Precise for TPM

User Guide

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Precise for TPM User Guide

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Precise for TPM Basics

This section includes the following topics:

- About Precise for TPM tabs
- How most tabs are structured
- About drilling down in context
- About configuring your settings
- Tasks common to most tabs

About Precise for TPM tabs

Precise for TPM provides the user with a high level view of all monitored applications, and allows the user to focus on a specific application, the instances monitored in the installed tiers.

The table below describes the three tabs displayed in Precise for TPM.

Table 1-1 Precise for TPM tabs

tab	Description
Applications	Lets you quickly visualize the overall health and status of all instrumented application server instances. The Dashboard tab provides support for detailed views of individual application servers, as well as top-level summary views of multiple application servers. See About the Precise TPM Applications screen on page 14.
Transactions	Displays the end to end transactions of the monitored application. See About the Transactions tab on page 16.
Infrastructure	Displays OS and virtualization. See About the Infrastructure tab on page 17.
Alerts	Lets you examine all generated alerts. See About the Alerts tab on page 17.

You can easily switch between the different tabs using the tab Selection bar. See Switching to a different tab on page 11.

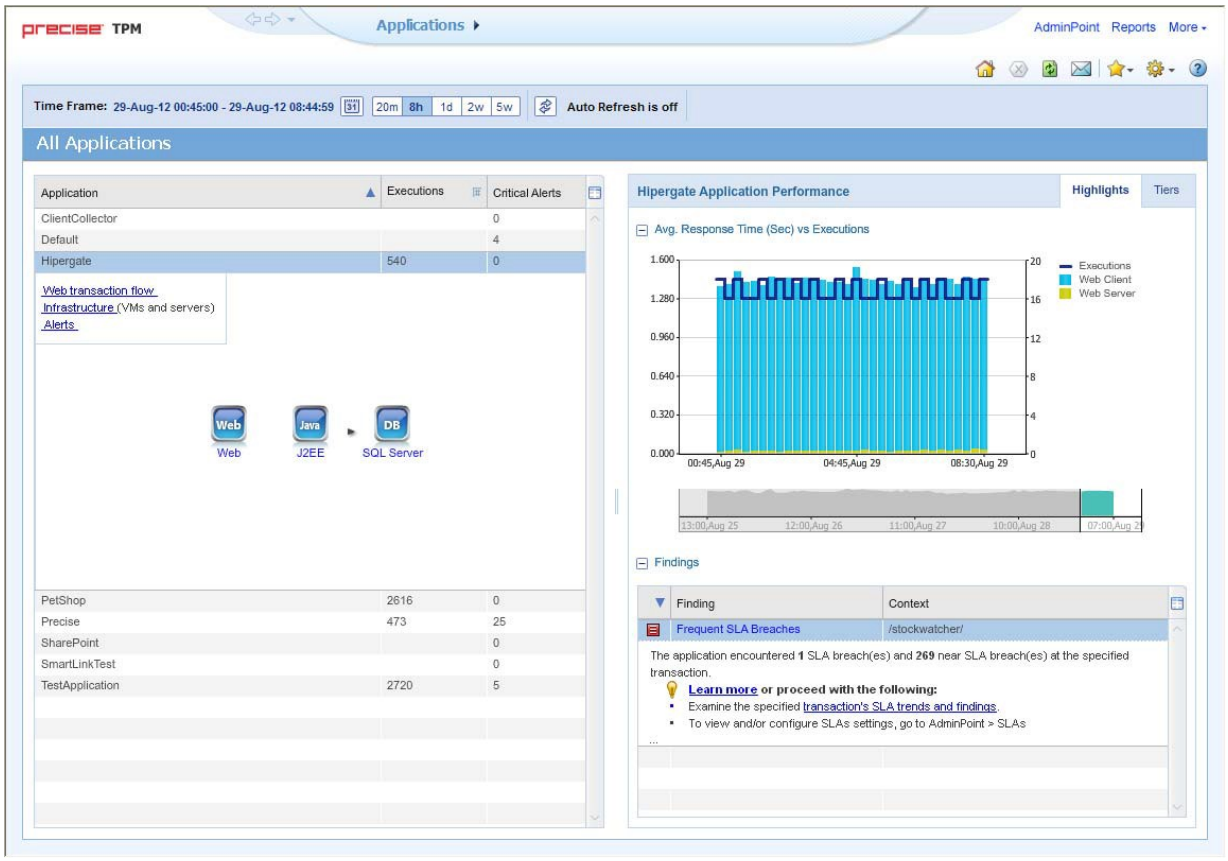
How most tabs are structured

Though each tab is structured differently, most tabs consist of a Precise bar, tab selection bar, tab bar, and two areas (the Main area and the Association area). The Main area (left or top pane) features either a table or a tree view of all monitored applications, and the Association area (right or bottom pane) includes various tab specific tabs that display information in various formats, such as tables, graphs, or charts.

