

# **PerfCap PAWZServer Version V10.0**

## **Release Notes and New Features Guide**

February 2012

**Revision/Update:**

Version 10.0 is new feature release.

**PerfCap Corporation  
Nashua, New Hampshire**

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# ***PerfCap PAWZServer Version V10.0***

## **Release Overview**

These release notes address version V10.0 of the PAWZServer. Current fixes and known problems are outlined at the end of this document.

This software contains the PAWZServer components and services. This software requires a license from PerfCap to enable functionality.

The PAWZServer installation installs Windows system services for PAWZServer, PAWZ Graph All Server, PAWZ Real Time Server and PAWZ Purge.

## **Summary of features and changes**

V10.0 introduces the following features.

- ESX Host
- Cloud Computing
- ESX (Cloud) Planner
- Exports for Saturation Analysis graphs and Analytical Model Graphs

## **Release Contents**

This release of the PerfCap PAWZServer product set consists of 2 single licensed components:

- PAWZServer
- PAWZ Planner

Version 10.0 is comprised of the following items:

- PerfCap PAWZServer 10.0 software
  - PAWZ Server
  - PAWZ Graph All
  - PAWZ Real Time
  - PAWZ Planner
  - PAWZ Purge
- PerfCap PAWZ Server 10.0 Release Notes and New Features Guide

## **Pre-Installation**

If upgrading to a newer version of the PAWZServer you must first uninstall the PAWZServer software. (NOTE: this will not remove the database). Attempting to install a newer version of the existing PAWZServer software without first uninstalling the older version will cause the installation to prompt you to uninstall the PAWZServer.

### **Required Software for Installaton**

- Java Runtime Environment 1.6 or higher
- Windows Server 2003, or 2008
- NET framework 2.0 on Windows Server2003
- SQL Server 2005 or above
- IIS Manager (this is not installed by default on Windows 2003 or Windows 2008 servers)
- PAWZServer license

### **Required Information for Installation:**

- Installation should be performed directly on the PAWZServer system (or via terminal services to the PAWZServer system).
- Installation should be performed from the Administrator's account
- SQL Server name/instance name (if instance has been installed)
- SQL Server privileged account name and password

For further installation instructions refer to the PAWZServer Installation guide.

Once installation is complete PAWZ Server no longer requires the SQL Server account and password. The PAWZServer creates its' own account (PAWZDSN) for database connections. The PAWZDSN account password should never be changed.

## **Troubleshooting: Service startup**

When the PerfCap PAWZServer service will not run check

- If you were prompted to reboot after the installation, then reboot and the service will start up automatically
- If SQL Server is on a remote system, then make sure the tcp connections are open to the PAWZServer system.
- Check for the c:\pawzserver\_startup.log which is created during the service startup process

- Check the c:\PAWZServer\_install\_log.txt. This file is created during installation

## **Post-Installation**

## **De-installation**

The software can be removed interactively with “Add/Remove Programs” in the system control panel or with “Uninstall PAWZServer in the system start bar.

Performing a “partial” uninstall will leave all pertinent files. Performing a “complete” uninstall will remove all files from the PAWZServer system.

NOTE: Complete and partial uninstalls do not remove or alter the database.

## New Features Overview

### ESX Host

This new feature provides the ability to monitor system performance for VMware ESX systems from a hosted Windows system. Each host can have 2 eCap monitors, one to monitor its' own Windows operating system, and a second eCap monitor responsible for monitoring VMware ESX systems. When a host is first designated as the host for a VMware ESX system, it starts up the ESX eCap Monitor and begins monitoring the VMware ESX system. The host maintains the raw data files and all communication for the ESX system is done via the host. The host acts as the agent for the VMware ESX system and is responsible for all the day to day operations of a standard PAWZ agent, e.g. supplying the up/down status for the ESX host, reducing and sending performance data when requested to the PAWZServer, etc..

eCap Monitor for VMware ESX / ESXi 4.n (vSphere) remotely collects ESX 4.n performance data by connecting with the VMware Hypervisor. The eCAP Monitor for VMware ESX is multi-threaded and can collect performance data from multiple VMware ESX hosts.

Having eCap Monitor for VMware ESX collect performance data from individual VMware hosts is done through the PAWZServer. When a VMware host is added to PAWZServer, it will send a request to the PAWZ Agent to register and start an eCAP monitor collector thread.

### Cloud Computing

Cloud Computing enables capacity and performance management of virtual infrastructure (VI) resources across the management spectrum. It provides:

- A view of the infrastructure from different levels:
  - Enterprise View – gives *top level management* an enterprise-wide overview of utilization of corporate virtual infrastructure.
  - Data Center View – gives *regional management* an overview of individual data center VI resource utilization necessary for efficient operation and planning
  - Cluster View – gives *application and system managers* an overview of cluster resource utilization necessary for allocation and planning of local resources.
  - Host View – gives *system managers* information necessary for assignment of guests to specific hosts.
  - Guest View – gives *application and system managers* information necessary for appropriate provisioning of guests and applications.
  - Multi-level VI Resource utilization view
- In depth provisioning analysis from the enterprise down to the guest level. It also provides observations and advice on how to correct problem areas.

## **VMware ESX Cloud Planner**

The VMware ESX Cloud Planner provides capacity planners with a tool to perform what if and saturation analysis for VMware ESX systems. Using this tool users perform what if analysis via various scenarios, like adding and/or removing guests, moving guests to other ESX hosts, adding additional hosts etc.. This tool enables capacity planners to make intelligent decisions on how best to utilize the virtual infrastructure.

## Using the New Features

### VMware ESX Host

To use this feature navigate to the Manage→Node→Policies page within the PAWZ Web interface.

The screenshot shows the PAWZ Node Policies page for a node named 'esxnode'. The 'OS' is set to 'VMware ESX'. A red circle highlights the 'Host Info' button next to the OS dropdown. The page is divided into several sections: Node, Data Collection, Templates, Real Time Data Collection, Data Management, and Advanced Data Management. The 'Node' section includes fields for Name, IP Address, DNS Suffix, OS, Cluster Member, and Summary Group Member. The 'Data Collection' section includes fields for Dump Interval, Peak Interval, Retain data for, Restart Attempts, Version, Status, and Status Check Frequency. The 'Templates' section includes fields for Node, Workload, Plan, Risk, RTEvent, and Holiday. The 'Data Management' section includes checkboxes for Enable auto download, Generate trend data, Download analysis data only, and fields for Standard Download time, Retain data in PAWZ database for, and Recover missing data for. The 'Advanced Data Management' section includes fields for Peak hours, Top VM, Top Disk Count, Spec Rating/Weight, and EMail Notification.

Click the “Host Info” button for your VMware ESX node to add esx host information.

The screenshot shows the ESX DC Host Info form. The form has the following fields: Node Name (esxnode), DC Host IP (Windows), ESX DNS String/IP (e.g. nodename.perfcap.com or 123.1.1.1), ESX Host Name (fully qualified or unqualified), User Name, Password, and Confirm Password. There are three buttons at the bottom: Back, Save, and Delete DC Host Info.

The ESX DC Host info form is displayed. Fill in each field as follows, then click save:



- **DC Host IP**
  - The IP address for the Windows host where the PAWZ Agent and eCap Monitor 10.0 (VMware ESX) is installed
- **ESX DNS String/IP**
  - Either the qualified ESX host name or the IP address for the ESX node.
- **ESX Host Name**
  - The VMware ESX hostname must be *exactly* what the ESX/ESXi system has defined. This may be fully qualified or not.
- **User Name**
  - A non-privileged user account used by the ESX eCap Monitor for VMware ESX
- **Password**
  - The password associated with the User Name
- **Confirm Password**
  - The same password as above

For more information regarding how to retrieve this information, refer to the eCap Monitor Release Notes documentation.

Once you're finished entering the information, click the "Save" button. The ESX node's data collection status will change to "ESX Host Add/Modify in Progress...". Once a connection is established by the host to the ESX node, the status will change to Up/Down, etc..

When deleting an ESX Host, the node's data collection status will change to "ESX Host Delete in Progress..." until the connection is broken.

## Using the New Features (continued)

### Cloud Computing

A Cloud environment consists of the following components:

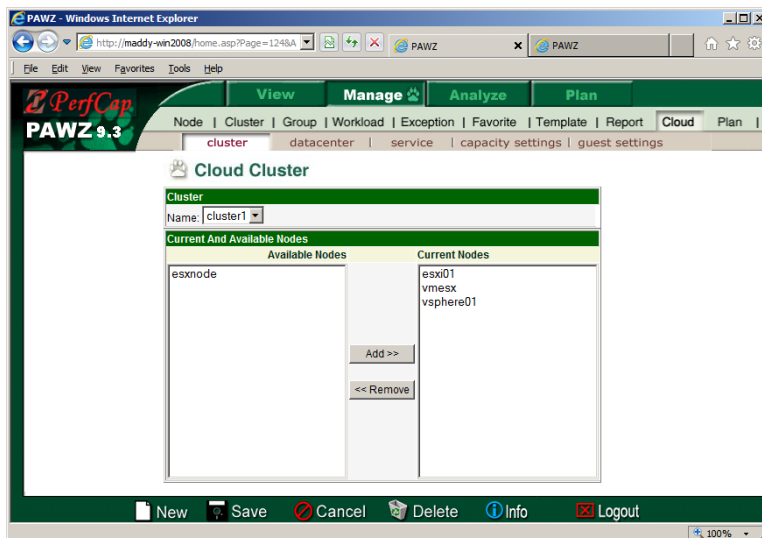
- Cluster
  - a. One or more VMware ESX hosts
- DataCenter
  - a. One or more clusters
- Services
  - a. One or more guests
- Settings
  - a. User defined thresholds which indicate alert, warning and normal usage levels per metric.

To use this feature you must:

1. Define a Cloud Environment
2. Download Data
3. Analyze the data

### Defining the Cloud Environment

To begin cloud computing, you must first create a VMware ESX cloud cluster and datacenter. Navigate to the manage→cloud→cluster page to define a cluster. You can also define a cluster from the manage→cluster page, either way is fine.

