Utilizing the Personal Computer for MPE Performance Management

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Introduction

Coupling the personal computer as the presentation manager with a host based MPE mainframe data collector is the basic infrastructure found in a powerful and user friendly performance management solution available now from HP. The product LaserRX, provides the local System Manager or Performance Specialist the ability to view in a full color, graphics based, MS Windows environment the performance information collected on the MPE host over a predetermined user defined time period. The ability for the user to define what metrics to collect, when to collect, and how to display (by hour, week, or month) provides a limitless amount of performance metrics. LaserRX's flexibility allows the user to view the performance issues that they feel are pertinent to their site in a time frame they feel is appropriate.

Having used the product over the past few months I'd like to share the positive experiences we have had with LaserRX. A very brief overview will provide a basic understanding of the product structure. Examples of the displays that LaserRX provides will be shown along with examples and ideas such that System Managers can see for themselves the potential of LaserRX in the area of performance management.

Product Structure

Prior to LaserRX, I as a System Manager of a multi-CPU HP3000 shop had available to me an incomplete set of performance tools and services. OPT/3000 provided me with the immediate "what's going on now..." information needed in periods of reactive system tuning. On the other end of the spectrum, there was HPTrend and its' ability to show "where we have been.." albeit in a rather non-flexible fashion. The missing link was the ability to view in the local environment the time periods found between the immediacy of OPT reports and the long term perspectives of HPTrend. From my experience LaserRX fills this void with amazing functionality and flexibility.The System Manager can determine when to collect data, what data to collect, and most importantly how to view the data using LaserRX's MS Windows full color graphics capability. Performance metrics such as memory bottlenecks, CPU utilization, Disc Activity are available with ease from LaserRX. In addition, LaserRX allows customization of local environment classes. Classes are easily defined by the System Manager and allow for a site to determine who their CPU consumers are. Examples that I have used for classes are HPDeskmanager, Print Spooling, plus several unique application systems (Cost Accounting, Order Processing, etc). Each class mentioned here was defined based on the fact that it was deemed important to our shop, we wanted to get a handle on how these classes were effecting our system. LaserRX allowed us to do this task easily and effectively. Thus our site specific classes coupled with global performance displays allows us to get a complete picture of how our machine is performing during time periods that we deem important.

The structure of LaserRX is a two tiered design, resident on the MPE V/E based machine is the data collector. This batch job, a low CPU consumer, continuously gathers the pertinent (defined by the user! - remember we collect what we think is important) performance metrics. Three log files residing in the SYS account are the sole areas of data. No other resources are used for data storage. Your system log files and network log files remain untouched. Log files used by the host data collector are of a circular design with the size determined by the System Manager. This allows for flexible data management of the performance metrics collected on the host. Local sites can size their log files to contain 2 days, 2 weeks, or 2 months or whatever depending on their reporting needs and available disc space resources.

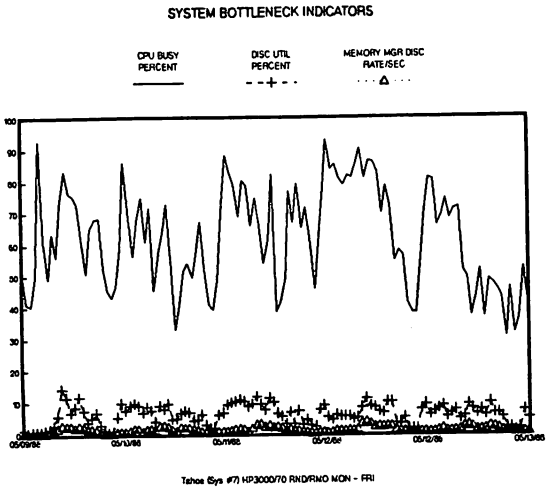
The complementing side of the architecture is the PC. On an HP Vectra or Vectra compatible, the requirements are: MS Windows 2.0, MS-DOS 3.1 or later, and a datacomm link (serial or 802.3). The workstation platform is the presentation engine for the host based collected data. Full color graphs on CPU bottlenecks, Transaction Response time, CPU utilization, Disc Activity plus user defined classes can be displayed on demand with a few easy "clicks" of your Mouse.