The information displayed in one area of the tab has a direct relation to the information displayed in the other area. When you perform an action on any element in one pane, the information displayed in the other pane changes to reflect this action and to show information for the current selected context.

The figure below shows the common tab elements.

Figure 1-1 Sample Applications Screen



About the Precise bar

The Precise bar enables you to keep track of where you have been and provides various controls. The following table describes the function of each of the toolbar buttons.

Table 1-2 Precise bar functions

Icon	Name	Description
	Back	During a work session, keeps track of where you have navigated to. The Back and History buttons enable you to navigate between previously visited views. The Back control displays your previous view.
	Forward	Enables you to navigate to the next view. This button is only enabled if you clicked Back or if you chose a history option.
AdminPoint	AdminPoint	Launches Precise AdminPoint.
	Home	Navigates to the highest level entity, usually the instance or Tier (all instances). The time frame settings remain the same.
	Stop	Stops a request for information from the server.
	Refresh	Updates the data currently displayed.
	Favorites	Enables you to add or remove favorites in your Favorites list.

Icon	Name	Description
	Send	Opens a new email message in your email program with the link to the current application in context.
	Settings	Opens the General Settings, Transactions & Users Settings, and Time Frame Settings dialog boxes.
	Help	Opens the online help in context.

About the Main area

In most tabs, the left or top area is the Main area. This area displays an overview of all instances monitored by your Precise product. This information can be displayed in either graph, table, or tree format. The time frame that the information is displayed for can be seen in the tab toolbar, alongside the selected instance name (and drop-down menu) and auto-refresh status. The times displayed are the local times on the FocalPoint server where the page was generated.

About the Association area

The Association area displays indepth information for the entity selected in the Main area. Each tab has analysis tabs specific for that tab. As you navigate through Precise for TPM, the analysis tabs change to enable you to view specific information relevant to the selected tab and entity.

For example, the following analysis tabs are available in the Applications tab:

- Highlights
- Tiers

About the Findings area

For selected tabs in Precise products, the association area includes the Findings area, displaying problematic findings for the application. The findings feature is a high level tool, designed to provide the user with an overview of performance issues within the monitored application and enable quick and efficient navigation to the relevant tab for further analysis and handling. The displayed performance findings may indicate performance deteriorations as well as incorrect methods usage. Each finding appears as a row in the displayed table of findings. Hover the mouse indicator over the single-line displayed finding to expand the finding. When expanded, the finding details area provides important guidelines as to what may be the root cause for the reported problem, and what the recommended steps are to resolve this problem.

The table below describes the information that is displayed in the Findings area.

Table 1-3 Information displayed in the Findings area

Column	Description
Severity	The severity of the finding is calculated using a formula. The position of the finding in the list is determined by an internal scoring system that is based on the knowledge of Precise product experts. The severity is indicated by the following colors: ■ Red: High severity ■ Orange: Medium severity ■ Yellow: Low severity ■ Blue: No severity - the finding is strictly informative By default, findings are displayed according to severity.
Finding	A short name of the Finding.
Context	Entity/Method name (unless specified for the whole application). Some of the findings are identified in specific Methods while others are relevant for the entire application. In the latter case, a finding is specified as an application-related finding. **Note:** Rows are aggregated by finding and the URI/method/SQL name and not by ID.
Finding overview	Displays specific details regarding the finding in context. **Note:** This is displayed in the expanded view only.
Learn more (advice)	Provides recommendations for solving the selected finding. For each finding, it lists all relevant pieces of advice and all applicable solutions. You should carefully review all data for the finding and then choose the advice that best suits your needs. **Note:** This is displayed in the expanded view only.

Proceed with the following (bullets)	Provides expert knowledge about the selected finding. The information displayed will direct you if you have difficulties deciding which advice to take or which solution to implement. **Note:** This is displayed in the expanded view only.