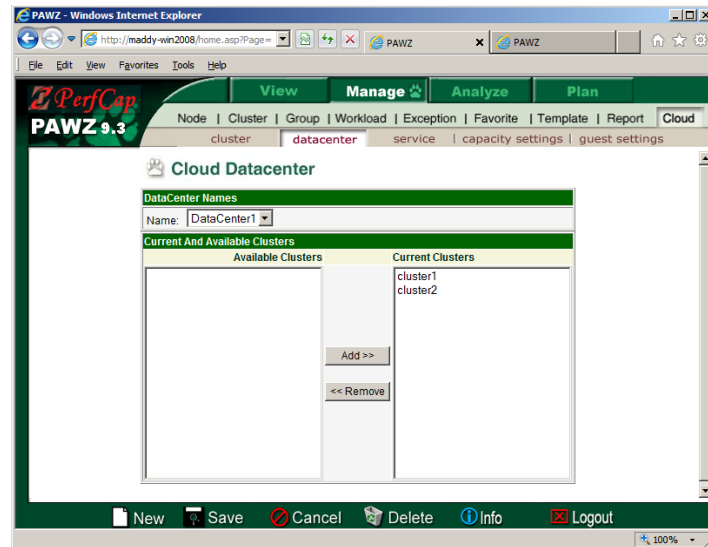


Click the “New” button to create a cluster. Move one or more VMware ESX nodes that will participate in this cluster by selecting them from the list of available nodes, then clicking the “Add” button.

NOTE: You can select multiple VMware ESX nodes by selecting one then holding down either the Shift key or the Ctrl key, select the remainder of the nodes, then click the “Add” button.

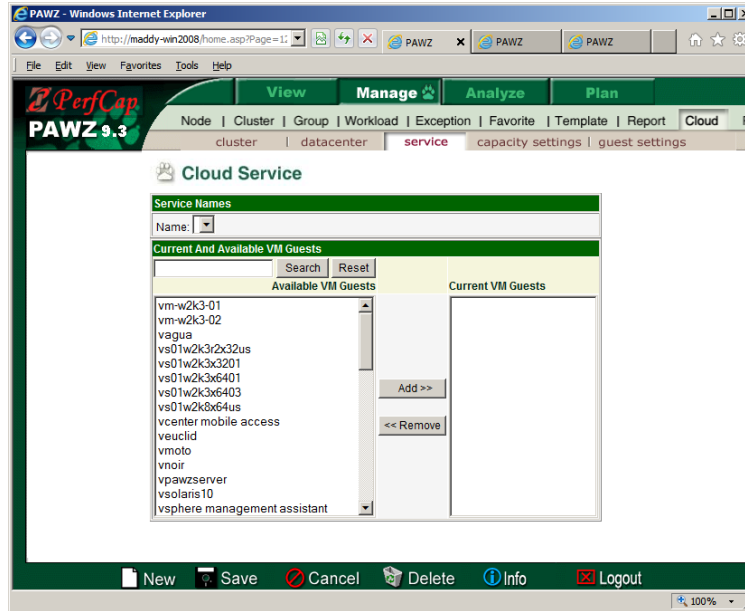
When all participating nodes are in the Current list, click the “Save” button. Nodes can be added or removed at any time.

Next, navigate to the manage→cloud→datacenter tab. Click the “New” button then select one or more available clusters to participate in the data center. Click the “Save” button when finished.

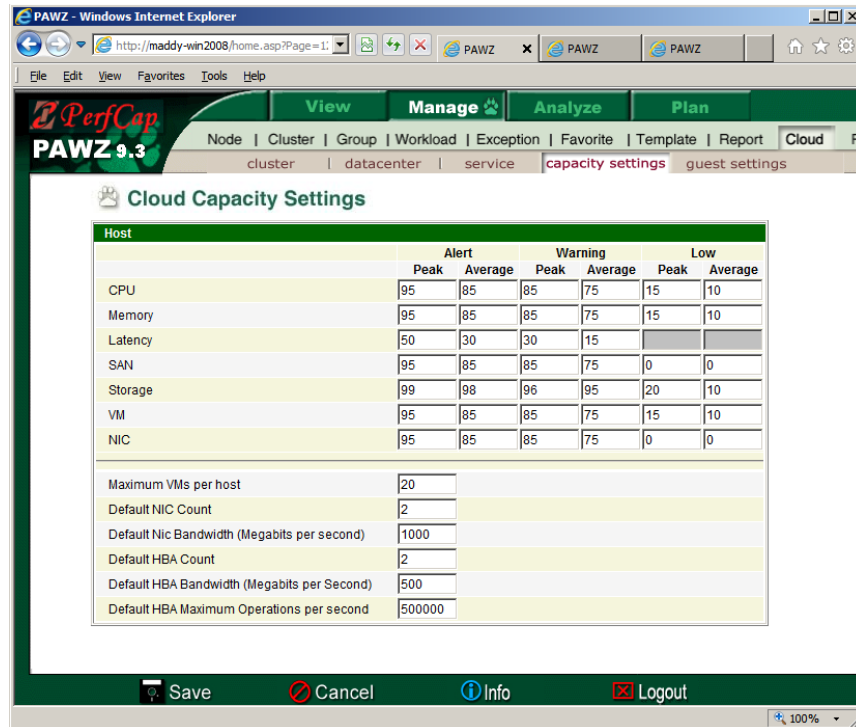


To define services, navigate to the Manage→Cloud→service tab. Click the “New” button on the footer, then enter a name for the services. Select the services from the list of available ones and click “add” to move them to the Current list. Click the “Save” button when finished.

NOTE: Available services will be available after the initial download.



Navigate to the Manage→Cloud→capacity settings page to set the cloud thresholds, or you can use the defaults.

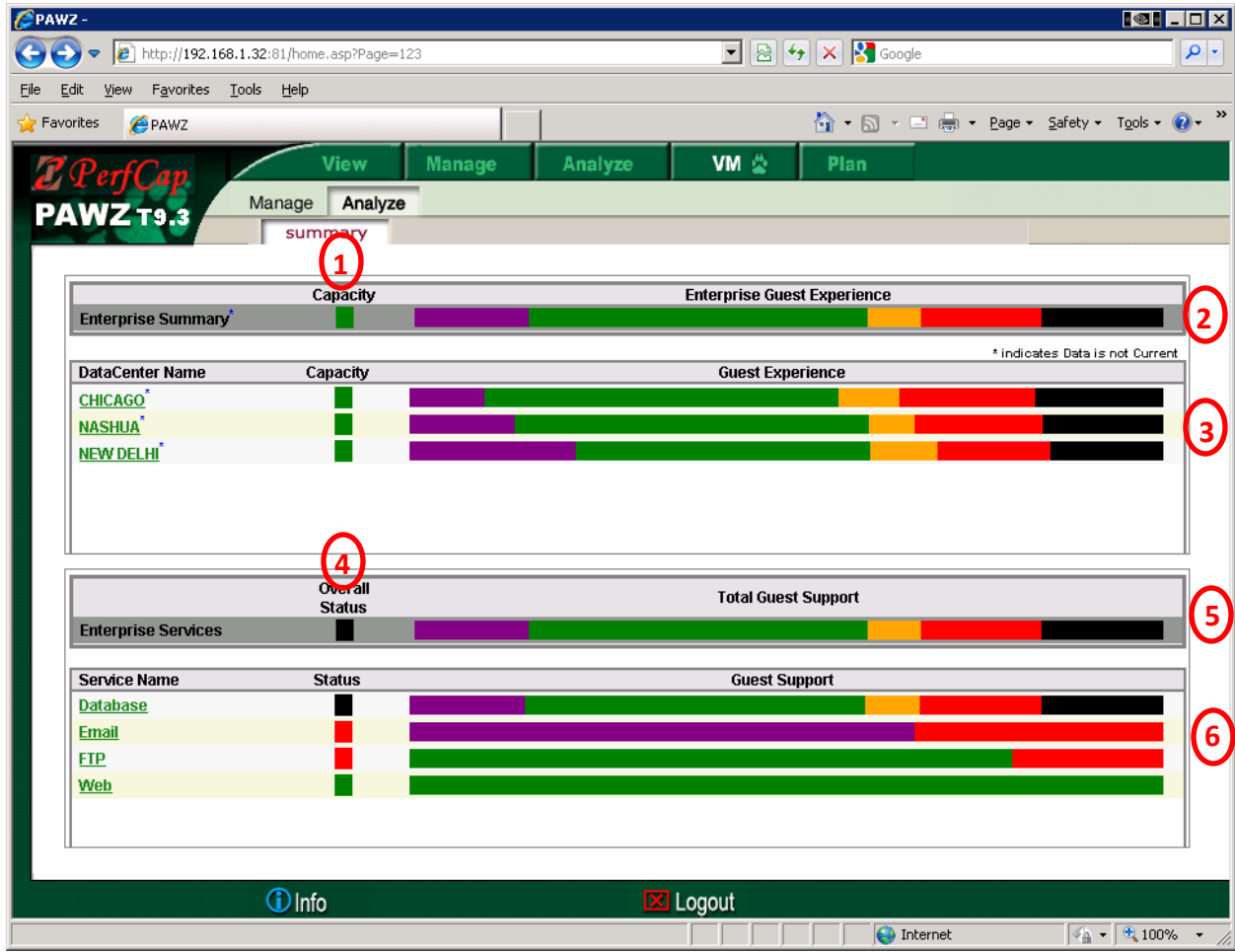


## Download Data

Once the Cloud environment is defined, cloud data is processed automatically during either a normally scheduled download or by requesting data on demand for a full day. Once data is downloaded it can be viewed and analyzed.

## Analyze Cloud data

Navigate to the Analyze→Cloud→summary to view the Enterprise level data



### Enterprise Data Center summary

Each summary displays a colored square indicating the current capacity status for datacenters, clusters, or hosts in relation to the predefined alert, warning and low settings.

- Green squares indicate that capacity is within the normal range
- Amber squares indicate capacity is at or above the warning peak or average
- Red squares indicate capacity at or above the alert peak or average
- Black square indicate that no data came in for the datacenter, cluster or host

A colored bar is also displayed which corresponds to the guests. Putting the mouse cursor on the color displays the number of guests within the color range.