Obviously, the merger of the PC with its' sophisticated display environment coupled with an intelligent and flexible data collector provide limitless ways to view performance management issues. System Managers now have a solution to see where they have been, who their consumers are, and with LaserRX's ability to export data to other PC packages, a mechanism to model the raw data to fit their reporting needs.

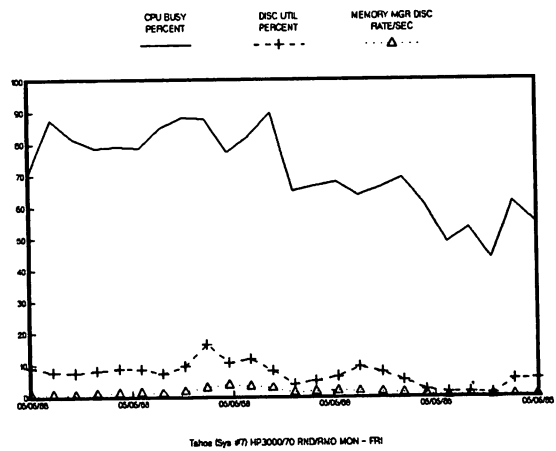
The amount of raw data is truly staggering. While this could be thought of as a negative point I view it as one of the most positive features inherent in LaserRX. Truly, only a day-to-day member of a site can grasp what data (performance) metrics are important. LaserRX lets you choose! Areas that can be displayed/printed from the PC based Windows environment are:

CPU Bottlenecks
CPU Utilization
Disc Transactions
Transaction Response Time
User defined Classes

Below are some examples of "traditional" system performance graphs. All of these graphs were created with the same data points, the time focus and class descriptor were the modifying parameters. While it is hard to mimic the PC color based graphics environment in a black and white paper such as this, the graphs do represent an example of the power of LaserRX.



LaserRX Example: Five Day System Bottleneck Graph



LaserRX Example: One Day System Bottleneck Graph

In addition to the traditional performance measurements, LaserRX also graphs the user defined classes. The classes are up to the creativity and need of the local System Manager. Definitions for the user defined classes as well as the triggers for the generic or traditional measurements are resident in the file "SCOPPARM". This parameter file is configured by the local System Manager in a very forgiving syntax. SCOPPARM has two basic components, the first is the traditional system workload or "global" metrics. The second component of the file contains the locally designed class definitions. An example of a SCOPPARM file used in our shop on a HP3000 S/70 is shown below:

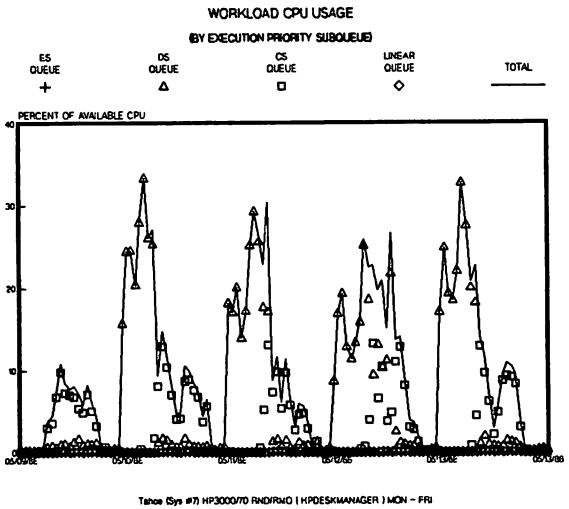
LaserRX Example: Host Mainframe Parameter File

```
ID Tahoe (Sys #7) HP3000/70 RND/RMO
*************************************************************************
          **>>Global CPU LaserRX Metrics<<**
*************************************************************************

** Log all three types of records with log command **

LOG GLOBAL WORKLOAD PROCESS

** Threshold interesting processes are ones that: used 20% of the CPU, or **
** had >10 I/O's per second or > 10 second response time, log these process**
** events to the LaserRX Process log file.                              **

THRESHOLD CPU=20, DISC=10, RESPONSE=10.0

** Use default response time buckets **

RESPONSE RANGE=.5, 1, 2, 3, 4, 5, 10, 20, 40
FIRST    RANGE=.1, .2, .3, .4, .5, 1, 2, 3, 4
THINK    RANGE= 1, 5, 10, 20, 30, 40, 50, 60, 120

*************************************************************************
          **>>LaserRX Class Definitions<<**
*************************************************************************

** Class for performance tools **

CLASS=PERFORMANCE TOOLS
FILES=OPT.PUB.SYS,@.SCOPE.SYS

** Class for Datacomm **

CLASS=MPE DATACOMM
INTERACTIVE=DS@.@.SYS,@.NET.SYS
BATCH=DS@.@.SYS,@.NET.SYS

** Class for HPDesk **

CLASS=HPDESKMANAGER
FILES=@.HPMAIL.SYS,MAIL@.@.HPOFFICE

** Class for Maestro/Tapes **
```