Investigating a finding

Perform the following steps to investigate a finding.

To investigate a finding

1. In the Time Frame list, select the period of time you want to analyze.
2. In the All Applications table, select the application you want to investigate.
3. In the Finding area, review the top Findings for the selected application displayed in the Findings table. The findings displayed in this table are sorted by severity.
4. In the Findings table, select the finding you want to analyze further.
5. In the selected finding (the expanded view), read the data displayed for the finding and follow any links provided to view additional information (advice) or next steps (bullets) to resolve the problem.

For more information, refer to Examining Findings on page 18.

About drilling down in context

The term 'in-context' means that you can display additional information on a selected item by drilling down to another tab or view. The filter settings you defined (for example, the selected time frame you chose) and the entity you selected are carried over to the other view or tab, to allow you to continue analyzing your subject from a different perspective. This concept takes on slightly different meanings depending upon where you are attempting to drill down in context from. In short, the information displayed when drilling down in context is always related to your original selection's settings.

For example, when viewing information on an application in the Applications tab, you can click a link in the Details area (right pane) to view additional information on the related tab, in context of your original selection. Or when viewing a list of alerts for your product in Alerts, you can open your product in context and continue investigating the factors that led the system to issue that alert. In short, the information displayed when drilling down in context is always related to your original selection's settings.

How a drilldown affects the tab heading

The tab heading displays the name of the currently selected entity on this screen. When you drill down to a new entity in the Association area, the tab heading changes to reflect the name of the newly selected entity.

About configuring your settings

The following settings allow you to control the appearance and behavior of the user interface. They can be configured from the Settings menu on the Precise bar:

- General settings - Includes the General, Display, and Tree view tabs.
- Time Frame settings

About configuring general settings

On the General tab of the General Settings dialog box, you can adjust the following:

- Number of items that will be displayed for each association

  From the list, select the maximum number of items that will be displayed in a table. The default is 50 items. You can control the number of items returned for a specific association by using the More... option in the Association controls. This way, you can display up to 200 items.

- How often the information in the Current tab is refreshed

  If you select the Auto-refresh Current tab every check box, the Current tab automatically refreshes at the specified interval. By default, the tab is not refreshed automatically. If you select this option, the default refresh interval is every five minutes.

About configuring display settings

When you drill down to or choose a different entity, selecting the option on the Display tab of the General Settings dialog box allows you to maintain the selected view or tab when changing from one tab to another. This is sometimes referred to as sticky tabs.

About configuring Tree view settings

(Only applied to Precise products that include a Tree view)

On the Tree View tab of the General Settings dialog box, you can adjust the following:

- Sort criteria of the tree.
- Max. number of search results.

About configuring Time Frame settings

You can determine the resolution of the data that is displayed in the overtime graphs using the Time Frame Settings dialog box. By using this dialog box you can define the default time frame to display.

About viewing data in the Precise TPM tabs

Precise TPM tabs display information in the following formats:

Bar graphs for a selected time frame

The user interface displays data per time slice in bar graphs. Bar graphs summarize one slice of data and generally compare several values of similar type, such as time or throughput. For example, contributors of a higher level metric are displayed as bars in the graph, with their type and percentage work time displayed by putting the mouse over the area of interest (see the “tab terminology” figure). Each displayed metric value is an average of observations within the slice.

Line graphs for a selected time frame

The user interface displays overtime data for a defined time frame in line graphs. Line graphs summarize many slices of data. You can change the number of items plotted by selecting or unselecting check boxes located to the right of the graph. Each point in the graph represents the total metric value for a time slice included in the time series.

Tables for a selected time frame

The various Precise TPM tabs display information in tables. The way this information is viewed can be modified according to the user's needs, by clicking on the icon to the right of the column header. The following table describes the displays views available.

Table 1-4 Column display modes in tables

Display Mode (Icon)	Description
Normalized Graph ( )	This mode displays the breakdown bar in full size for each entity. In this mode you can clearly see the relative breakdown per type for each entity in the table.
Sacked Bar Graph ( )	This mode displays a normalized view of the breakdown bar for each entity in relative size to the entity with the highest value. In this mode, you can see the actual breakdown per type (in seconds) for each entity.
Numerical ( )	This mode displays the numerical value in the relevant unit size.
Bar Graph ( )	This mode displays a solid bar graph for each entity in relative size to the entity with the highest value.

