Quest™

Foglight® Resource Optimizer for Hyper-V Environments 5.7.7

User Guide

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Legend

WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.

CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.

IMPORTANT NOTE, **NOTE**, **TIP**, **MOBILE**, or **VIDEO:** An information icon indicates supporting information.

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1

Get started with Foglight Resource Optimizer

This guide provides instructions and information about using Foglight® Resource Optimizer to optimize CPU, memory, and network consumption, and project storage requirements in virtualized environments. This guide is intended for IT managers who want to monitor and optimize virtualized environments by using the waste-finding and right-sizing functionality that this product provides.

Virtual machines (VMs) are quickly becoming the industry standard in IT infrastructures. IT managers find themselves with hundreds, if not thousands of VMs or physical machine hosts in their infrastructures. VMs can be added quickly, making it necessary to plan for the addition of virtual machines to the physical machines that host them. This situation can be a challenge for administrators. IT managers lack the required tools to accurately optimize CPU, memory, and network consumption, or project storage requirements. Monitoring virtual machine environments with Foglight Resource Optimizer simplifies the optimization process, providing waste-finding and right-sizing functionality for virtualized environments.

This section introduces you to Foglight Resource Optimizer environment, and provides you with essential foundational information.

For detailed information about the Foglight™ for Hyper-V and how it monitors Microsoft® Hyper-V® environments, see the *Foglight for Hyper-V User and Reference Guide*.

For more information, review the following topics:

- Installation requirements
- Credentials required for optimization
- Data collection
- Dashboard location

Installation requirements

Foglight Resource Optimizer comes installed on Foglight for Virtualization, Enterprise Edition and can be installed on a Foglight Management Server.

For more information about installing Foglight Resource Optimizer, and for details about system requirements and version compatibility, see the *Foglight Resource Optimizer Release Notes*.

Credentials required for optimization

Foglight Resource Optimizer provides recommendations for changes in the Hyper-V® environment to make more efficient use of resources. As a prerequisite, a Hyper-V® agent must be part of the local Administrators group.

Data collection

The Optimizer dashboard automatically displays the virtual machine hosts (Hyper-V® target machines) that Foglight or Foglight for Virtualization, Enterprise Edition monitors, for which resource optimization recommendations are provided. No further setup is required.

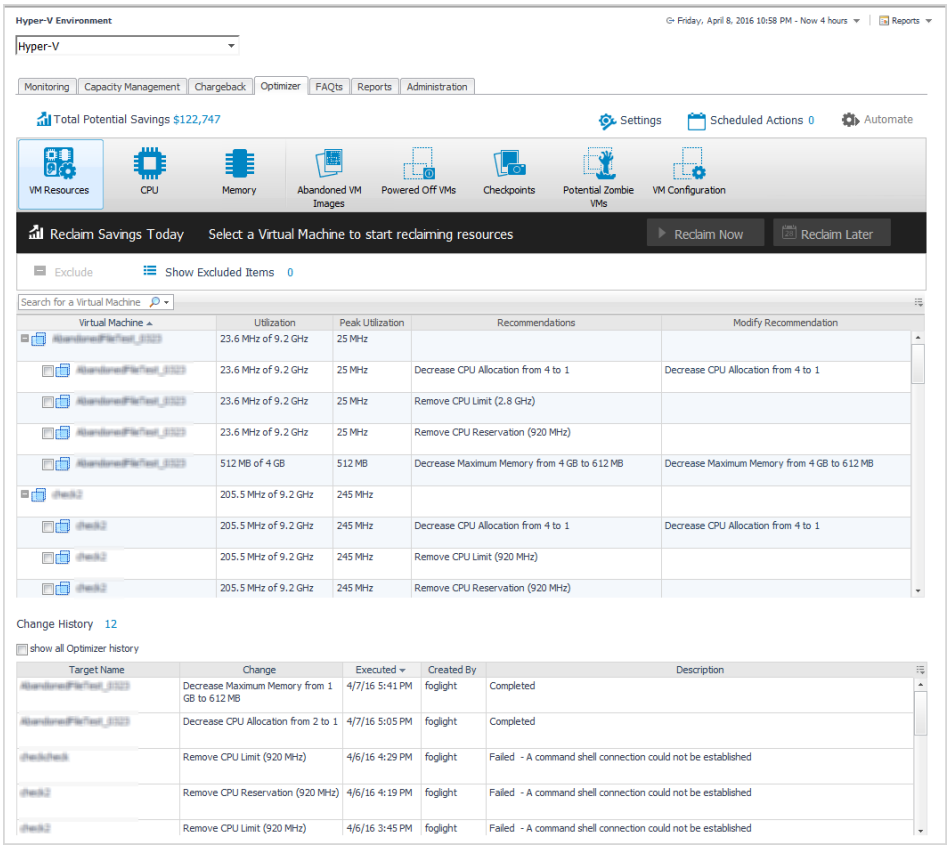
Working in a federated environment

Each Federated Child should be configured to monitor its own unique environment. There should be no overlap between the monitored environments, such that no two Federated Children are monitoring the same nodes (VM, Server, Datastore, etc.). Incorrect configuration results in topology churn on the Foglight Federation Master.

Dashboard location

After installing Foglight Resource Optimizer, the Optimizer tab appears in the Hyper-V Environment dashboard.

Figure 1. Optimizer dashboard location



To access the Optimizer dashboard:

1. Log in to the Foglight or Foglight for Virtualization, Enterprise Edition browser interface.
2. On the navigation panel, under Dashboards, click **Hyper-V** > **Hyper-V Environment** > **Optimizer** tab.

