned. However, these resources ultimately revert back to values that do not include the reserved VMs.

There is a rare case where Workload Optimization Manager can lose the cluster relationship for VMs running on a host. Assume you move a host out of a cluster, and directly into the datacenter (not into a cluster). Next you create a new cluster and then move the host into that cluster. In this case, the VMs on that host will not belong to any PM cluster. This can also affect Provider Virtual Datacenters that belong to the new cluster. To avoid this problem, create the cluster first, and move the host directly into it. If this problem occurs, rediscover your environment to establish the correct cluster relationships.

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 Workload Optimization Manager is not correct. As a result, Workload Optimization Manager will not recommend that you increase the VCPU limit.

In OpenStack environments, it is possible to place a VM belonging to a specific cluster (a VM flavor that is set via extra specifications) onto a host that is not a member of that cluster. Workload Optimization Manager cannot identify this configuration error, and will not recommend a move to place the VM on an appropriate host. You can implement placement policies to ensure that VMs always get placed on the correct hosts. This can work even if there is no host cluster to match the VM flavor. However, in that case the user interface will not show these VMs as members of a PM cluster.