Tasks common to most tabs

The following tasks are commonly performed in most tabs:

- Switching to a different tab
- Selecting a time frame
- Auto Refresh data
- Focusing on information in overtime graphs
- Determining which table columns to display
- Adding, viewing, and deleting Favorites
- Exporting to Precise Custom Portal

Switching to a different tab

You can easily switch between the different tabs using the tab Selection bar. When you start your Precise product, usually the Dashboard tab opens by default. The button of the selected tab is displayed in orange.

To select a tab

- Click a button on the tab Selection bar to display information on the selected entity in a different tab.

Selecting a time frame

You can configure Precise TPM to display transaction performance data for a specific time frame using the predefined time frame options or calendar icons.

Selecting a predefined time frame from the toolbar displays transaction performance data for the selected time period up to the current time. See “Selecting a predefined time frame from the Precise TPM toolbar” on page 9.

Selecting the time frame using the calendar icon, you can choose to define a time range independent of the current time, or to define a time range up to the current time. See Selecting a time frame using the calendar icon on page 11.

The predefined time frame options are:

- Last 20 minutes (20m)
- Last 8 hours (8h) (default)
- Last 1 day (1d)
- Last 2weeks (2w)
- Last 5weeks (5w)

The time frame selected affects all information displayed in Precise TPM. Only data that falls within the selected time frame is shown in these areas.

Selecting a predefined time frame from the Precise TPM toolbar

To select a predefined time frame

- From the Precise TPM toolbar, select one of the predefined time frames.

Selecting a time frame using the calendar icon

To select a time frame

1. Click the calendar icon. In the dialog box that is displayed perform one of the following:
    a. To define a time frame independent from the current time, select the ‘Time Range’ option and select the Start and End dates and times.
    b. To define a time frame up to the current time, select the ‘Last’ option and enter the desired time frame.
    c. To use one of the three previously used time frames, select the ‘Recently used’ option and from the drop down menu select the desired time frame.
    d. To use a previously saved time frame, select **Use a previously saved time frame** and from the drop down menu select the desired time frame.

2. To save your settings for future access, select **Save these definitions for future use as:** and enter a name in the corresponding field.
3. Click **OK**.

Auto Refresh data

You can configure Precise for TPM to automatically refresh collected data displayed on a tab. By default the option is Auto Refresh is off.

To Auto Refresh data

- Click Auto Refresh is off/Auto Refresh is on.

Focusing on information in overtime graphs

Some entities display an overtime graph. The overtime graph displays activity statistics over a specified time period. Depending on the number of points displayed in the graph, you may need to zoom in or out. The text displayed on the x-axis varies according to the time frame. If there is a year or day change, x-axis labels will display accordingly.

Use the vertical or horizontal scroll bars (if displayed) to view additional information on the graph. Click the legend ( ) icon to either hide or show the overtime graph legend.

Use the small zoom (spyglass) icon, displayed on the upper right of a time range and above the overtime graph legend, to select a desired time frame that you wish to focus. To select an area on the graph, first click and drag the mouse pointer and then click the spyglass icon.

Determining which table columns to display

Tables are used to display information about a set of related entities in either the left or right panes. It is possible to determine which columns to display in the Association area tables.

To determine which columns to display in a table

1. Click the Table icon on the upper right-hand side of a table and select **Column Chooser**.
2. In the Column Chooser dialog box, click the arrows to move the names of the columns that you want to display to the Visible box and the ones that you do not want to display to the Invisible box.
3. Click **OK**.

Sending an email message

You can send an email message to one or more recipients from the Precise toolbar. The default subject for the message will be “Link to a Precise environment”.

The email will include a link to the Precise product in the current context (time frame and selected entries).

To send an email message

1. Click the email icon on the Precise toolbar. The default email program opens.
2. Fill in the required fields and click **Send**.

Adding, viewing, and deleting Favorites

The Favorites function enables you to save a specific location in your environment and to retrieve the same location later without having to navigate to it. For this purpose, a friendly user interface similar to the familiar Favorites option in the Internet Explorer has been implemented.