2

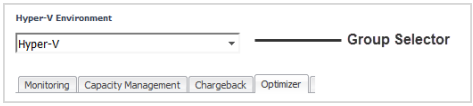
Optimize your virtual environment using Foglight Resource Optimizer

This section provides instructions and information about using Foglight Resource Optimizer to optimize CPU, memory, and network consumption in virtualized environments.

For detailed information about the Foglight™ for Hyper-V and how it monitors Microsoft® Hyper-V® environments, see the *Foglight for Hyper-V User and Reference Guide*.

The Optimizer provides a broad platform of categories to optimize your virtual environment. You begin this process by using the Group Selector, located in the upper left section of the Hyper-V Environment dashboard, to select the required VM object.

Figure 2. Group Selector



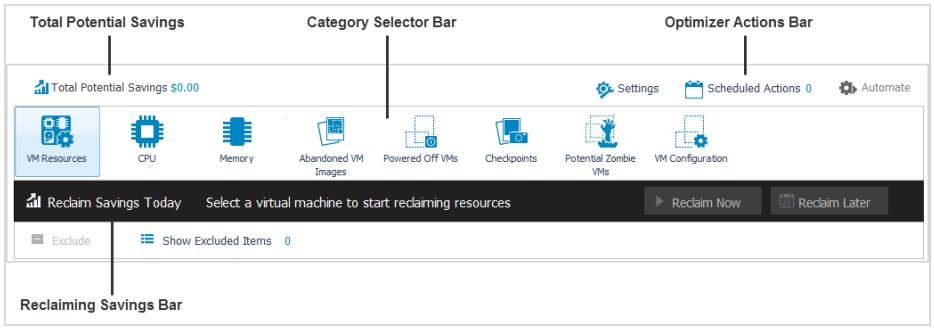
The Optimizer tab is refreshed to display the selected group in the Virtual Machines table.

The Virtual Machines table shows only the recommendations for the selected VM category, only for the VMs that are not excluded from the optimization list. For example, if a user excluded a VM from “CPU”, this VM is not displayed on the Virtual Machines table for CPU. It is displayed on the other categories for which recommendations are provided.

After selecting a group, use the Category Selector View to begin optimization of your virtual environment. This view contains the following sections:

- Total Potential Savings
- Category Selector bar
- Optimizer Actions bar
- Reclaiming Savings bar

Figure 3. Category Selector view



Foglight Resource Optimizer comes with a set of pre-defined report templates that can be run from the Reports dashboard (**Dashboards > Reports**). Using this dashboard, operators can run reports, build custom reports, and

view generated reports. Advanced Operators can also schedule and manage reports. For a list of pre-defined report templates provided for Foglight Resource Optimizer, see Foglight Resource Optimizer reports.

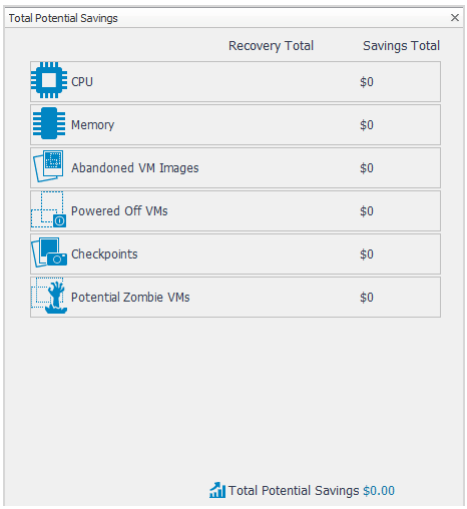
Foglight for Virtualization, Enterprise Edition users can also investigate the resources' efficiency and optimize the virtual environment via the Environment Overview dashboard. For more information, see Investigate resource efficiency.

Total Potential Savings

Total Potential Savings is the resource savings multiplied by the cost of the resource ("resource savings" x "the cost of the resource"). The Optimizer automatically calculates the savings for the selected VM object.

Click **Total Potential Savings** to open the Total Potential Savings dialog box, which lays out the total potential savings by VM component.

Figure 4. Total Potential Savings dialog box



The dialog box includes the following information:

- VM component
- **Recovery Total**. Shows the total amount of optimization that can be performed for each VM component.
- **Savings Total**. Shows the total amount of savings for each VM component.

Category Selector bar

The Category Selector bar allows you to select VM components for optimization:

- VM Resources
- CPU
- Memory
- Abandoned VM Images
- Powered Off VMs
- Checkpoints
- Potential Zombie VMs
- VM Configuration

VM Resources

The **VM Resources** category includes all CPU and memory recommendations for optimizing a particular VM. You can review them all in one tab, instead of going through the CPU and Memory tabs. This option allows you to coordinate the recommendations for that VM and reboot the machine once instead of three times.

