Interpreting the displayed data

This section includes the following topics:

- About Tier entities and metrics

About Tier entities and metrics

With Insight, you can examine the performance of various business applications and their accompanying components and Tiers. For each Tier, the Tier area provides a slightly different performance perspective which reflects the differences between the Tiers. For each Tier, the graphs in the Tier area compare the performance of entities that are related to the Tier.

When you examine the response time, each graph breaks the response time down into the various Tier states to help identify the nature of the problem. This breakdown is also Tier-dependent.

About entities for OS

OS displays information on the following entities:

- Server identifiers
- Process identifiers
- Citrix identifiers

About server identifiers

For OS, the Tier area displays the following information for each server:

- **Server**. The name of the server.
- **Server Type**. The name of the operating system, number of CPUs, and number of bits (32 or 64).
- **Server Load**. The average number of processes in the CPU queue during sampling.
- **CPU**. The percentage of total used CPU time.
- **CPU Times (Summed)**. The summed time of CPU usage in the following format: HH:MM:SS.
- **CPU**. The percentage of time the server used the CPU in User mode.
- **User CPU Summed**. The summed time the server used the CPU in User mode.
- **System CPU**. The percentage of time the server used the CPU in Kernel mode. On some platforms, Kernel mode is also known as System or Protected mode.
- **System CPU Summed**. The summed time the server used the CPU in Kernel mode. On some platforms, Kernel mode is also known as System or Protected mode.
- **Wait I/O CPU**. The percentage of time the CPU was idle, but processes waited for I/O operations to complete.
- **Wait I/O CPU Summed**. The summed time the CPU was idle, but processes waited for I/O operations to complete.
- **Other CPU**. The percentage of time the CPU was in other miscellaneous states.

> ⓘ This counter may have non-zero values only on HP-UX, LINUX, and other CPU Summed platforms.

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- **Page Faults**. Minor and major page faults.
- **Page Faults/sec**. The rate of minor and major page faults per second.
- **Physical Memory (Avg)**. The average physical memory in use.
- **Physical Memory Utilization**. The percentage of server physical memory in use.
- **Virtual Memory (Avg)**. The average virtual memory in use.
- **Virtual Memory Utilization**. The percentage of server virtual memory in use.
- **Processes Executed**. The number of new processes with the same identifiers.
- **Concurrent Processes (Avg)**. The average number of processes on the server.
- **Context Switches/sec**. The rate of switches for the server between user and kernel mode.
- **I/O Bytes/sec**. The rate of I/O read and I/O write in bytes per second.
- **I/O Bytes**. The I/O read and I/O write in bytes.

The Insight Savvy for OS has the capability to compare server's resource utilization by logical CPUs. Insight Savvy for OS enumerates in each time slice the list of logical CPUs that the server is working on and samples several key metrics per CPU.

The following table shows the available metrics.

- **CPU name/ID**. This is the name or ID that the system assigns to the logical CPU.
- **CPU Times (Summed)**. The summed time of CPU usage in the following format: HH:MM:SS.
- **CPU**. The percentage of total used CPU time.
- **System CPU**. The percentage of time the server used the CPU in Kernel mode. On some platforms, Kernel mode is also known as System or Protected mode.

ⓘ

- **User CPU**. The percentage of time the server used the CPU in User mode.
- **Wait I/O CPU**. The percentage of time the CPU was idle but processes waited for I/O operations to complete.

> ⓘ The term logical CPU is platform specific and refers to the logical representation of a processor by the OS to the running processes. On some platforms it may relate to several physical processors, several processor cores, or part of one physical processor.

About process identifiers

For OS, the Tier area displays the following information for each process:

- **Program**. The name of the process.
- **Commands**. Full command and arguments of the executed program.
- **Process IDs**. PID of the process.

> ⓘ To enable collection of Process IDs, set the Include Process ID Details option in AdminPoint. Open the Warehouse Processes screen, and then open the Operating System Load Parameters dialog. The Process IDs are stored in the PMDB on a time slice aggregation level only.