About the Favorites function

The new Favorites function includes the following features:

- Relative Time Frame - Saving a relative time frame instead of static date. For example, saving the last 7 days will always display the last 7 days, depending on the day entered.
- One click to specific location - Once you open Precise by launching a saved Favorite item, you will not have to enter a login credential nor click the login button.
- IE Favorites support - Adding a new Favorite item in Precise will also add it to the IE Favorites menu.
- Auto Complete - The Favorites dialog includes a new combo box which supports AutoComplete.
- Auto Naming - The Favorites dialog generates item names based on the current location.

UI description

A Favorites menu has been added to the Precise bar in each product. An Add/Delete Favorites option under the Favorites menu allows you to save the current location or delete an existing one.

To add a new Favorite location

1. On the Add/Delete Favorites dialog box, enter the name of the new Favorites entry.
2. Click **Add**. The dialog box is closed and the new Favorite is added to the list.

To view a Favorites location

1. On the Precise bar, click **Favorites**.
2. Select the Favorites location you want to view.

To delete an existing Favorite location

1. On the Add/Delete Favorites dialog box, select the Favorite location to be deleted.
2. Click **Delete**. The dialog box closes and the selected Favorite is deleted from the list.

NOTE The favorite address is displayed in the Address field and cannot be edited.

Exporting to Precise Custom Portal

The Export to Precise Custom Portal Portlet feature enables you to export the view of the chosen table or graph and generate a portlet with that view in the Precise Custom Portal, so that it will provide you with another way of monitoring your environment.

Prerequisites

To be able to use this feature, you need to have the following rights in Precise:

- View permissions to all AppTiers in the environment

  If you do not have sufficient rights, you will get an error message when trying to execute this feature.

Exporting the information

You can either export a table view or a graph view.

NOTE The name field has the following restrictions: maximum 100 characters.

To export a table view

1. Click the Column Chooser icon.
2. Select Export to Precise Custom Portal portlet.
3. Insert a name in the name field that clearly describes the table view.
4. Click **OK**.

To export a graph view

1. Click the Export icon.
2. Select Export to ASD.
3. Insert a name in the name field that clearly describes the graph view.
4. Click **OK**.

Examining Monitored Precise Applications

This section includes the following topics:

- About the Precise TPM Applications screen

About the Precise TPM Applications screen

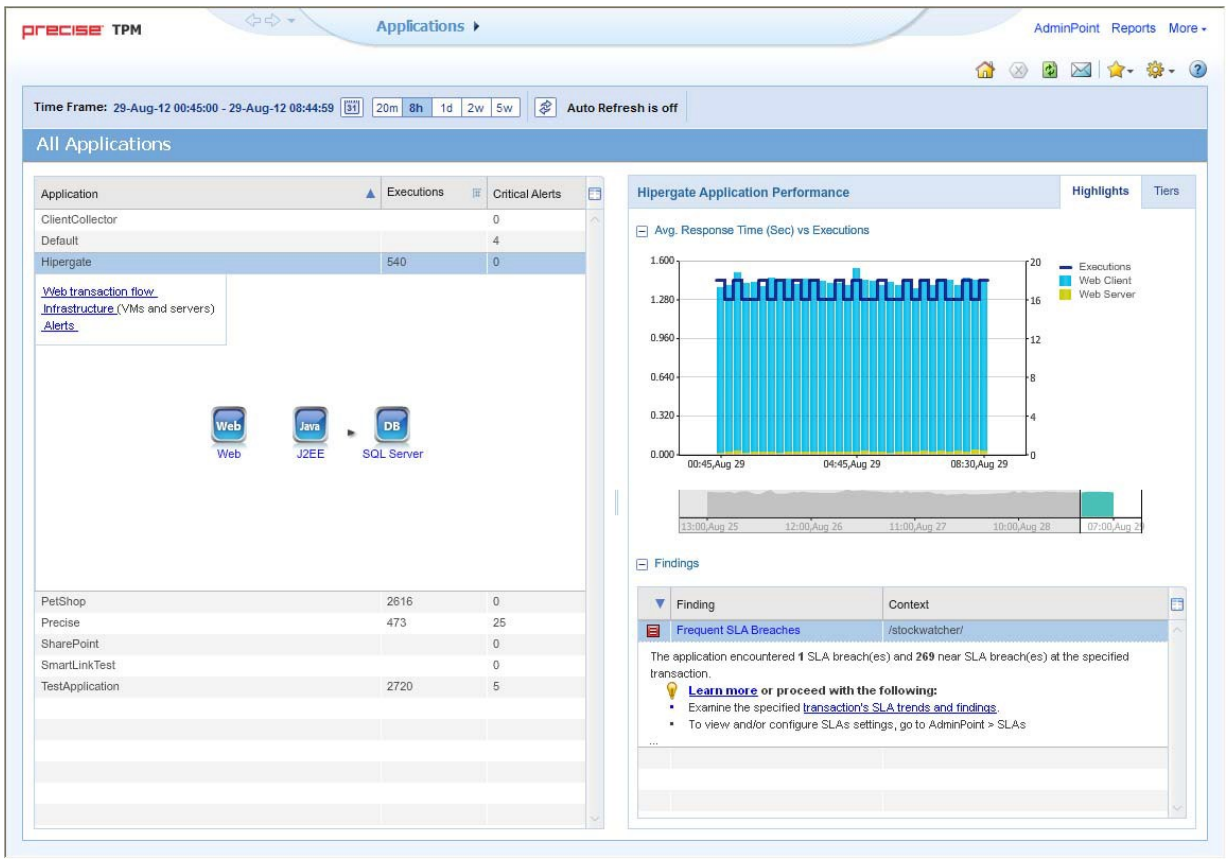
The Precise TPM user interface provides the high level view over all the applications defined at the framework. You can navigate between applications and review their topology and statistics.