The VM Resources view includes the following elements:

- VM Resources optimization table
- Change History view

Table 1. VM Resources optimization table

Description	This table includes the following information:
	Virtual Machine. Name assigned to the VM.
	Utilization. • CPU: Amount of processing speed that each virtual machine uses. • Memory: Amount of memory that each virtual machine uses.
	Peak Utilization. • CPU: Highest sustained CPU utilization rate for the VM over a 15-minutes period. • Memory: Highest sustained memory utilization rate for the VM over a 15-minutes period.
	Recommendation. • CPU: Recommended amount of CPU that users should add or remove for optimization. • Memory: Recommended amount of memory that users should add or remove for optimization.
	Modify Recommendation. • CPU: Recommended modifications for the VM's CPU. To change the Optimizer's recommendation, click the link in the cell. In the dialog box that opens, type the new recommended value in the **Change CPU Allocation** field and click **Save**, or click **Reset to Default** to restore the default value. Memory: Recommended modifications for the VM's memory. To change the Optimizer's recommendation, click the link in the cell. In the dialog box that opens, type the new recommended value in the **Change Memory Allocation (MB/GB)** field and click **Save**, or click **Reset to Default** to restore the default value.
Where to go next	N/A

The **Search** box is located on the top left corner of the table. It allows you to search the environment for a specific virtual machine, by entering the VM name, the disk name, or the partition name in the search box. The VMs matching the search criteria are displayed in the Virtual Machines table.

CPU

The **CPU** category allows you to view utilization rates and peak utilization rates. It provides recommendations for optimizing the CPU for the VM.

The CPU view includes the following elements:

- CPU optimization table
- Change History view

Table 2. CPU optimization table

Description	This table includes the following information:
	Virtual Machine. Name assigned to the VM.
	Utilization. Amount of processing speed that each virtual machine uses.
	Peak Utilization. Highest sustained CPU utilization rate for the VM over a 15-minutes period.
	CPU Recommendations. Recommended amount of CPU that users should add or remove for optimization.
	Modify Recommendation. Recommended modifications for the VM's CPU. To change the Optimizer's recommendation, click the link in the cell. In the dialog box that opens, type the new recommended value in the **Change CPU Allocation** field and click **Save**, or click **Reset to Default** to restore the default value.
Where to go next	N/A

The **Search for a Virtual Machine** box is located on the top left corner of the table. It allows you to search the environment for a specific virtual machine, by entering its name in the search box. The VMs matching the search criteria are displayed in the Virtual Machines table.

Memory

The **Memory** category allows you to view utilization rates and peak utilization rates. It provides recommendations for optimizing the Memory for the VM.

The Memory view includes the following elements:

- Memory optimization table
- Change History view

Table 3. Memory optimization table

Description	This table includes the following information:
	Virtual Machine. Name assigned to the VM.
	Utilization. Amount of memory that each virtual machine uses.
	Peak Utilization. Highest sustained memory utilization rate for the VM over a 15-minutes period.
	Memory Recommendations. Recommended amount of memory that users should add or remove for optimization.
	Modify Recommendation. Recommended modifications for the VM's memory. To change the Optimizer's recommendation, click the link in the cell. In the dialog box that opens, type the new recommended value in the **Change Memory Allocation (MB/GB)** field and click **Save**, or click **Reset to Default** to restore the default value.
Where to go next	N/A

The **Search for a Virtual Machine** box is located on the top left corner of the table. It allows you to search the environment for a specific virtual machine, by entering its name in the search box. The VMs matching the search criteria are displayed in the Virtual Machines table.

Abandoned VM Images

VMs images can easily get abandoned in large virtual infrastructures. This situation typically occurs when a virtual machine that is no longer needed is removed from inventory instead of being deleted. In this case, large amounts of wasted storage space develop.

The **Abandoned VM Images** category identifies those abandoned VM images and allows you to reclaim them, if necessary. For additional information about abandoned VM images reported on a federated environment, see Working in a federated environment.

NOTE: The Abandoned VM Images view gets populated with data in one to two days after the installation.

The Abandoned VM Images view includes the following elements:

- Abandoned VM Images optimization table
- Change History view

Table 4. Abandoned VM Images optimization table

Description	This table includes the following information:
	Unused Image File Name. Name of the abandoned image (for example, image created when the VM was deleted from the environment, or when the disk files detached from the existing VM).
	Volumes. Combines the volume name and the relevant cluster name.
	Size. Size of the abandoned image.
	Last Modified. Date and time when the image file was last modified.
	Recommendations. Recommends removing the abandoned image file.
Where to go next	N/A

The **Search** box located on the top left corner of the table. It allows you to search the environment for a specific abandoned VM image, by entering its name in the search box. The image files matching the search criteria are displayed in the Abandoned VM Images optimization table.

Powered Off VMs

In virtual environments, VMs often get turned off and forgotten.

The **Powered Off VMs** category identifies virtual machines that have been powered off for an extended period. It is recommended to delete these VMs, since they have been powered off for a long time. Users must manually perform this operation. The operation cannot be reverted, and therefore, it should not be automated.

The Powered Off VMs view includes the following elements:

- Powered Off VMs optimization table
- Change History view

Table 5. Powered Off VMs optimization table

Description	This table includes the following information:
	Virtual Machine. Name assigned to the VM.
	Volumes. Combines the volume name and the relevant cluster name.
	Size. Size of the powered off VM.
	Powered Off For. Number of days the VM has been powered off.
Where to go next	N/A

The **Search for a Virtual Machine** box is located on the top left corner of the table. It allows you to search the environment for a specific virtual machine, by entering its name in the search box. The VMs matching the search criteria are displayed in the Virtual Machines table.

Checkpoints

Creating a checkpoint in a virtual environment does not create a complete copy of the original VM disk file, rather it only copies the delta between disks. A checkpoint file contains only a change log of the original virtual disk. The **Checkpoint** category identifies the checkpoints taken in your environment that have not been modified for an extended period, and allows you to reclaim them, if necessary.