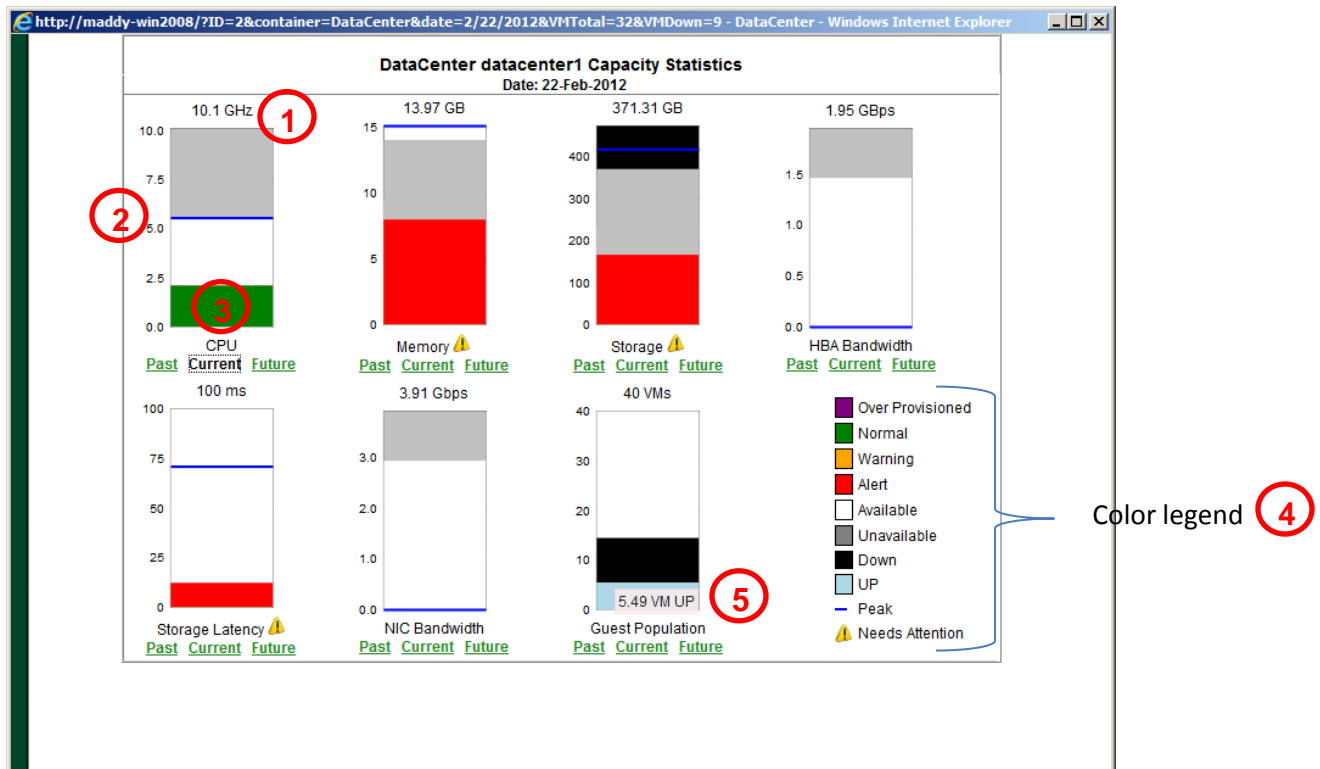
- Green bars indicate the number of guests within the normal range
- Amber bars indicate the number of guests at or above warning level
- Red bars indicate the number of guests at or above alert level
- Black bars indicate the number of guest that are powered down for a full day
- Purple bars indicate the number of guest which are overprovisioned

Capacity summaries indicate the following statistics:

1. Resource capacity summary status
2. Overall resource capacity and guest provisioning summary
3. Guest provisioning summary spectrum
4. Service provisioning summary status
5. Service provisioning status spectrum
6. Service provisioning summary

Click on the green capacity icon for each datacenter to view it's summary statistics.

### DataCenter Capacity



Aggregate resource utilization statistics are displayed for the following:

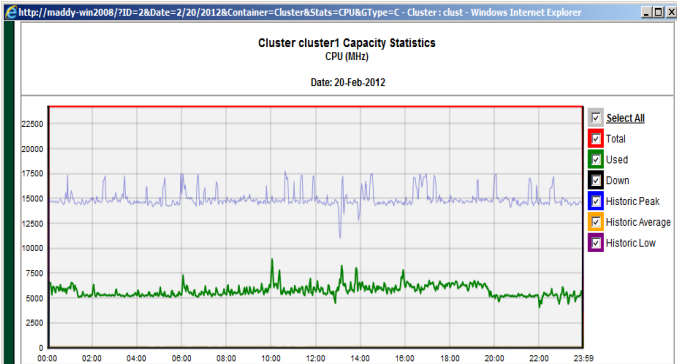
- CPU
- Memory
- Storage
- HBA Bandwidth
- Storage Latency
- NIC Bandwidth
- Guest Population

Each resource displays the:

1. Total resource consumption known as of the previous day
2. Peak for the day is represented by the blue line
3. The day usage is displayed as green, amber, red, or purple

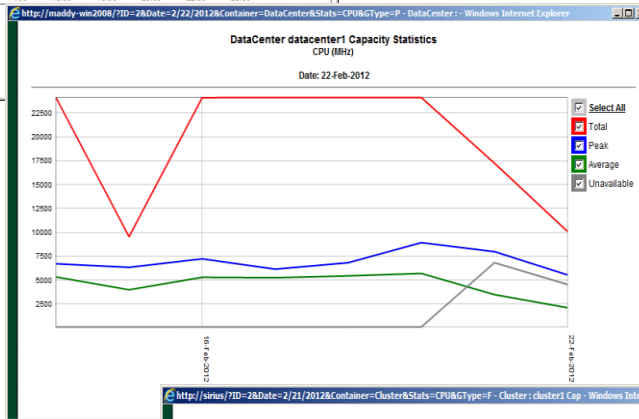
4. Colors are based on predefined thresholds
5. Guest population stats are counts indicating the number of virtual machines

Click the Past, Current and Future links to display the graphs



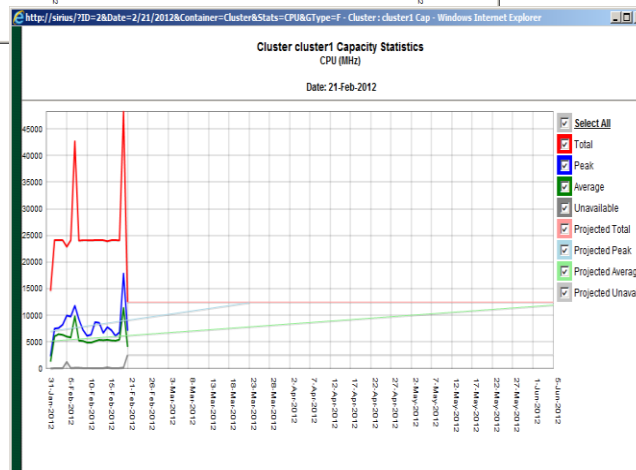
The current graph displays minute by minute cluster CPU MHz stats for the most recent data downloaded. Stats include:

- Total MHz available
- MHz used
- Down indicates MHz usage for down systems
- Historic peak, average and low



The past graph displays daily historic CPU MHz stats for:

- Total MHz Available
- Peak MHz usage
- Average usage
- Unavailable indicates total CPU MHz unused due to down systems

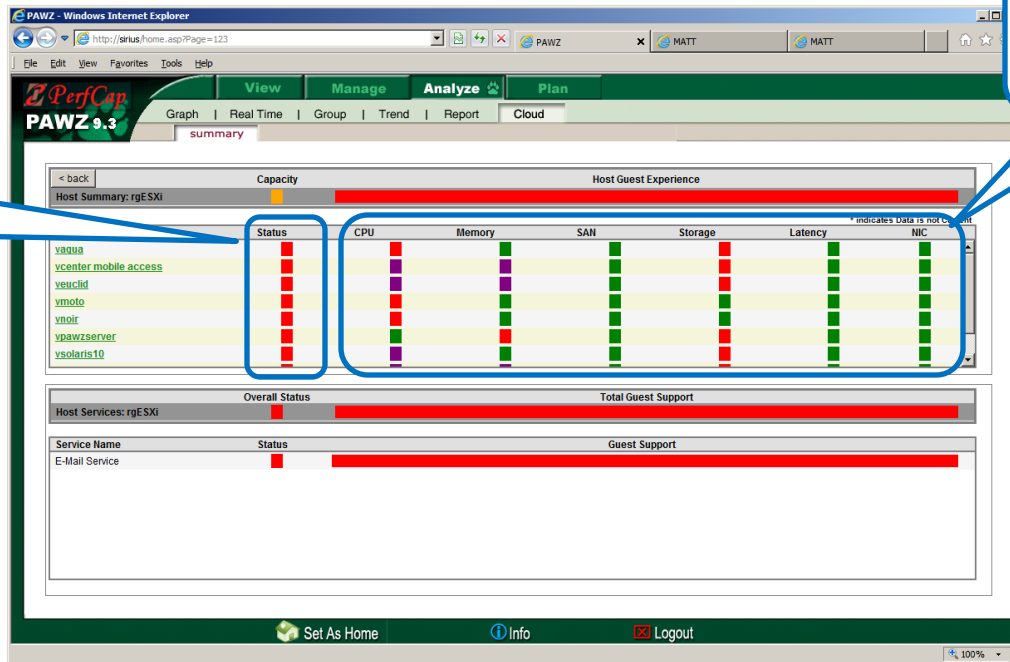


The future graph displays projected values for:

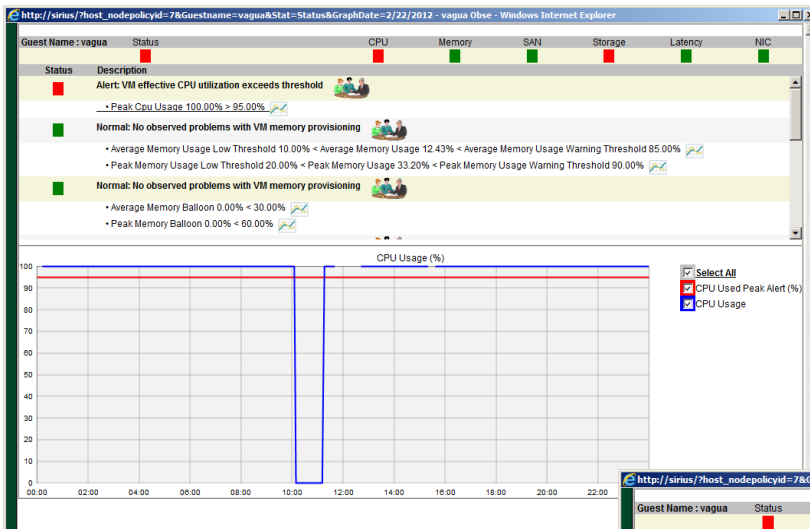
- Total MHz to date
- Peak MHz to date
- Average to date
- Unavailable to date
- Projected total, peak, average & unavailable



The figure below displays provision summaries for all guest on a host.