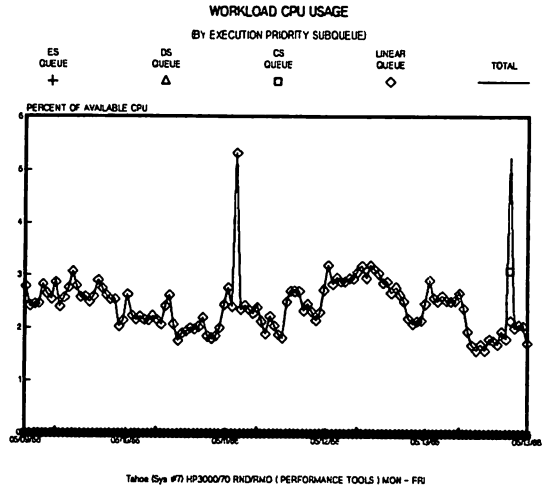
```
CLASS=MAESTRO/TAPES
FILES=@.@.CCC

** Class for Print Spooling **

CLASS=PRINT SPOOLING
FILES=@.@.RSPOOL,@.PSPOOLER.SYS

** Class for PC software monitors **

CLASS=PC SOFTWARE
FILES=MONITOR.PUB.SYS,@.PPC.SYS,@.PPCUTIL.HPOFFICE,PCLINK.PUB.SYS
```

Using this example of a SCOPPARM file we can now present some user defined class graphs. Class graphs is an area that makes LaserRX so powerful. The ability to determine who the system consumers are is up to the discretion of the System Manager. It is now a simple task to found out what these consumers did.

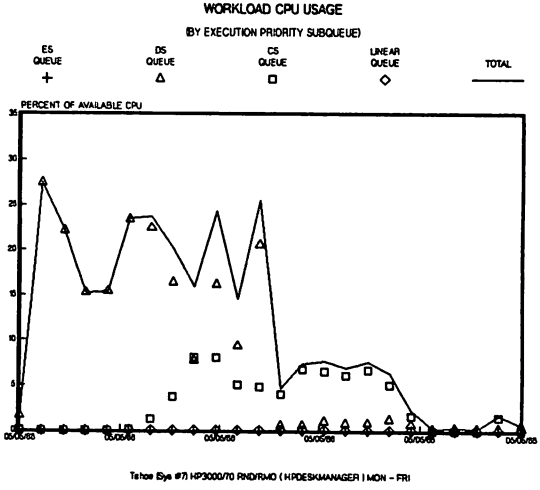
Now let's look at some more LaserRX graphs. Again these are not exactly as they will appear on a PC, but they are representative of the product:



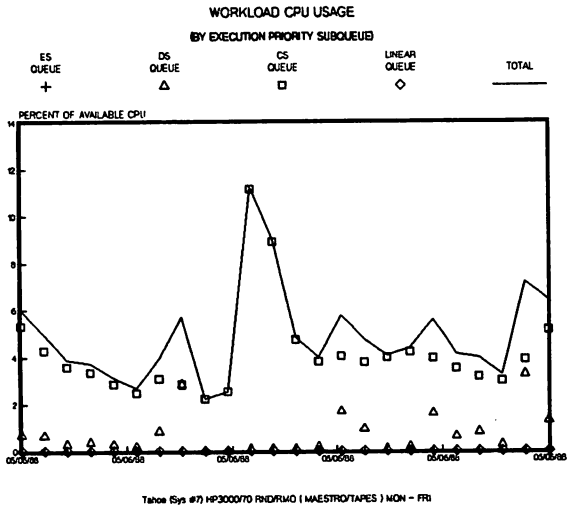
LaserRX Example: HPDeskmanager Five Day Workload Graph