- **CPU**. The percentage of total used CPU time.
- **CPU Times (Summed)**. The summed time of CPU usage in the following format: HH:MM:SS.
- **User CPU**. The percentage of time the process used the CPU in User mode.
- **User CPU Summed**. The summed time the process used the CPU in User mode.
- **System CPU**. The percentage of time the process used the CPU in Kernel mode. On some platforms, Kernel mode is also known as System or Protected mode.
- **System CPU Summed**. The summed time the process used the CPU in Kernel mode. On some platforms, Kernel mode is also known as System or Protected mode.
- **Wait I/O CPU**. The percentage of time the CPU was idle, but the process waited for I/O operations to complete.
- **Wait I/O CPU Summed**. The summed time the CPU was idle but the process waited for I/O operations to complete.
- **Other CPU**. The percentage of time the CPU was in other miscellaneous states.

> ⓘ This counter may have non-zero values only on HP-UX, Linux, and other CPU Summed platforms.

- **Other CPU Summed**. The summed time the CPU was in other miscellaneous states.

> ⓘ This counter may have non-zero values only on HP-UX, Linux, and other CPU Summed platforms.

- **Page Faults**. Minor and major page faults.
- **Page Faults/sec**. The rate of minor and major page faults.
- **Physical Memory (Avg)**. The average physical memory consumption used by the process.
- **Virtual Memory (Avg)**. The average virtual memory used by the process.
- **Processes Executed**. The number of new processes o the server with the same identifiers.
- **Concurrent Processes (Avg)**. The average number of processes on the server with the same characteristics.
- **Concurrent Threads (Avg)**. The average number of threads for this process.
- **Context Switches/sec**. The rate of switches for the process between user and kernel mode.
- **I/O Bytes/sec**. The rate of I/O read and I/O write in bytes per second.
- **I/O Bytes**. The I/O read and I/O write in bytes.

About Citrix identifiers

Citrix-related statistical counters are collected by the Insight Savvy for OS by using the public Citrix API. Insight uses this information to correlate Citrix metrics with the processes underlying each Citrix session.

The following information is displayed for each process that has been initiated by a Citrix session on the monitored server:

- **Citrix Applications**. The name of the Citrix Published Applications that initiated the session, along with their corresponding resource usage. It is possible to drill down into all Published Applications processes.
- **Citrix Users**. The user name used to logon in to the Citrix server.
- **Citrix client IPs**. The remote client's IP address. This information can be manually correlated with the client IP address, as displayed by Insight Network savvy.
- **Citrix Locations**. The Citrix locations. Citrix locations are not collected by the Insight Savvy for OS. They are automatically generated by Insight FocalPoint if the locations were defined.
- **Citrix Clients**. The remote client's machine name.
- **Citrix Client Latency (Avg)**. The average client latency (in seconds) for each Citrix agent. Baseline information for this counter is not available.

About entities of the Tuxedo Tier

For the Tuxedo Tier, Insight measures the response time of the following entities:

- Tuxedo services
- Tuxedo server processes
- Tuxedo domains
- Tuxedo servers
- Tuxedo users
- Tuxedo client machines identified by the IP addresses

The response time is broken down into the following components:

- **Tuxedo queue time**. The queue time of service requests before process. Queue time is measured only for server processes and is not reported per service.
- **Tuxedo work time**. The processing time of the original service.
- **Tuxedo execution time**. The processing time of services called by the original services. The execution time is not available for entities other than Tuxedo services and Tuxedo server processes. For all other entities, the execution time if included in the work time.

Network time is the round-trip network time between the client and the server. It is only available on the Overview tab and in the Tier area for the Network Tier. To measure network time, you must enable the network-monitoring option.

For additional information, see Installation and Administration.

About entities of the WebSphere MQ Tier

For the WebSphere MQ Tier, Insight measures the response time of the following entities:

- **WebSphere MQ Queue Managers**. The name of the Queue Manager.
- **WebSphere MQ Queue**. The name of the queue.
- **WebSphere MQ Message Types**. The type of the MQ message, such as Request, Reply, Datagram, or Report.
- **WebSphere MQ Messages**. The ID of the message.
- **WebSphere MQ Header Fields**. The MQ header fields, containing Put and Get options.
- **WebSphere MQ Message Bodies**. The message content.
- **WebSphere MQ Reader Applications**. The get application name.
- **WebSphere MQ Writer Applications**. The put application name.
- **WebSphere MQ Servers**. The machine on which the Queue Manager is installed.
- **WebSphere MQ Users**. The put user name.

