Announcing VPAT (Vicom Infinity Performance Analysis Tool)

All mainframe shops today face the dual challenge of how to control costs while still providing acceptable performance. Since software costs make up the largest part of these costs and are often tied to resource consumption, systems programmers face a balancing act of trying to limit consumption without negatively impacting performance. This poses a major challenge for many shops who have lost experienced systems programmers. The result is a series of try one option and see what happens. But the resulting performance problems can have a major impact on a business, especially when those bet your business, critical applications are affected. These problems require a tool and methodology for quickly diagnosing performance problems and relating those problems to their root causes.

VPAT is an easy to use tool, designed to aid the z/OS systems programmer perform two critical functions. These are Performance Management and Capacity Planning. VPAT lets you look at current utilization and performance metrics to assess the health of your z/OS systems. An Artificial Intelligence (AI) function in VPAT can identify the root causes of poor performance and provide suggestions on ways to improve performance. Utilization data can be shown graphically in a number of ways such as utilization by LPAR (Figure 1).
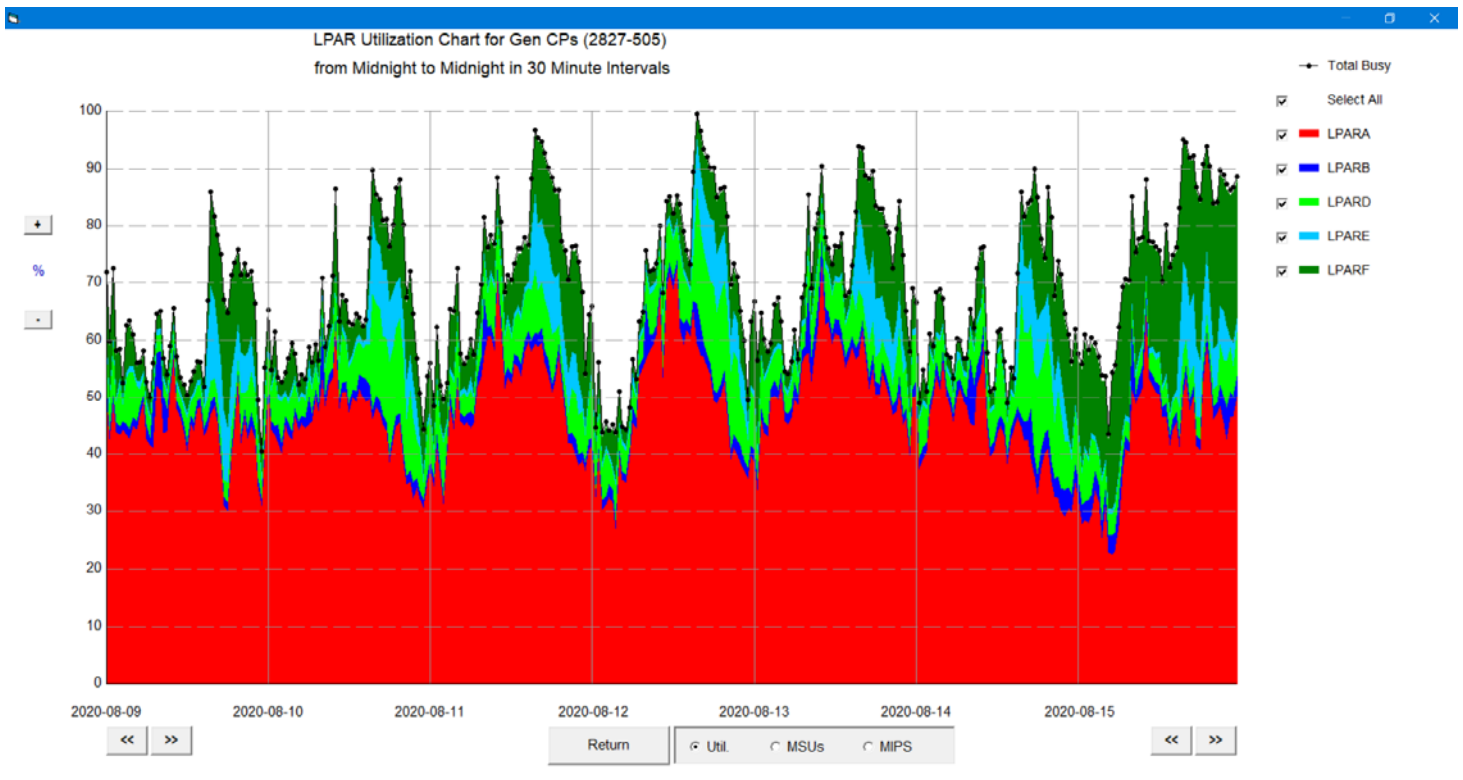