The Checkpoints view includes the following elements:

- Checkpoints optimization table
- Change History view

Table 6. Checkpoints optimization table

Description	This table includes the following information:
	Virtual Machine. VM name and checkpoint name.
	Description. Checkpoint description. May indicate why the checkpoint was created.
	Reclaim Size. Size of the checkpoint.
	Last Modified. Number of days passed since the checkpoint file was last modified.
	Checkpoints Count. Number of checkpoints.
	Volumes. Combines the volume name and the relevant cluster name.
	Recommendations. Recommends removing the unused checkpoint file.
Where to go next	N/A

The **Search** box is located on the top left corner of the table. It allows you to search the environment for a specific VM or checkpoint file, by entering its name in the search box. The VMs matching the search criteria are displayed in the Virtual Machines table.

Potential Zombie VMs

Zombie VMs are powered-on virtual machines that system administrators may have neglected and that are no longer in use. They are often hard to find in a virtualized infrastructure. It is recommended to power off these zombie VMs.

The **Potential Zombie VMs** category identifies those VMs by analyzing CPU, memory, network, and disk throughput for consistent usage over an extended period. It allows you to reclaim them, if necessary.

By default, a VM is considered a zombie VM if all of the following conditions are met for every resource:

- The VM resource utilization over the evaluated period is less or equal than “Average resource utilization”.
- The VM resource standard deviation over the evaluated period is less or equal than “Average resource utilization” * “Deviation” / 100.

The Potential Zombie VMs view includes the following elements:

- Potential Zombie VMs optimization table
- Change History view

Table 7. Potential Zombie VMs optimization table

Description	This table includes the following information:
	Virtual Machine. Name assigned to the VM.
	CPU. CPU utilization.
	Memory. Memory amount that the zombie VM is wasting.
	Disk Throughput. Throughput speed of the zombie VM's disk.
	Network. Network speed of the zombie VM.
	Recommendations. Recommends removing the potential zombie files.
Where to go next	N/A

The **Search for a Virtual Machine** box is located on the top left corner of the table. It allows you to search the environment for a specific virtual machine, by entering its name in the search box. The VMs matching the search criteria are displayed in the Virtual Machines table.

VM Configuration

The **VM Configuration** category allows you to search for VMs with duplicate VMIDs (bios IDs), and provides recommendations for remediation.

The VM Configuration view includes the following elements:

- VM Configuration optimization table
- Change History view

Table 8. VM Configuration optimization table

Description	This table includes the following information:
	Name. Configuration name.
	Virtual Center. Virtual center name.
	Creation Date. Date and time when the configuration was created.
	Template. Set to **Yes** if it is a template; set to **No** if it is a VM.
	Recommendation. Recommends changes to the configuration.
Where to go next	N/A

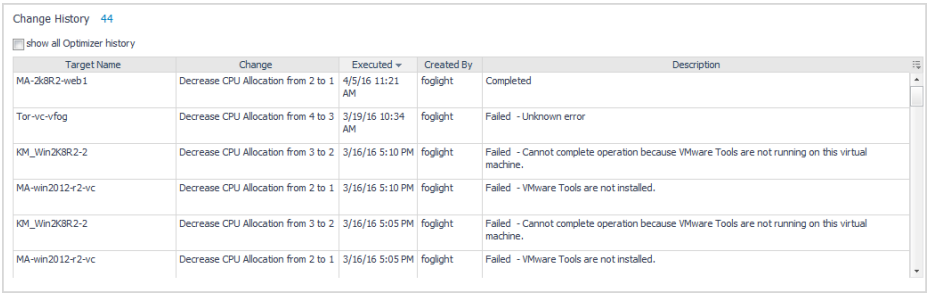
The **Search for a Virtual Machine** box is located on the top left corner of the table. It allows you to search the environment for a specific VM configuration, by entering its name in the search box. The configurations matching the search criteria are displayed in the VM Configuration optimization table.

Change History view

The **Change History** embedded view shows the changes that have been implemented in the environment (during the **History Period [x] Day(s)** defined in the Configuration tab), the object that was affected, and the result of the operation.

To view the change history of all Optimizer tabs, select the **"show all Optimizer history"** checkbox. When the checkbox is not selected, the view shows only the change history for the selected Optimizer tab.

Figure 5. Change History view



The number at the top of the view indicates the total number of changes executed for the selected VM component, during the **History Period [x] Day(s)** defined in the Configuration tab.

Table 9. Change History table

Description	This table includes the following information:
	Target Name. Virtual machine that was affected by the change.
	Change. Type of change. These changes may include: • Removing a virtual machine limit • Decreasing or increasing the CPU allocation • Decreasing or increasing the memory allocation • Removing unused checkpoints • Powering off potential zombies • Removing abandoned images
	Executed. Date and time when the change was executed.
	Created By. User who scheduled the change.
	Description. Operation result: *Completed, In progress,* or *Failed* (and an explanation why the job has failed).
Where to go next	N/A

Optimizer Actions bar

The Optimizer Actions bar allows you to set the following optimizer actions:

- Settings
- Scheduled Actions
- Automate

Settings

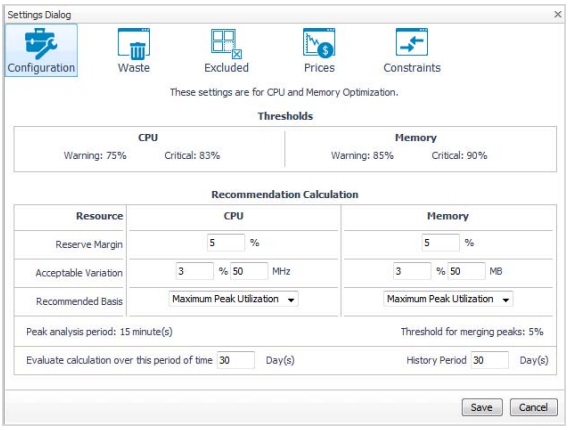
Use the **Settings** menu to define the default optimization settings for your environment. The **Settings Dialog** box provides information about the following components:

- Configuration tab
- Waste tab
- Excluded tab
- Constraints tab

- Constraints tab

Configuration tab

Figure 6. Configuration tab



The Configuration tab provides recommended settings for CPU and memory optimization.