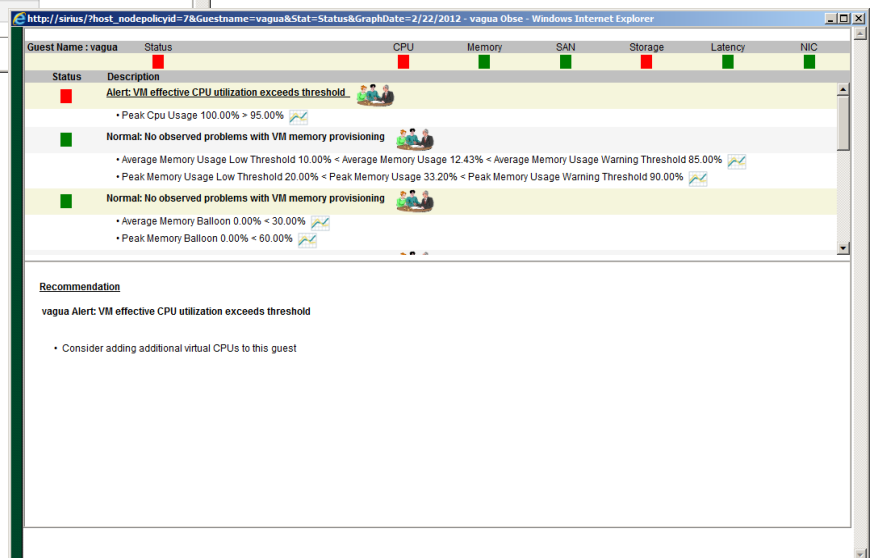


Click on the Status color to display guest provisioning summary statuses



Click on the people icon to display the recommendation.

In this case the recommendation is to alleviate the provisioning issue.

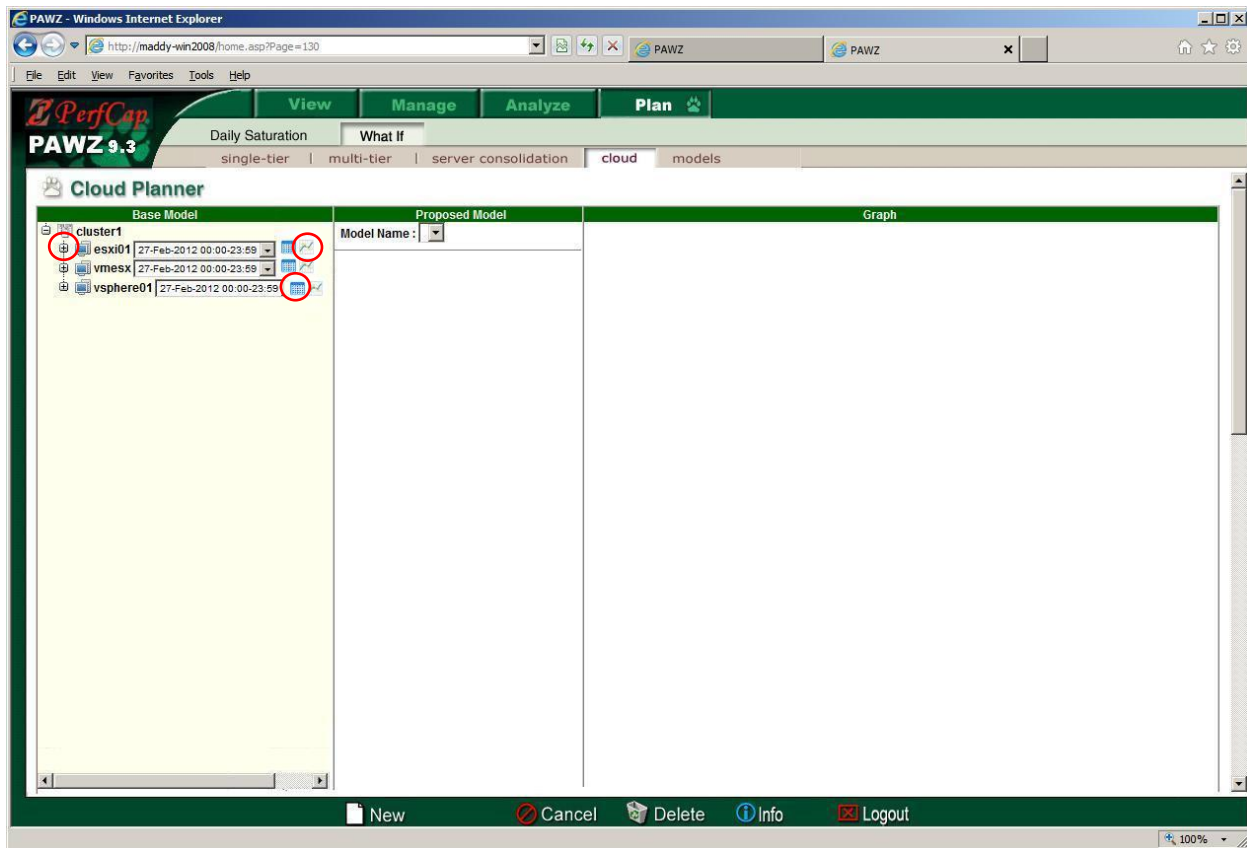


## Using the New Features

### VMware ESX Cloud Planner

This feature is used to perform what if analysis for VMware ESX. This analysis is used to determine response time and headroom. Using this tool provides a proactive approach to proposed current and future changes to ESX guests and hosts. For example, if a company plans to add a new application which requires adding additional guests to existing hosts then using this tool will allow users to determine what, if any impact this will have. It enables users to immediately see the impact any changes to the ESX configuration. Examples of changes include adding additional guests, moving guests from one host to another, removing guests, upgrading the host configuration, etc..

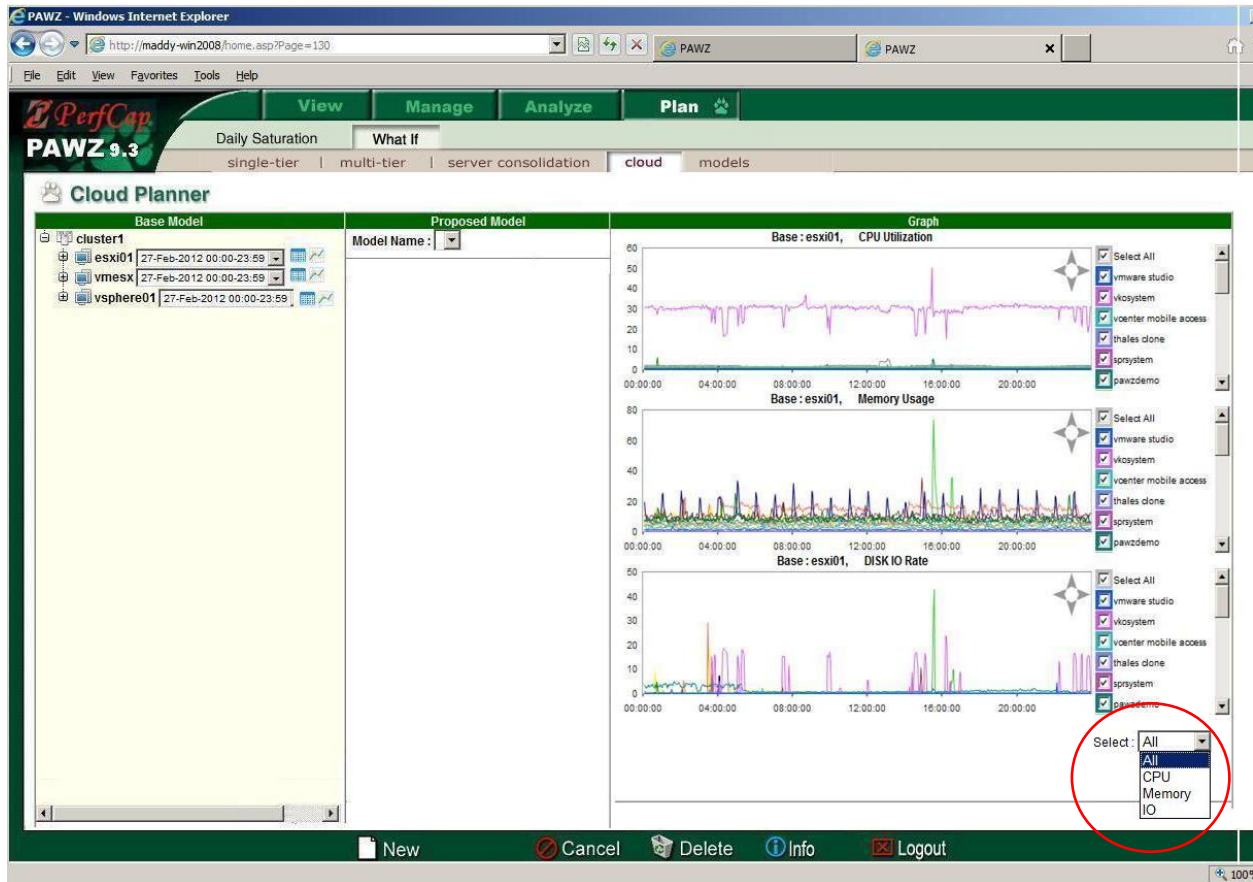
To use this feature navigate to the Plan→What If→cloud page within the PAWZ Web interface.



