System Performance Acceptance Criteria Template Description

The System Performance Acceptance Criteria template is created by the IPT during the System Requirements Analysis phase of the IPT process. The sample spreadsheet is designed to illustrate a model for a typical client/server application. Application Performance Analysis Models may require different fields, depending on project objectives, situational factors, etc.

I.	**IPT Name:**	
II.	**Deliverable Name:** System Performance Acceptance Criteria	**Date Completed:**
III.	**Contact Information**	
	Name	Channel Unit
IPT Sponsor		
Channel Task Manager		
CIO Task Manager		
Contractor Task Manager		
IV.	**Task Order Number:**	

[1] Performance Hour---The peak or average hour during which the application's performance will be reviewed.

[2] Process Name/Dialog Number---The unique identifier or name of the critical business process or dialog to be examined for performance.

[3] Daily Volume---The number of times that the process or dialog will be performed in the course of the day.

[4] Performance Hour Conversion Factor---The conversion switch that allows the volume of the daily business process to be converted to the rate of the performance hour. For example, Dialog 1 in hour 1 may have a peak workload, but hour 2 may not have any workload on the application. This conversion switch allows the analyst to determine the workload without having to modify any previously calculated rates.

[5] Dialog Occurrences per Process---The average number of executions of the dialog per business process.

[6] Dialog Occurrences per Performance Hour---The number of times the dialog is invoked during this performance hour.

[7] Window Number---The reference number for each window that is being modeled in a given dialog.

[8] Resource Requirements---Section containing the calculations and parameters to determine the workload characteristics of a processing node (client, server, etc.).
Note: Items [9]-[21] described below must be included for a client section and a server section. The basic calculations for resource requirements must be applied to both client and server.

[9] CPU Speed---The rated speed of the processor, expressed in millions of instructions per second (MIPS).

[10] Average I/O Time---The total time for seek time and rotational delay time. These numbers are readily available from vendor documentation on the disk drives.

[11] Window Occurrences per Dialog---The average number of executions per dialog for each window. This column is repeated in the server section to denote the number of server processes for a given dialog.

[12] Execution Step Name---The lowest level process that is used to measure CPU or I/O resource requirements. Data access should be referenced from the Call Pattern object (see the Call Pattern sample for more information).

[13] Execution Step Occurrences per Window---The average number of execution steps for the specified window.

[14] Total CPU Instructions per Execution Step (path length)---The average number of processor instructions for each execution step. Published data for most applications can be obtained through various user groups and vendors.

[15] CPU Seconds per Window Execution---The number of seconds required to execute the steps for the specified window.

[16] Probability of a Physical I/O---The probability that an application will have to physically read or write the requested record, as opposed to being able to pull it from the buffer. Modeling software may be available to the project team to calculate these numbers. If the proposed application is similar to an existing one, examining the current application may give reasonably accurate figures.

[17] I/O Seconds per Window Execution---The amount of I/O required for the execution step for the specified window.

[18] CPU Load Characteristics---The CPU utilization for a specific dialog, given the volume of dialogs in the specified performance hour. To get this number:

1. Compute the total CPU time for each window type in a given dialog.
2. Multiply the total CPU time (per window) by the number of window occurrences in the dialog.
3. Add this value for all windows of the given dialog.
4. Multiply this sum by the volume of dialogs in the performance hour.

5. To get the percentage CPU utilization, divide this value by 3600 (seconds per hour).

[19] I/O Load Characteristics---The I/O utilization level for a specific dialog, given the known volume of dialogs in the specified performance hour. To get this number:

1. Compute the total I/O time for each window type in a given dialog.
2. Multiply the total I/O time (per window) by the number of window occurrences in the dialog.
3. Add this value for all windows of the given dialog.
4. Multiply this sum by the volume of dialogs in the performance hour.
5. To get the percentage I/O utilization, divide this value by 3600 (seconds per hour).

[20] Total CPU Load---The CPU utilization level for all dialogs in the specified performance hour, computed by summing each dialog's CPU utilization obtained in [18]. For client workstations, this figure includes all the clients on the site.

[21] Total I/O Load---The I/O utilization level for all dialogs in the specified performance hour, computed by adding each dialog's I/O utilization obtained in [19]. For client workstations, this figure includes all the clients on the site.

[22] Number of Client Workstations---The number of client workstations at a site.

[23] Average CPU Workload---Average CPU workload per client workstation.

[24] Average I/O Workload---Average I/O workload per client workstation.
The structure of this sample spreadsheet covers online transaction processing and client/server at a single site. With some modification, it could also cover transaction-driven batch processing. This spreadsheet example does not apply to sequential batch, to online loads such as analysis-type systems (Focus, Express, etc.) and time-sharing systems, or to wide area networks.

Typically, the performance hour identified by this spreadsheet will be a peak hour that occurs during the day. In some cases, there will be several peak hours, and the project team might want to examine other peak performance hours.

It is usually only necessary to identify the critical or key transactions of the system; the key transactions should account for approximately 70-80 percent of the workload. In determining the number of key transactions to be included, each environment must be analyzed to assess the level of performance risk.

This performance model does not include contention effects, as it is only designed to provide a first-cut estimate of resources. This model is suitable for identifying potential problem areas, such as a situation in which the expected processing time requires more than a fraction of the capacity (50 percent CPU, 25 percent I/O). For a more careful analysis, use specialized performance modeling tools.