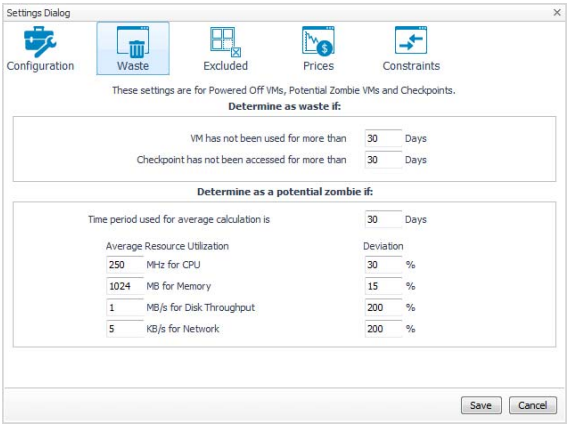
- **Thresholds**. Provides the values of a resource metric that define the Warning and Critical levels (for CPU and memory).
- **Recommendation Calculation** area. Allows you to define the following parameters for optimizing the CPU and memory resources in your environment:
  - **Reserve Margin [x]%**. This parameter is used for calculating the Evaluation Result, which is needed for making recommendations. The **Recommendation Reserve Margin** percentage is the percentage above the recommended basis, reserved for unexpected increases in utilization.
  - **Acceptable Variation [x] % [x] MHz, or [x] % [x] MB**. This parameter is used for calculating the Evaluation Result, which is needed for making recommendations. The **Acceptable Variation** percentage is the minimum percentage deviation of the Evaluation Result from the current setting which results in a recommendation. The **Acceptable Variation** value is the minimum difference between the Evaluation Result and the current setting which results in a recommendation.
  - **Recommended Basis**. Use this list to select the “Recommended Basis” to be used for calculating the Evaluation Result. The following options are available: **Average Utilization**, **Maximum Peak Utilization**, and **Combined Utilization** (half of average utilization plus half of maximum peak utilization).
  - **Peak analysis period: [x] minute(s)**. Peak analysis period used for peaks calculation. “Peak” is the maximum usage of metric during this period.
  - **Threshold for merging peaks: [x]%**. If several peaks happened during the peak analysis period, they are treated as a single peak.
  - **Evaluate calculation over this period of time [x] Day(s)**. Defines the time interval during which the right-sizing calculation is performed.
  - **History Period [x] Day(s)**. The Change History view displays the changes for the time interval defined here.

To save any changes made to the Configuration settings, click **Save** at the bottom of the tab.

IMPORTANT: Changing any configuration settings forces a recalculation that may require a long time to complete.

Waste tab

Figure 7. Waste tab



The Waste tab allows you to configure the settings for determining resources wasted in your environment. These include powered-off VMs, checkpoints, and potential zombie VMs:

- **Determine as waste if** area: A resource is considered wasted if one of the following settings is met:
  - **VM has not been used for more than [x] Days**. Defines when a powered-off VM is wasting resources in your environment by not being used.
  - **Checkpoint has not been accessed for more than [x] Days**. Defines when a checkpoint is wasting resources in your environment by not being accessed.
- **Determine as a potential zombie if** area: A VM is considered a zombie VM if the following five settings are met:
  - **Time period used for average calculation is [x] Days**. Defines when a resource is considered a zombie VM, by looking at the period used for average calculations.
  - **Average Resource Utilization—Deviation**. Defines when a resource is considered a zombie VM, by looking at the CPU, memory, disk throughput, and network utilization values.

    TIP: Deviation is the maximum deviation from the average resource utilization that is allowed for a VM considered to be a zombie.

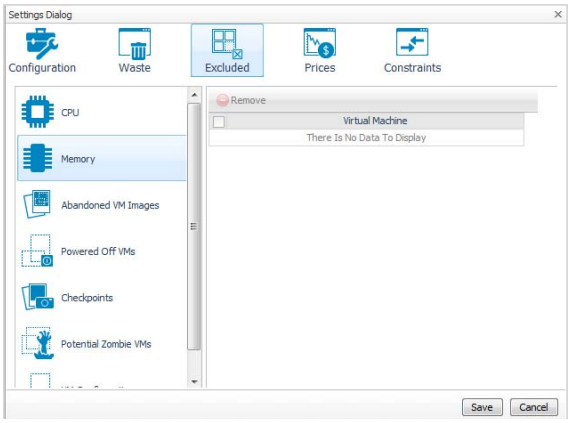
To save any changes made to the Waste settings, click **Save** at the bottom of the tab.

Excluded tab

The Excluded tab allows you to remove a VM from the list of excluded objects.

For information about how to add a VM to the list of excluded objects, see Excluding objects.

Figure 8. Excluded tab



The Excluded tab includes the following information:

- On the left side, a navigation tree, that allows you to select the VM component category.
- On the right side, the list of VMs excluded from the selected VM category.