LaserRX Example: Performance Tools Five Day Graph



LaserRX Example: HPDeskmanager One Day Graph



LaserRX Example: User Defined Class (Third Party Software) Graph

Potential

Now that we have discussed and presented a very brief overview of the product structure, lets turn our attention to what solutions the product can provide. Flexibility and freedom are the key phrases. Data collected, especially class metrics are user controlled. As a System Manager you have the capability to define what to collect and how to present the LaserRX data points. Resolution is up to the PC user. Hours, days, or weeks can be presented depending upon the resolution required. In our uses of LaserRX, we graph and display the last business week (Mon - Fri) in graphs of 24 hour days. This allows us to present to our user community an easy to read graphical based representation in full color of where our machines operated.

Each graph generated by LaserRX has its own useful and unique purpose. For example, the classic graph of CPU Utilization presents an overview in a stacked line chart manner showing the partitioning of the CPU as a resource. Interactive consumers, batch consumers, system processes, memory management, ICS overhead, and Paused for I/O are represented by a different color allowing for quick identification of problem areas. In analyzing the display, problem areas are easily identified by color and by large percentages of the overall time period. System Managers can also get a good idea of the distribution of interactive versus batch processing utilized on the machine from this display.

Transaction Response Times, long a desired feature in HP performance tools is available in LaserRX. Metrics in this display are: Time to first response, Average time to prompt, and Transaction rate (x 1000). The first two metrics are in seconds for interactive sessions. Transaction rates are the number of terminal transactions over time for the selected measurement period. Our use of these graphs has been to compare periods of high CPU use versus low periods to gauge the impact of a busy system in regards to user

response time. Unexpectedly this graph also helped us to identify a performance bottleneck that, unknown to us, was happening in the early morning hours due to some hardware anomalies. Again the flexibility of the product is seen here. We were not aware of this problem, yet by graphing "where we had been" over a previous weeks data points we recognized and resolved a performance problem.

Class graphs are useful in further analyzing the partitioning of the interactive and batch applications resident on the machine. By properly defining classes, answers to questions like "How much is HPDeskmanager consuming on the machine?" are easily answered. Class data provides metrics that allow for System Managers and the Application Programming staffs to help evenly distribute system loads. Trends can be easily seen allowing for changes in application consumption to be easily identified.

PC Export Facility

Extended and unique functionality is found in LaserRX's Export facility. This portion of the product allows the PC user from their Windows session to "click" on a range of data points and to export them out of the LaserRX environment and into MS DOS data files. Once resident in these MS DOS data files they can be incorporated into several MS DOS packages. Spread sheets (LOTUS 1-2-3, Excel by Microsoft, etc) or pure graphics packages (Graphics Gallery) can be used. This export facility allows the LaserRX user to remove and isolate the performance metrics that they wish to examine in more detail out of the LaserRX environment.

At this point we have learned that LaserRX data moves easily and effortlessly from the HP3000 data collector, thru the LaserRX MS Windows environment and finally to a user defined MS DOS data file. All accomplished via clicks of the Mouse or a few easy keystrokes. Again, the data that is ported is truly determined by the System Manager. The LaserRX user determines what exactly to them is important to collect, to view, and to export!

Conclusion

As a System Manager with several machines to support, LaserRX has been an immediate and positive addition to my tool set. Performance metrics are easily gathered and displayed. I have the flexibility to define what metrics are gathered and when. In our shop LaserRX has become a transparent data collector that we use on a weekly basis. The product has allowed us to make intelligent choices on hardware issues, third party software evaluations, and the week-to-week performance displays we present to our user community.

Areas that before were best guesses will be areas of defined and represented measurements with the use of LaserRX. Capital budgeting decisions can now be based on exact needs and not feelings. Load balancing is easily attained, application tuning as well, are readily available results from LaserRX outputs. This tool, in its' first release, is a magnificent solution to help System Managers move from a reactive system resource utilization mindset to a proactive mindset. Whether your shop has one system or several, this product can make system resource measurement a proactive science. Once exposed to LaserRX, the ability to extract and analyze is in the hands of the user. A shop can now easily and quickly track where their system(s) have gone, allowing for knowledgeable and timely decisions on how they can prepare for the future.