In addition to the links to specific applications, the left side of the screen also includes links to transactions and alerts. It should be noted that these links change according to the selected application.

On the right side of the screen you can examine tier and instance tables. Additionally, you may analyze findings and drill down for more information.

The figure below shows an example of the Precise TPM Applications screen.

Figure 2-1 TPM Applications Screen



About the Findings area

For selected tabs in Precise products, the association area includes the Findings area, displaying problematic findings for the application. The findings feature is a high level tool, designed to provide the user with an overview of performance issues within the monitored application and enable quick and efficient navigation to the relevant tab for further analysis and handling. The displayed performance findings may indicate performance deteriorations as well as incorrect methods usage. Each finding appears as a row in the displayed table of findings. Hover the mouse indicator over the single-line displayed finding to expand the finding. When expanded, the finding details area provides important guidelines as to what may be the root cause for the reported problem, and what the recommended steps are to resolve this problem.

The table below describes the information that is displayed in the Findings area.

Table 2-1 Information displayed in the Findings area

Column	Description
Severity	The severity of the finding is calculated using a formula. The position of the finding in the list is determined by an internal scoring system that is based on the knowledge of Precise product experts. The severity is indicated by the following colors: ■ Red: High severity ■ Orange: Medium severity ■ Yellow: Low severity ■ Blue: No severity - the finding is strictly informative By default, findings are displayed according to severity.
Finding	A short name of the Finding.
Context	Entity/Method name (unless specified for the whole instance). The entity/method name is a short name but the long name is displayed in the ToolTip. Some of the findings are identified in specific Methods while others are relevant for the entire instance. In the latter case, a finding is specified as an instance-related finding. **Note:** Rows are aggregated by finding and the URI/method/SQL name and not by ID.
Finding overview	Displays specific details regarding the finding in context. **Note:** This is displayed in the expanded view only.
Learn more (advice)	Provides recommendations for solving the selected finding. For each finding, it lists all relevant pieces of advice and all applicable solutions. You should carefully review all data for the finding and then choose the advice that best suits your needs. **Note:** This is displayed in the expanded view only.
Proceed with the following (bullets)	Provides expert knowledge about the selected finding. The information displayed will direct you if you have difficulties deciding which advice to take or which solution to implement. **Note:** This is displayed in the expanded view only.

Investigating a finding

Perform the following steps to investigate a finding.

To investigate a finding

1. In the Time Frame list, select the period of time you want to analyze.
2. In the All Applications table, select the application you want to investigate.
3. In the Finding area, review the top Findings for the selected instance displayed in the Findings table. The findings displayed in this table are sorted by severity.
4. In the Findings table, select the finding you want to analyze further.
5. In the selected finding (the expanded view), read the data displayed for the finding and follow any links provided to view additional information (advice) or next steps (bullets) to resolve the problem.

For more information, refer to Examining Findings on page 18.