To remove VMs from the list of Excluded objects, select the check boxes for these VMs and click **Remove**.

To save any changes made to the Excluded settings, click **Save** at the bottom of the tab.

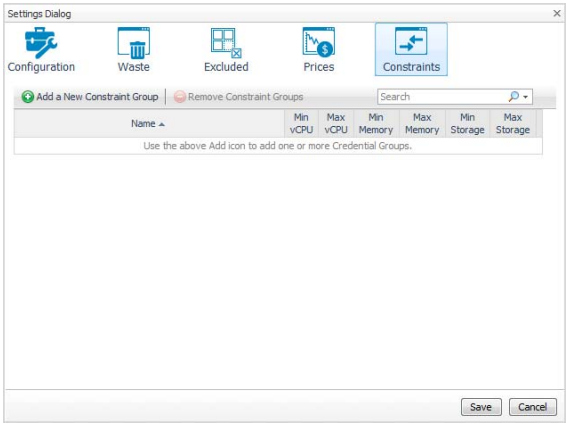
The Excluded tab can also be accesses by clicking **Show Excluded Items** on the Reclaiming Savings bar. For more information, see Viewing excluded objects.

Constraints tab

The Constraints tab allows you to set custom thresholds for select objects in the environment. These recommendations are displayed in the **Optimizer** tab > V**M Configuration/ CPU/ Memory/ Storage** views > **Modify Recommendation** column. Use this tab to add, edit, and remove constraints groups.

IMPORTANT: A virtual machine may have several partitions. Foglight Resource Optimizer makes recommendations for each partition separately, but the custom constraints can be set only for the entire VM (not for individual partitions). Therefore, the custom constraint for storage are applied to all partitions on the selected VM.

Figure 9. Constraints tab



To add a constraint group:

1 In the **Settings Dialo**g, click **Constraints** > **Add a New Constraint Group**.

The **Create a New Constraint Group** dialog box appears.

2 In the **Constraint Group Name** field, type in name of the new group.

3 In the **List of Related Object** area, define the objects that are related to this constraint group. Click **Add Services** or **Add Virtual Machines**, and select the objects from the available lists.

4 In the **Constraints** area, select the options or type the values you want to assign to this group.

5 Click **Save**.

The new group appears in the **Constraints** tab.

6 To save the new group, click **Save**.

The settings are saved and the **Settings Dialog** closes.

To edit a constraint group:

1 In the **Settings Dialog**, click the **Constraints** tab.

2 Click the **Edit** icon at the right end of the constraint group you want to modify.

The **Edit a Constraint Group** dialog box appears.

3 Modify the group name, the list of related objects, and the list of assigned constraints, as necessary.

4 Click **Save**.

The constraint information for the selected group is updated in the **Constraints** tab.

5 To save the changes, click **Save**.

The settings are saved and the **Settings Dialog** closes.

To delete a constraint group:

1 In the **Settings Dialog**, click the **Constraints** tab.

2 Select the check box for the constraint group you want to delete, and click **Remove Constraint Groups**.

A **Confirm deletion** dialog box appears.

3 To proceed with the operation, click **Confirm**.

The group is deleted from **Constraints** tab.

4 To save the changes, click **Save**.

The settings are saved and the **Settings Dialog** closes.

Scheduled Actions

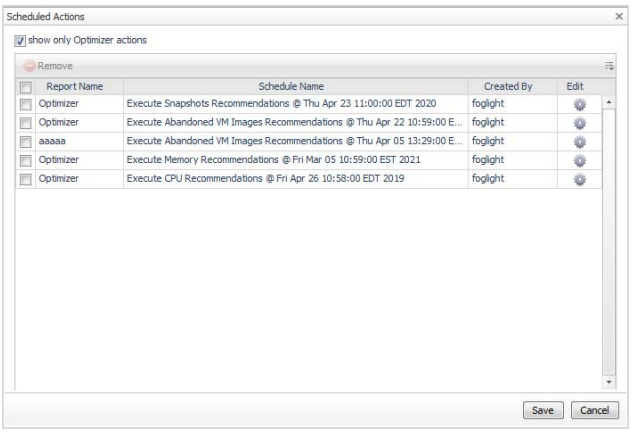
Recommendations for improvements in resource utilization can be implemented automatically, or scheduled for implementation at a particular time in the future (for example, within a maintenance window).

IMPORTANT: Foglight users must have the “Remediation role” to be able to run and automate recommendations. This role can be assigned to a user using the User Management dashboard. For more information about this dashboard, see the “Controlling user access to dashboards” topic in the Foglight Online Help.

Use the **Scheduled Actions** menu to access the list of operations scheduled to be run at a particular time in the future.

The **Scheduled Actions** dialog shows the list of operations scheduled to be run at a particular time in the future, and allows you to edit or remove any scheduled actions. To view only the actions specific to Foglight Resource Optimizer, select the **“show only Optimizer actions”** checkbox. When the checkbox is not selected, the dialog shows all actions scheduled for your virtual environment.

Figure 10. Scheduled Actions dialog box



To edit a scheduled action:

1. In the **Scheduled Actions** dialog, click the **Edit** icon at the right end of the action you want to modify.

   The **Edit Scheduled Action** dialog box appears.

2. Modify the report name, add or remove email addresses, and updated the date and time when the action will be executed, as necessary.

3. Click **Apply**.

   The scheduled action is updated in the list.

4. To save the changes, click **Save**.

   The settings are saved and the **Scheduled Actions** dialog box closes.