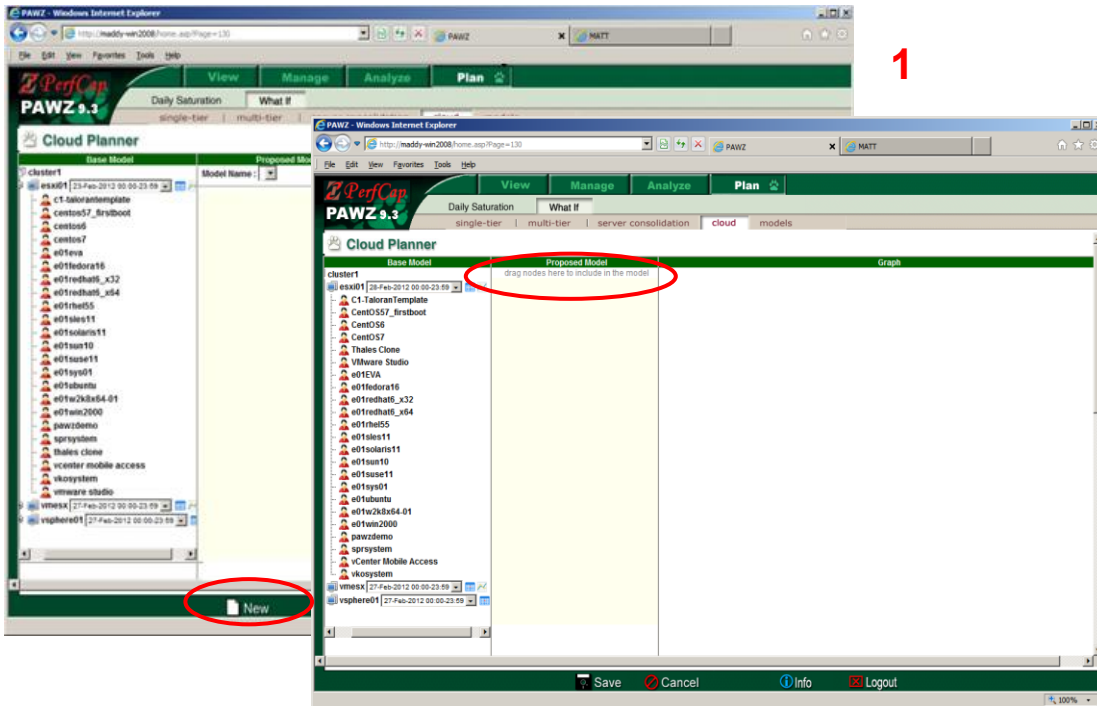
The What If cloud page contains three (3) panes:

- The left pane is the base model pane and displays the current cluster configurations.
  - Click the plus (+) sign to display the hosts and its guests
  - Click the calendar icon to select a date. NOTE: Dates corresponding to successful downloaded data for the node are displayed in the calendar. The raw data files must be present on the ESX host system to run the Cloud planner.

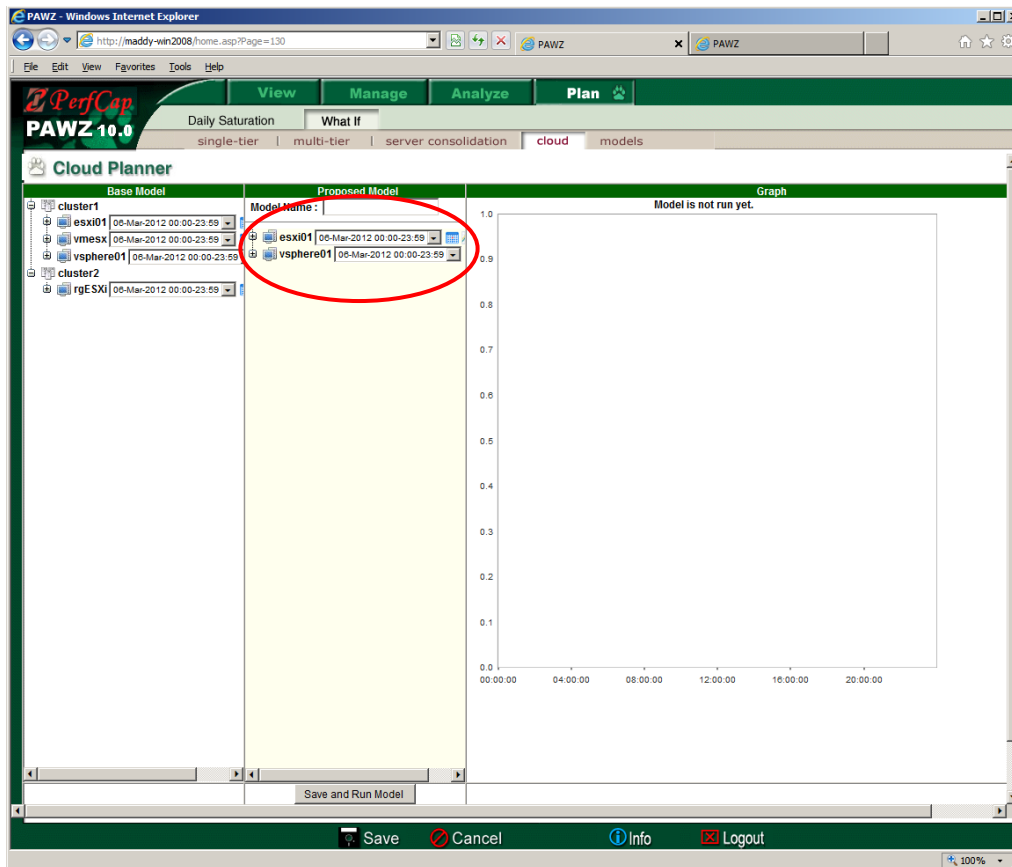
- Click the graph icon to display performance data for the date specified in the dropdown.



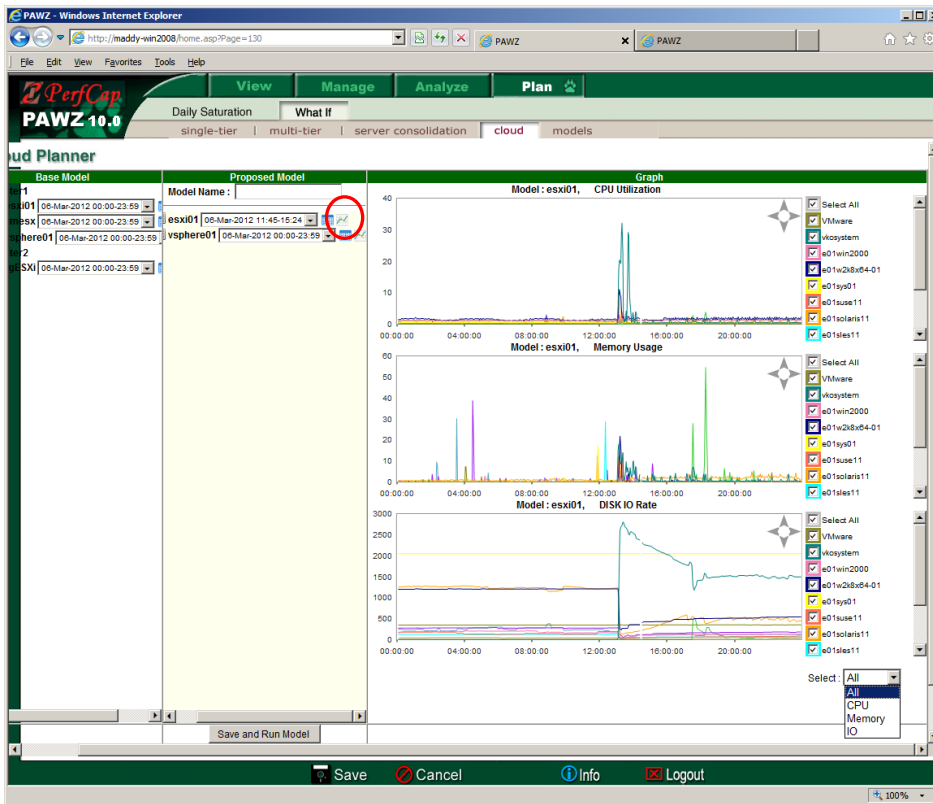
- The middle pane is the proposed area. This is where “what if” scenarios are defined.
  - The Model Name dropdown displays all saved models that have currently been run.
  - The “Save and Run Model” button and the “Save As” buttons are used to save the proposed configuration and to run the model
- The rightmost panel is used to display performance data or model data
  - Performance data can be displayed for:
    - CPU Utilization
    - Memory Utilization
    - Disk IO Rate
  - Model data can be displayed for:
    - Response Time
    - Device Utilization
    - Headroom