Precise for TPM tabs

This section includes the following topics:

- About Precise for TPM Application
- About the Transactions tab
- About the Infrastructure tab
- About the Alerts tab

About Precise for TPM Application

The Precise for TPM user interface is comprised of three tabs - Transactions, Infrastructure and Alerts. Each tab has a unique focus, highlighting a specific aspect of the selected monitored application. You can easily navigate between these tabs to examine the information necessary to successfully track your application's performance.

The table below describes the three tabs displayed in Precise TPM.

Table 3-1 Precise TPM tabs

tab	Description
Transactions	Displays the end to end transactions of the monitored application. See About the Transactions tab on page 16.
Infrastructure	Displays OS and virtualization. See About the Infrastructure tab on page 17.
Alerts	Lets you examine all generated alerts. See About the Alerts tab on page 17.

About the Transactions tab

This section describes the Performance tab, its structure and the information included in it.

The left side of the screen lists the transactions sorted by average response time. The table below describes the tabs displayed on the right side of the Precise TPM screen.

Table 3-2 Precise TPM Transactions tabs

tab	Description
Highlight	This tab includes that following information: ■ Summary ■ Avg. Response Time (Sec) vs Executions ■ Web SLA Compliance ■ Findings

Table 3-2 Precise TPM Transactions tabs

tab	Description
Hotspots	This tab includes that following information: ■ Heaviest Tiers by Work Time ■ Heaviest Activities by Work Time ■ Avg. Response Time (Sec) vs Executions
Load Balance	This tab includes that following information: ■ Heaviest Transactions ■ Avg. Response Time (Sec) vs Executions ■ Users Executing Selected Transaction
Tiers	This tab includes that following information: ■ Tiers ■ Avg. Response Time (Sec) vs Executions ■ Load Balancing Instances in Selected Tier
Users	Lists the users detected.
Locations	Lists the locations detected

About the Infrastructure tab

This section describes the Infrastructure tab, its structure and the information included in it.

The Infrastructure tab enables you to see its application's infrastructure (ESXs, VMs and Servers). Data is collected through the vCenter server and OS agents.

The infrastructure tab has the following format:

- On the left side there is a tree with the relevant application's ESXs, VMs and servers. You can focus on the different categories and on a specific ESX, VM or server.
- On the right side there are tabs with more information such as statistics on VM's, events, findings and instances running on a specified VM.

About the Alerts tab

This section describes the Alerts tab, its structure and the information included in it.

In a world where organizations rely on their information systems, avoiding problems that affect service to end-users is of prime concern. Proactive monitoring enables organizations to avoid such conditions by predicting potential problems before they occur. It focuses on identifying conditions that may lead to problems or that indicate that a problem may develop. This enables you to implement corrective solutions before problems surface.

Alerts, is an alerting product that helps you manage your system performance proactively. With Alerts, you can effectively detect availability and performance problems and react quickly to solve them.

Alerts samples data collected by other Preciseproducts for the values of a set of metrics and compares these values with a predefined set of values, called thresholds. When the value of a metric exceeds the metric’s threshold value, Alerts alerts you through its user interface. It can even perform a defined corrective action.

A major cause of performance problems is imperfect application design. Therefore, monitoring the effectiveness of utilization and the efficient handling of data by the monitored servers are crucial to optimizing performance.

Alerts achieves this by focusing on the following:

- The resources and objects of the sampled devices
- The way your applications use those nodes to detect potential bottlenecks

For more information refer to the *Precise Alerts User Guide*.

Examining Findings

This section includes the following topics:

- How to identify performance problems
- About TPM findings

How to identify performance problems

In most cases, a Precise TPM tab displays information in the context of a specific application and time frame. However, if you want to view findings for another time frame or application, you can change these settings using the respective dropdown lists. See About the Findings area on page 8.

How to investigate a finding

When investigating finding, it is recommended to investigate findings based on their severity.

To investigate a finding

1. In the All Applications table, select the application you want to investigate. In the Finding Details area, the top findings for a selected application are displayed in the Findings table of a tab.
2. Identify the findings with the highest severity rankings (red, orange, and yellow icons where red is the highest severity and yellow the lowest) in the Findings table.
3. In the Findings table, select a finding to analyze further the problem.
4. In the selected finding (the expanded view), read the data displayed for the finding and follow any links provided to view additional information (advice) or next steps (bullets) to perform the recommendation(s) that best suit(s) your needs.