To delete a scheduled action:

1. In the **Scheduled Actions** dialog, select the check box for the action you want to delete, and click **Remove**.

2. To save the changes, click **Save**.

   The settings are saved and the **Scheduled Actions** dialog box closes.

Automate

Recommendations for improvements in resource utilization can be implemented automatically, or scheduled for implementation at a particular time in the future (for example, within a maintenance window).

IMPORTANT: Foglight users must have the “Remediation role” to be able to run and automate recommendations. This role can be assigned to a user using the User Management dashboard. For more information about this dashboard, see the “Controlling user access to dashboards” topic in the Foglight Online Help.

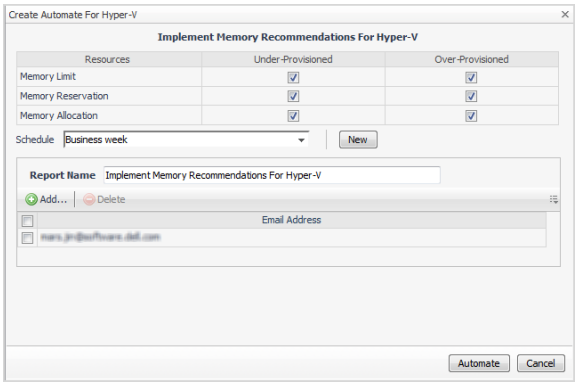
Use the **Automate** menu to set the criteria for automatically sending recommendations for improvements. The **Create Automate For <Environment Name>** dialog box allows you to configure the following settings:

- **Implement the <Resource> recommendations for <Environment Name>**. Select the check boxes (where available) for the recommendations that should be implemented automatically.

  NOTE: Over-provisioning VMs with CPU, memory, or storage resources can be a large source of wasted hardware (and budget). Sometimes over-provisioning can also be a source of performance degradation, if too many virtual CPUs have been allocated and VMs need to compete to each other for host CPU cores.

- Choose the recommendation schedule that should be run automatically. Click **New** to add a new schedule to the list of schedules.
- Type in the name of the report in the **Report Name** field.
- Send an email to a list of recipients when the scheduled action is run. Add, edit, or remove email addresses from the list, as necessary.

Figure 11. Create Automate For <Environment Name> dialog box

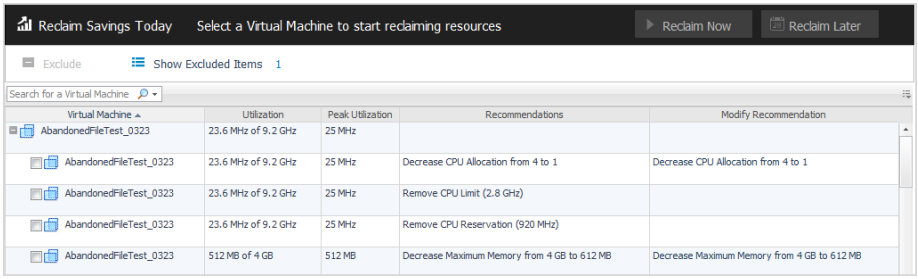


All the executable recommendations for improvements in resource utilization from the selected tab can be implemented automatically. When you click **Automate**, these recommendations are scheduled for implementation at a particular time in the future, and the scheduled recommendations appear in the **Scheduled Actions** dialog.

Reclaiming Savings bar

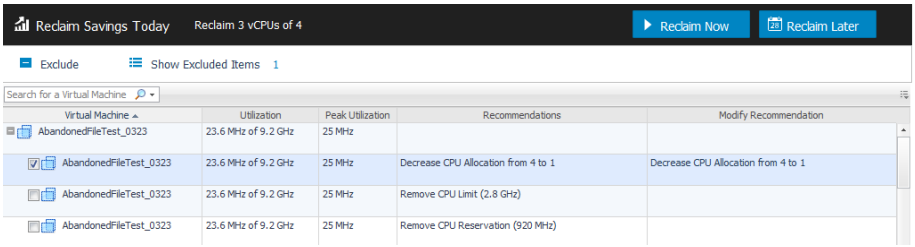
The Optimizer analyzes actual utilization and performance metrics to properly size virtual machine allocations and reclaim unused resources. System administrator can select a VM from the list and review the **Reclaiming Savings** bar for information about how many resources can be reclaimed.

Figure 12. Reclaiming Savings bar with no VM selected



The **Reclaim Now** and **Reclaim Later** buttons and the **Exclude** link are enabled only after selecting a virtual machine from the table.

Figure 13. Reclaiming Savings bar with VM selected



Reclaiming resources

To reclaim right away the resources wasted for a selected VM:

1 Click **Reclaim Now**.

A confirmation dialog box opens.

IMPORTANT: The implementation of some recommendations may require a VM reboot.

2 Click **Confirm** to confirm the operation.

The resources are reclaimed right away.

To schedule the reclaiming of resources wasted for a selected VM:

1 Click **Reclaim Later**.

The **Reclaim Later - Schedule** dialog box opens.

2 Review the list of recommendations and the date and time when they are scheduled to be implemented.

IMPORTANT: The implementation of some recommendations may require a VM reboot.

3 Type in the name for the report.

4 Create the list of recipients who should receive email notifications when the scheduled action is run.

5 Click **Confirm**.

The dialog box closes, and the new scheduled action is added to the **Scheduled Actions** list.

Excluding objects

To exclude objects from the analysis done for optimizing the environment:

- Select the VM from the Virtual Machines table and click **Exclude**.