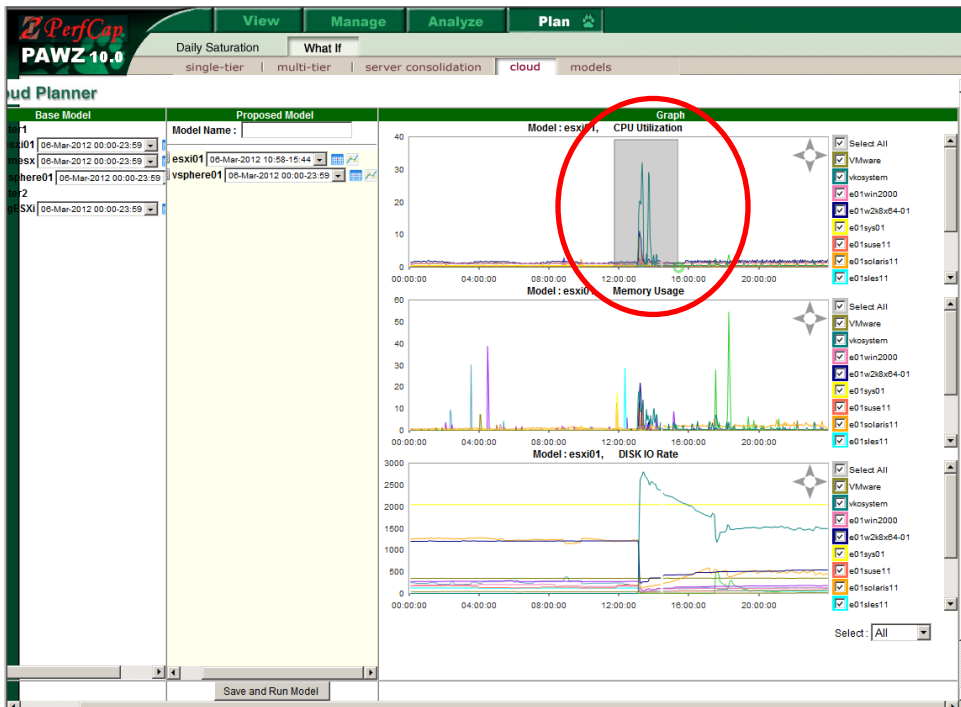
Click the “New” button on the footer bar to begin creating models. The text “drag nodes here to include in the model” appears in the proposed section



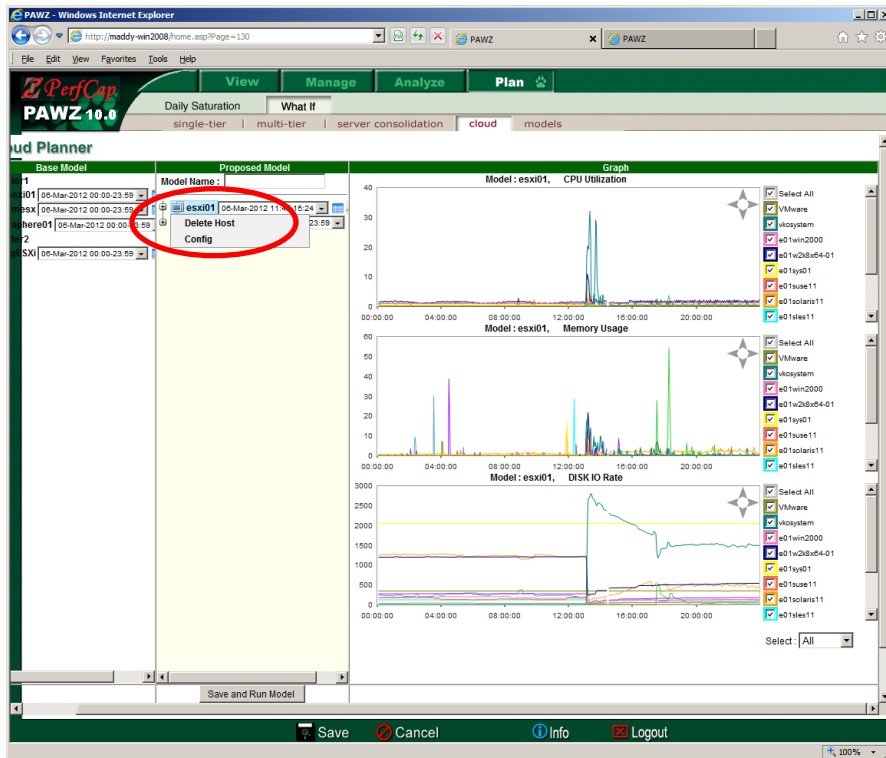
Drag the host(s), or cluster that will be included in the model to the proposed area.



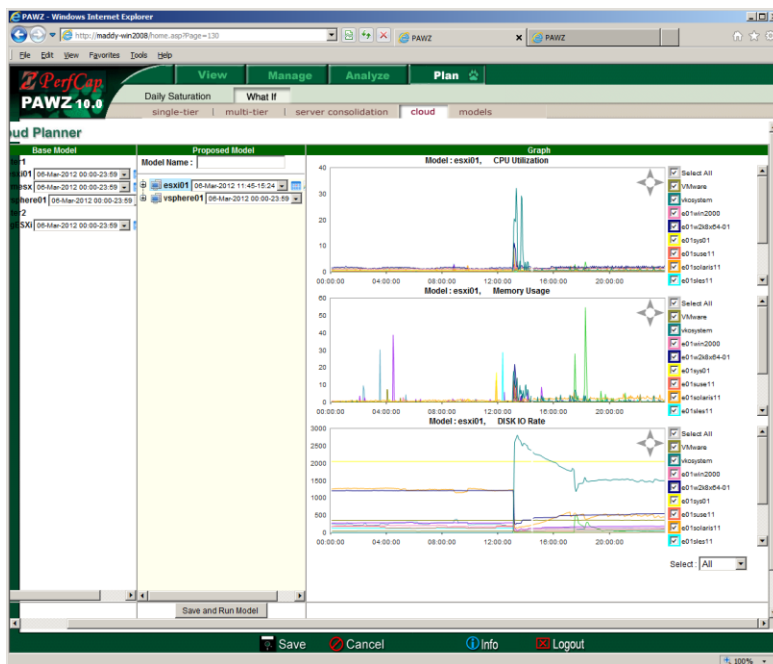
Click the graph icon in the proposed section to see the CPU, Memory and Disk IO Rate graphs.



Select a specific time interval by zooming in on the time period. When you release the mouse button the time will be saved with the date in the proposed area for the selected node.



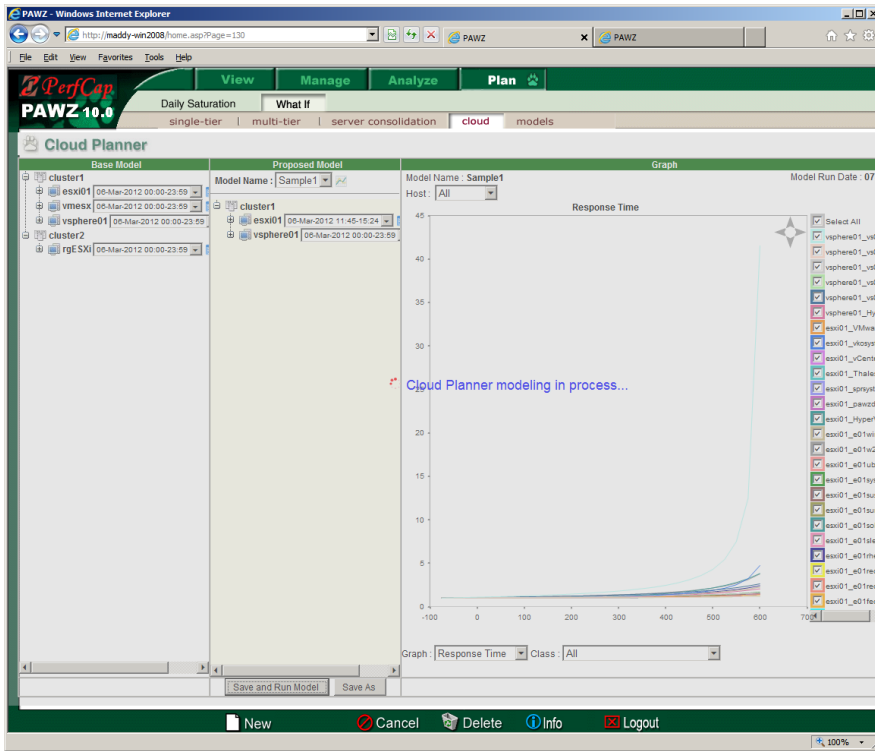
Right click on a host or guest to display a sub menu. To change a host configuration, select Config or to Remove a host select delete host



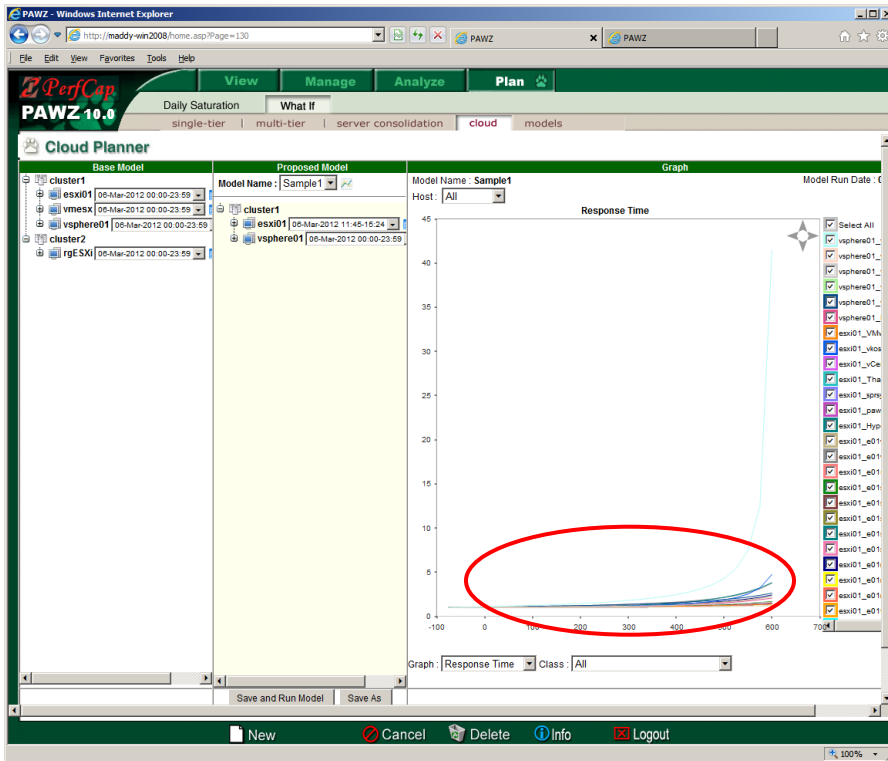
Click the "Save and Run Model" button to run the model.