About TPM findings

Several tab findings exist in the Findings table to help the user.

The following is a list of current Precise TPM findings for an instance/method:

- Hotspot Detected
- Frequent SLA Breaches
- Partial Upgrade
- Starved Virtual Machine
- VM Memory Swapping
- Virtualization Events Detected

Hotspot Detected

A high work time for a specific hotspot (reflecting the hotspot's work time only, without the underlying call path), can indicate a performance issue within the context of that hotspot.

In the same way, a high work time for a specific occurrence of a hotspot invoked multiple times in the invocation tree can indicate a performance issue within the context of that specific occurrence.

Working with the finding

To effectively locate the root cause of the performance finding, perform the following:

- Examine the heaviest occurrences further by following the featured link.

  The invocation tree opens to the hotspot's heaviest call path, facilitating effective navigation to the root cause. Examine the information displayed and look at the overtime graph and findings to drill down further to find the root cause of the performance issue.

  NOTE By default, information is displayed for the heaviest hotspot's call path. To investigate the other call paths, select them from the invocation tree. (They are highlighted in bold).

Frequent SLA Breaches

SLA thresholds are defined to help the user pinpoint transactions experiencing performance issues according to specific criteria. Frequent SLA breaches and near breaches can be caused by an underlying performance issue.

Working with the finding

To effectively locate the root cause of the performance finding, perform one of the following:

- Click on the transaction's link, and then look at the overtime SLA behavior to locate and zoom in to a specific (problematic) time frame. View the findings for that time frame and drill down until you locate the root cause.
- Select the root level of the transactions tree and select the Transactions tab. A high rate of SLA breaches across the application could result from overall resource exhaustion. Open the Tiers tab, follow the link to the heaviest ones and open the Statistics tab to learn more about the environment performance issues, like high memory usage, CPU usage and so on.
- Go to AdminPoint>Settings>SLA to view the thresholds definitions. (When you have too many SLA breaches, it may be a result of thresholds that are not defined appropriately for your application).

Partial Upgrade

This Application has undergone an upgrade to v9.6.x, but not all of the instances were upgraded. Therefore, statistics data will be displayed only for instances that have either been upgraded, or are newly installed.

Working with the finding

To effectively locate the root cause of the performance finding, perform the following:

- Upgrade all instances in this Application. You can see a list of the non-upgraded servers in the AdminPoint > Management > Updates.
- To view data for the old instances, move the instances to a separate Application.

Starved Virtual Machine

This section contains information about the Starved Virtual Machine finding in Precise TPM.

CPU Ready time is the amount of time that a guest virtual machine is ready to run against the physical CPU. However, the VMware CPU Scheduler cannot find time to run the virtual machine because other virtual machines are competing for the same resources. CPU Ready time can be an indicator of saturation on a system.

Working with the finding

To effectively locate the root cause of the performance finding, perform the following:

- Examine the statistics for the virtual machines sharing the ESX Server of the starved virtual machine, and look for virtual machines that use a high level of CPU usage.
- Refer to VMware's documentation on CPU management for solutions.

VM Memory Swapping

This section contains information about the VM Memory Swapping finding in Precise TPM.

Swap wait time is the time CPU waited for memory swap-in. Memory swapping almost always causes performance problems with the virtual machine whose memory is being swapped. It can also cause performance problems for other virtual machines due to the added overhead of managing swapping. VMware ESX uses swapping as a last resort to maintain correct operation of virtual machines when there is insufficient memory available to meet the needs of all virtual machines simultaneously.

The basic cause of memory swapping is memory over-commitment using virtual machines with high memory demands.

Working with the finding

To effectively locate the root cause of the performance finding, perform the following:

- Examine the statistics for the virtual machines sharing the ESX Server of the suffering virtual machine, and look for virtual machines that use a high amount of memory.
- Refer to VMware's documentation on Memory management for solutions.

Virtualization Events Detected

This section contains information about the Virtualization Events Detected finding in Precise TPM.

Virtual machine events inform you of anything that occurs during the lifetime of a virtual machine. Any event on your application's virtual machines is something that is irregular and should be considered when checking performance issues.

Working with the finding

To effectively locate the root cause of the performance finding, perform the following:

- Examine the events that occurred for the application's virtual machines. Look for any changes in the performance graphs to see if the events might have had any influence on the virtual machine's behavior.