  The selected VM is added to the list of Excluded objects for a specific category. For more information about this list, see Viewing excluded objects.

Viewing excluded objects

To see the list of VMs excluded from the optimization process:

- Click **Show Excluded Items**.

The Settings Dialog box opens, with the Excluded tab on the foreground. You can modify the list and save the new settings. For more information, see Excluded tab.

Foglight Resource Optimizer reports

Several report templates are available with Foglight Resource Optimizer, and together they provide a detailed analysis of the changes made in your environment over time.

Each report template uses report parameters to define the content of the report. Use a template's default report parameters to quickly generate or schedule a report or optionally change the report parameters to customize the report to better meet your requirements.

The following tables contains an alphabetical list of the Foglight Resource Optimizer reports. They also provide a brief description of the report and the report parameters used to define the content. Report parameters marked with an asterisk (*) are required and you must specify this parameter before the report can be generated.

NOTE: If you are using the T**emplates by Module** tab on the **Run Report** wizard, click the expansion box to the left of the:

- Optimizer entry to view the Foglight Resource Optimizer reports
- Common Analytics entry to view reports shared between several virtual cartridges, including Foglight Resource Optimizer

Table 10. Foglight Resource Optimizer report templates

Report Name	Report Description	Input Parameters: Default Value
Optimizer - Checkpoints Report	The Checkpoints view provides a glimpse at the virtual machine checkpoint files that have not been modified for an extended period of time, and the appropriate recommendations.	• Time Range: Last 4 hours • * Selected Service
Optimizer - Abandoned VM Images	Contains unused image file names, datastores they belong to, size, last modified date, and recommendations for future actions.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization
Optimizer - All Reports	Creates reports for CPU, memory, storage, abandoned VM images, powered off VMs, unused template images, snapshots, and potential zombie VMs.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization
Optimizer - CPU Report	Contains information regarding virtual machine, CPU utilization, peak utilization, and appropriate recommendations.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization
Optimizer - Initiated Changes History Report	Optimizer-initiated change information regarding target name, description of change, execution date, "created by", and status.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization
Optimizer - Memory Report	Contains information regarding virtual machine, memory utilization, its peak utilization, and memory recommendations.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization

Table 10. Foglight Resource Optimizer report templates

Report Name	Report Description	Input Parameters: Default Value
Optimizer - Potential Zombie VMs Report	Potential Zombie VMs are virtual machines that are powered on but appear to be unused. These VMs are identified by analyzing CPU, memory, network, and disk throughput for very consistent usage over an extended period of time. This report contains name of the VM, CPU, memory, disk throughput, network usage, and recommendations.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization
Optimizer - Powered Off VMs Report	Contains information regarding virtual machines that have been powered off for an extended period of time, and the time periods for which they have been powered off.	• Time Range: Last 4 hours • * Selected Service • * Type of Virtualization

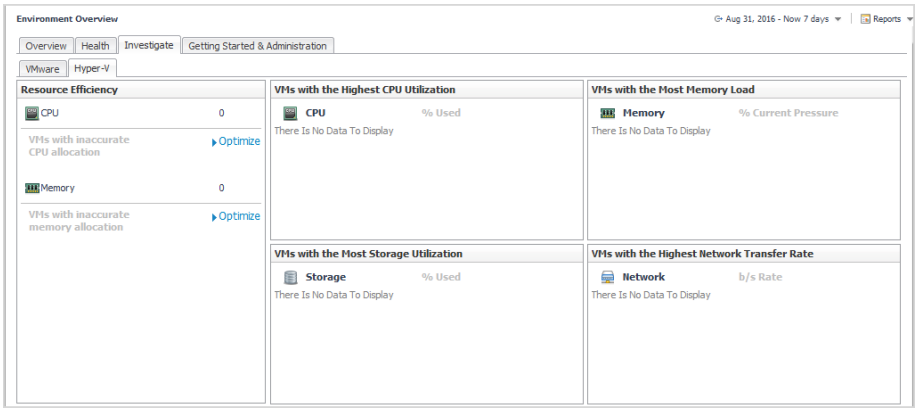
Table 11. Common Analytics report templates

Report Name	Report Description	Input Parameters: Default Value
Cartridge-initiated Changes History Report	Includes FVE Cartridge-initiated change information regarding “target name”, “description of change”, “execution date”, “created by” and “status”. **NOTE:** This report was named “Changes History Report” in previous versions of this cartridge.	• * Time Range: Last 4 hours • * SelectedService • * Type of Virtualization • Cartridge Type: ChangeAnalyzer

Investigate resource efficiency

In Foglight for Virtualization, Enterprise Edition systems, the **Environment Overview dashboard > Investigate tab** provides a quick way to investigate the resource efficiency in your environment and to optimize VMs with incorrect resource allocations, as necessary.

Figure 14. Environment Overview > Investigate tab



For Hyper-V® systems, click the Hyper-V tab. The Resource Efficiency pane provides the following information:

- **CPU**: Number of VMs with inaccurate CPU allocation. Click the **Optimize** link to navigate to the Environment Overview > Optimizer Main View dashboard > CPU tab, which provides recommendations for optimizing the CPU for these VMs. For more information, see CPU.

- **Memory**: Number of VMs with inn ac urate memory allocation. Click the **Optimize** link to navigate to the Environment Overview > Optimizer Main View dashboard > Memory tab, which provides recommendations for optimizing the memory for these VMs. For more information, see Memory.

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