- a. NOTE that a message box appears prompting for a model name.
- b. Enter a name then click the "Save and Run" button

# Save and Run Model

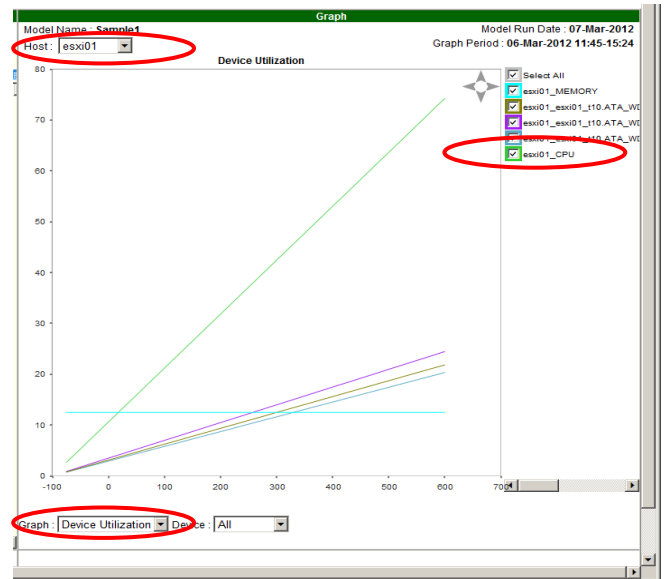
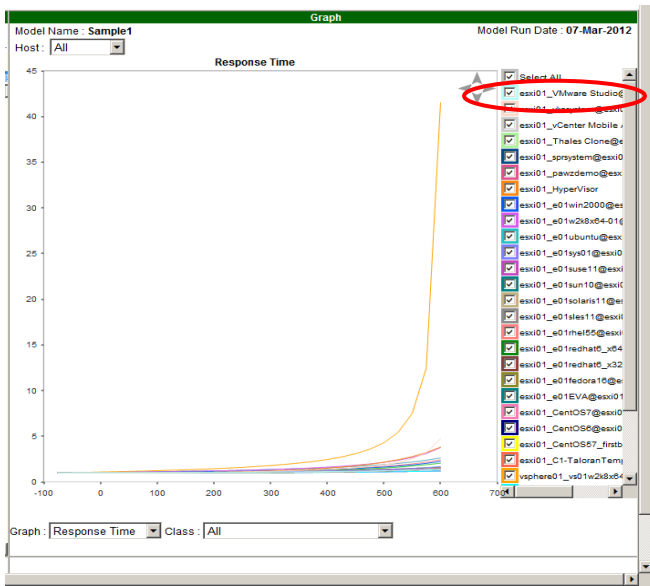


The screen changes to "Cloud Planner modeling in Process"



When the model run has successfully completed, a response time graph is displayed in the right pane. The result of this model run indicates that the system can grow by 200% before response time starts to go up. You can see this by observing where the curve starts to go up.

To see which guest is causing the problem, look at the legend to see the corresponding line color for the guest. Guest vkosystem is the guest that's saturated. Select the host esxi01 and change the graph to "Device Utilization" to see which device saturated. NOTE: If one host saturates, then none of the other hosts will go beyond that saturation point.



You can see by the device graph that the CPU is the first device to saturate. Try increasing the number of CPUs for host esxi01 to see if this will provide more growth.

To change the host configuration, select the Config menu item. Below illustrates how to change the number of CPUs for the proposed configuration from 4 to 16. Click the "save" then "close" button.



Host : esxi01

**Current Configuration**

Cpu Vendor	Dell Corporation						
Cpu Model	PowerEdge T110 (Intel Xeon X3430, 2.40 GHz) - 26.4						
Processor	Intel Xeon X3430						
Number of CPUs	4	SPECint2006	26.4	Memory	8181 mb	Number of Disks	3

Save Current Configuration

**Proposed Configuration**

Cpu Vendor	Dell Corporation						
Cpu Model	PowerEdge T110 (Intel Xeon X3430, 2.40 GHz) - 26.4						
Processor	Intel Xeon X3430						
Number of CPUs	4	SPECint2006	26.4	Memory	8181	Number of Disks	3

Save Close

Before

Host : esxi01

**Current Configuration**

Cpu Vendor	Dell Corporation						
Cpu Model	PowerEdge T110 (Intel Xeon X3430, 2.40 GHz) - 26.4						
Processor	Intel Xeon X3430						
Number of CPUs	4	SPECint2006	26.4	Memory	8181 mb	Number of Disks	3

Save Current Configuration

**Proposed Configuration**

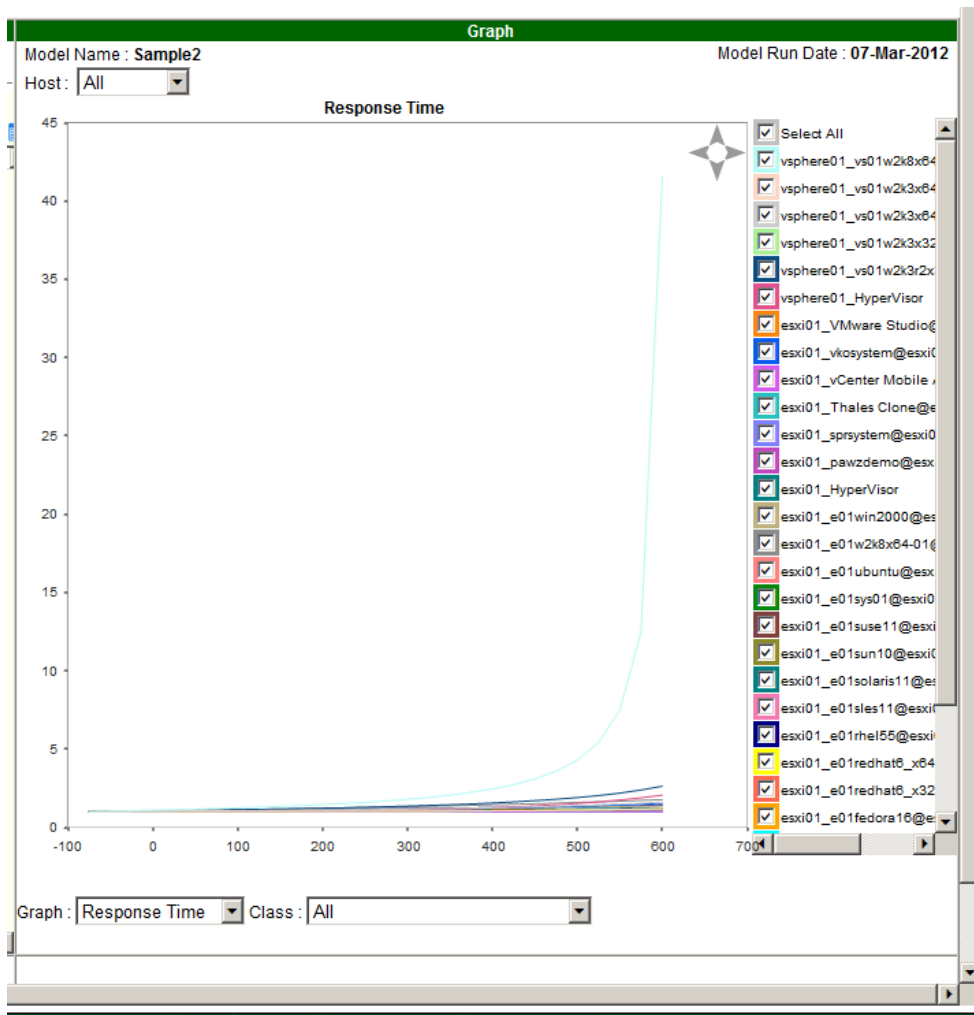
Cpu Vendor	Dell Corporation						
Cpu Model	PowerEdge T110 (Intel Xeon X3430, 2.40 GHz) - 26.4						
Processor	Intel Xeon X3430						
Number of CPUs	16	SPECint2006	26.4	Memory	8181	Number of Disks	3

Save Close

After

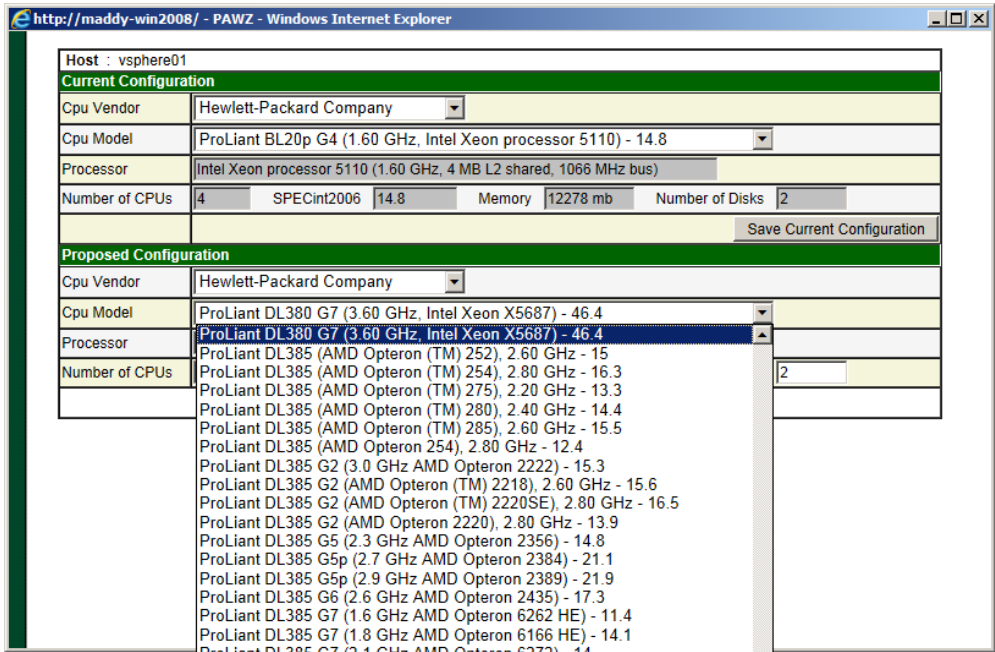
Click the “save button to save your changes. Then run the model again. Clicking the “Save and Run” button will overwrite the previous model’s results with the current model results. To preserve each model’s results, click the “Save As” button before running each model. After clicking the “Save As” button, you will be prompted to enter a new name for this model. Enter a unique name, then click “Save and Run Model”.