> ⓘ To collect detailed data (message ID) or extended data (message ID, header fields, and message body), edit the parameters of the MQ process in AdminPoint by setting the required collection mode.

For additional information, see Installation and Administration.

The response time is broken down into the following components:

- **MQ queue time**. The time a message spent in a queue between the Put and Get calls.
- **MQ work time**. The time the application spent processing a message from the Get to Put calls.

Network time is the round-trip network time between the client and the server. It is only available on the Overview tab and in the Tier area for the Network Tier. To measure network time, you must enable the network-monitoring option.

For additional information, see Installation and Administration.

About entities of the Oracle Applications Tier

For the Oracle Applications Tier, Insight measures the response time of the following entities:

- Oracle Applications forms
- Oracle Applications users
- Oracle Applications applications
- Oracle Applications servers
- Oracle Applications client machine, identified by the IP address
- Oracle Applications instances, identified by the Form server listener

The response time includes the processing time of Oracle Applications client requests, such as application logic and database access.

Network time is the round-trip network time between the client and the application server. Network time and packets are not available for Oracle Applications instances, which are configured to work in Forms Listener Servlet mode.

About entities of the Other Tier

The entities displayed for the Other Tier depend on the Other Tier type (a standard regular Other Tier, or Citrix type) as defined in the Application dialog box in AdminPoint.

For the standard regular Other Tier, Insight measures the response time of the following entities:

- Client IPs
- Server IPs
- Server

- Locations
- Server (Grouped)

The response time includes the server work time, which is the processing time of the original service.

Network time is the round-trip network time between the client and the server. It is only available on the Overview tab and in the Tier area for the Network Tier.

The statistical counters Network Bytes in MegaBytes [M] and TCP Packets in Kilo packets [K] are available. For the Citrix type Other Tier, Insight measures the response time of the following entities:

- Client IPs
- Server
- Locations
- Server (Grouped)

For the Citrix type Other Tier, Insight also measures CPU utilization and average Citrix client latency for the following entities:

- Citrix Applications
- Citrix Users
- Citrix Clients
- Client IPs
- Server

About entities of the Add-on Tier

A user or third-party vendor can collect performance data from any Tier. The Tier does not need to be supported natively by any of the Precise family of products. That means the user or third-party vendor can define an Tier: the Tier name, its entities and counters, and develop the Collector that collects this data. The Insight user interface functions the same as for all other Precise Tiers.

For an Add-on Tier, Insight can measure the following metrics for Add-on Tier activities:

- **Response Time**. Describes the working time of the application itself to complete an activity.
- **Statistics**. Displays various statistical metrics relating to the activity (such as: message size, number of users).
- **Executions**. Represents the number of times an activity occurred in one time slice (every 15 minutes).

The response time can be broken down into various components, such as:

- **Work time**. The processing time for the application.
- **Queue time**. The queue time of application requests for processing.
- **Database time**. The processing time spent in the database.
- **Client time**. The total time the client spent during the execution.

Insight displays the metrics for the Add-on Tier as Top *n* graphs grouped by the various entities (attributes). The Add-On Tier Collector reports the metrics for each activity. For example, if each Add-on Tier activity contains information about a Transaction name, User name and Server, then Insight will display Top Transactions, Top Users, and Top Server graphs.

For additional information, see the Precise Insight SDK User Guide.

About Network-related entities

When Network is selected, the Tier area shows summary information for all Tiers in your application that are installed and integrated with the Insight Savvy for Network.

The summary information includes the following data:

- Network identifiers
  - Tiers
  - Client IPs
  - Instances
  - Servers
  - Server IPs
  - Locations

- Statistical counters
  - Network Time
  - Network Bytes
  - TCP Packets
  - Executions