	Save and Run Model	Save As	
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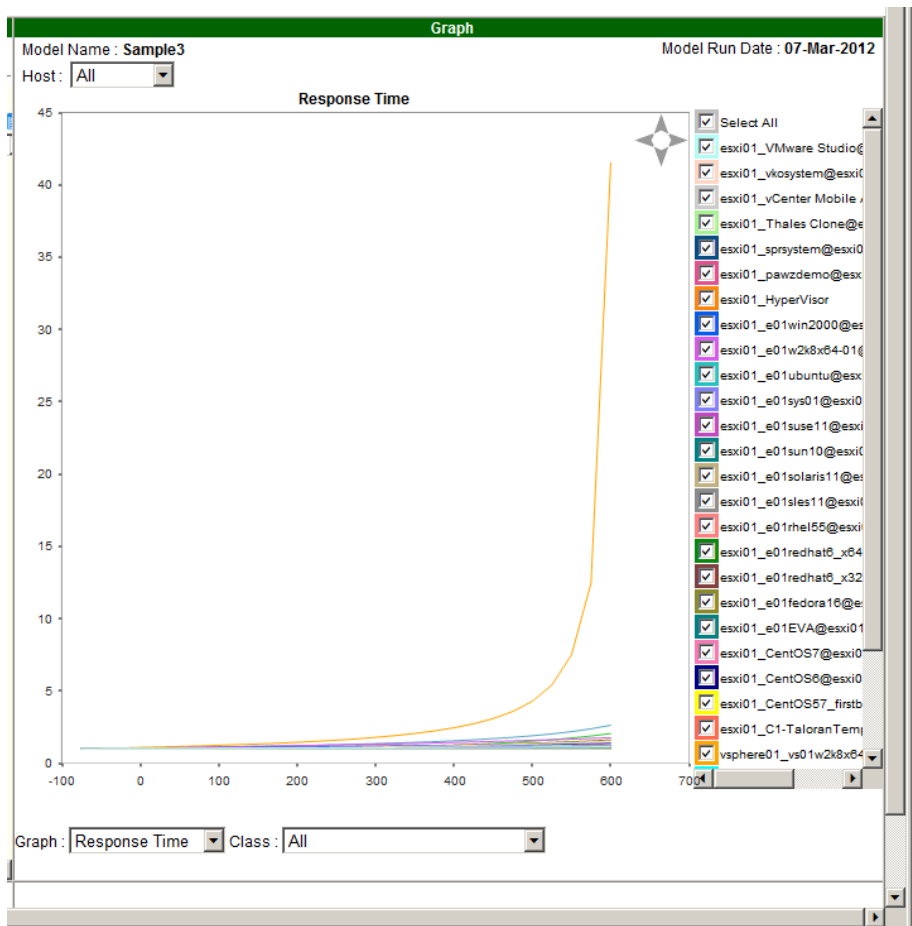


By changing the number of CPUs there is more growth, however a different guest on the other host is now saturated. Change the processor for vsphere01 to a faster processor.

Change vsphere01 to a faster processor. Click “Save” then rerun the model.



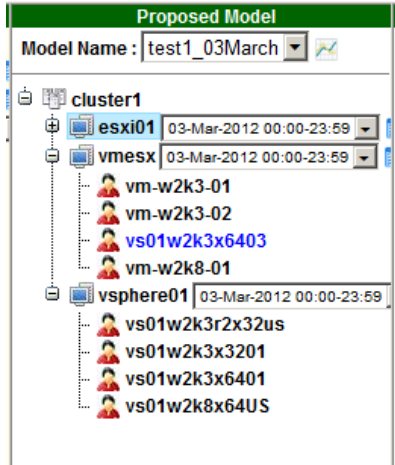
Click the Save and Run button to re run the model



The model run results indicate growth up to 300% before response times go up.

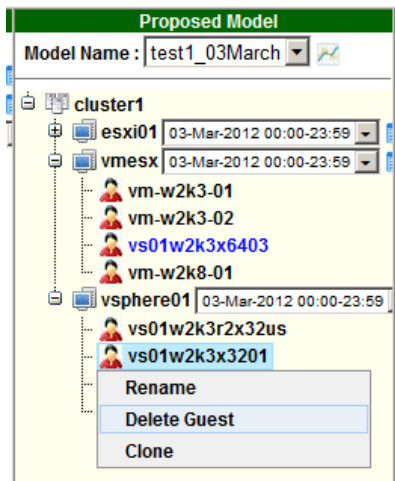
There are various ways to simulate growth and/or change:

Move guests from one host to another host by selecting the guest and dragging it to the target host. Moved guest are displayed in “blue”.

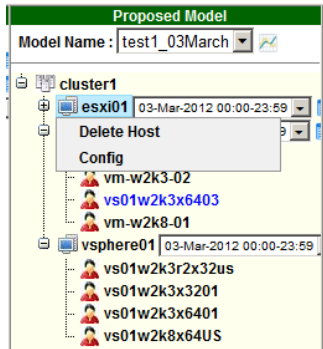


### Removing guests

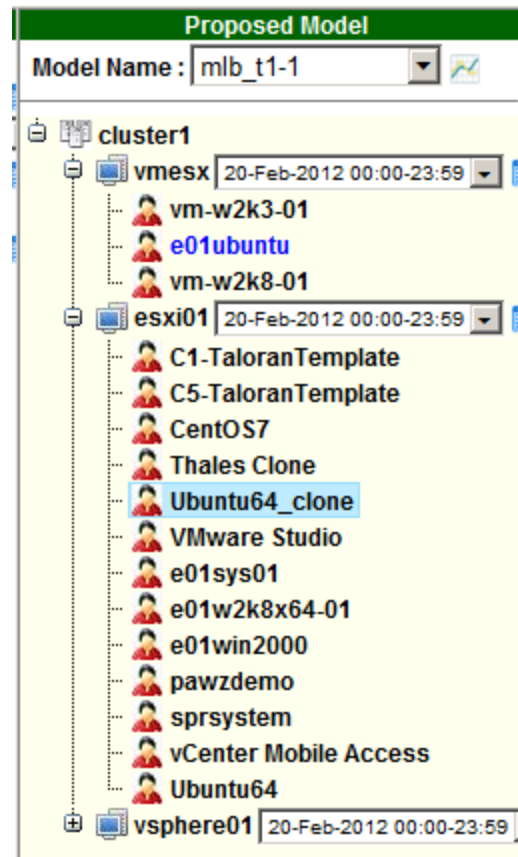
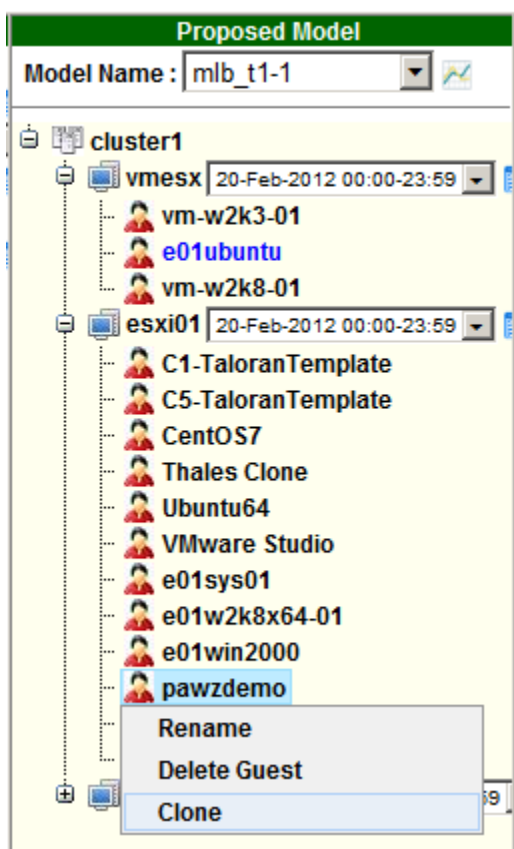
Remove guests by selecting the guest, and right clicking to display the menu. Select “Delete Guest” to remove a guest.



Remove a host by selecting it and right clicking



Clone a guest.



A cloned guest takes on the same attributes as the parent. When you create a clone it automatically is named after the parent with the \_clone suffix. You can rename it by selecting it then right clicking and choosing the “rename” submenu item.

## **Graph Exports**

### **Planner Saturation Analysis and Analytical Models**

Export is now available for the planner feature.

## Restrictions and Known Problems:

- If a windows host is hosting multiple ESX nodes, then downloads should be staggered so that each ESX host is scheduled at a different time. Allow at least ½ hour between each ESX node.
- Deleting a cluster (either a standard cluster or a cloud cluster) removes the standard cluster and cloud data.
- In order to use the new Cloud Feature “All” favorite processes **must** be turned on.  
NOTE: “All” favorite processes is turned on by default in V10.0 when ESX nodes are defined
- If more than one person is using the planner with the same nodes, unpredictable results can occur.
- When the ESX Planner is attempting to draw the three graphs, IE may stop running with an error message "A script on this page is causing Internet Explorer to run slowly" with the following dialog box

***This page contains a script which is taking an unusually long time to finish. To end this script now, click Cancel***

For a more detailed description and work around go to link

<http://support.microsoft.com/kb/175500>

- Using the calendar on the ESX Planner page may cause an error if the guest list is different in the previous date. PerfCap recommends, in this version to select dates from the dropdown. A fix will be supplied in the next release.

## Fixed in this release:

- #1602 - On standard graphs with UK Locale, the calendar shows the incorrect date
- #1726 - Combo graph gives an error when there is no data to display
- #1891 – PAWZServer may crash if ISCSI mapped disk names are turned on
- #1931 – View Data Collector page takes a long time to display
- #1860 – cint error on View Data Collector page
- #1743 – unable to display disk statistics for response time
- #1532 – Real Time Alerts not allowed on any port except 2101
- #1961 - pawz favorite graph for Solaris VSS has wrong units
- #1695 - SelectAll checkbox instead of SelectAll button in Pawz Graphs
- Multiple web page context errors