Figure 1. Weekly LPAR Report

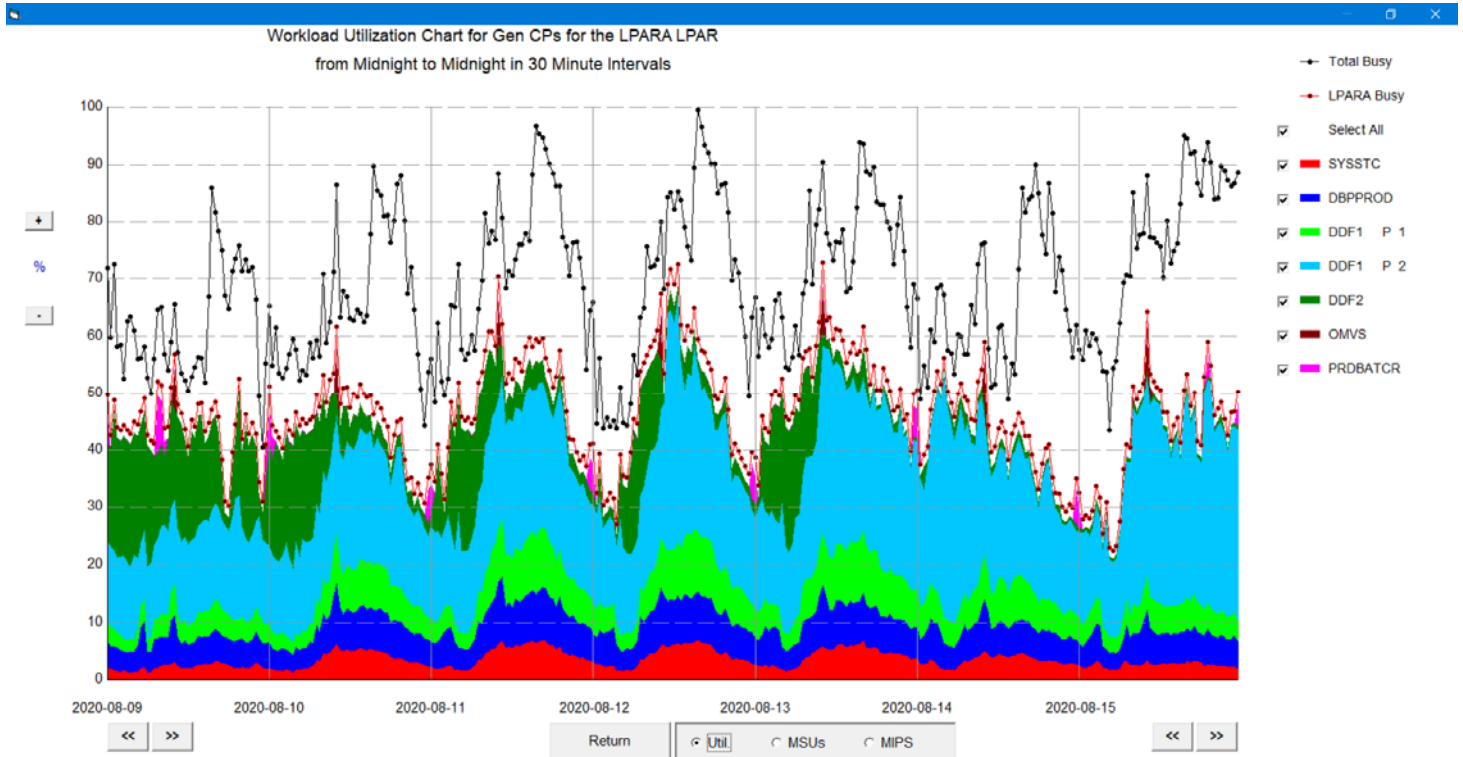Utilization can also be shown at the workload level for a specific z/OS image (Figure 2).

Figure 2. Weekly Workload Report

VPAT can display performance metrics for individual workloads and show the reasons for Delays (Figure 3).
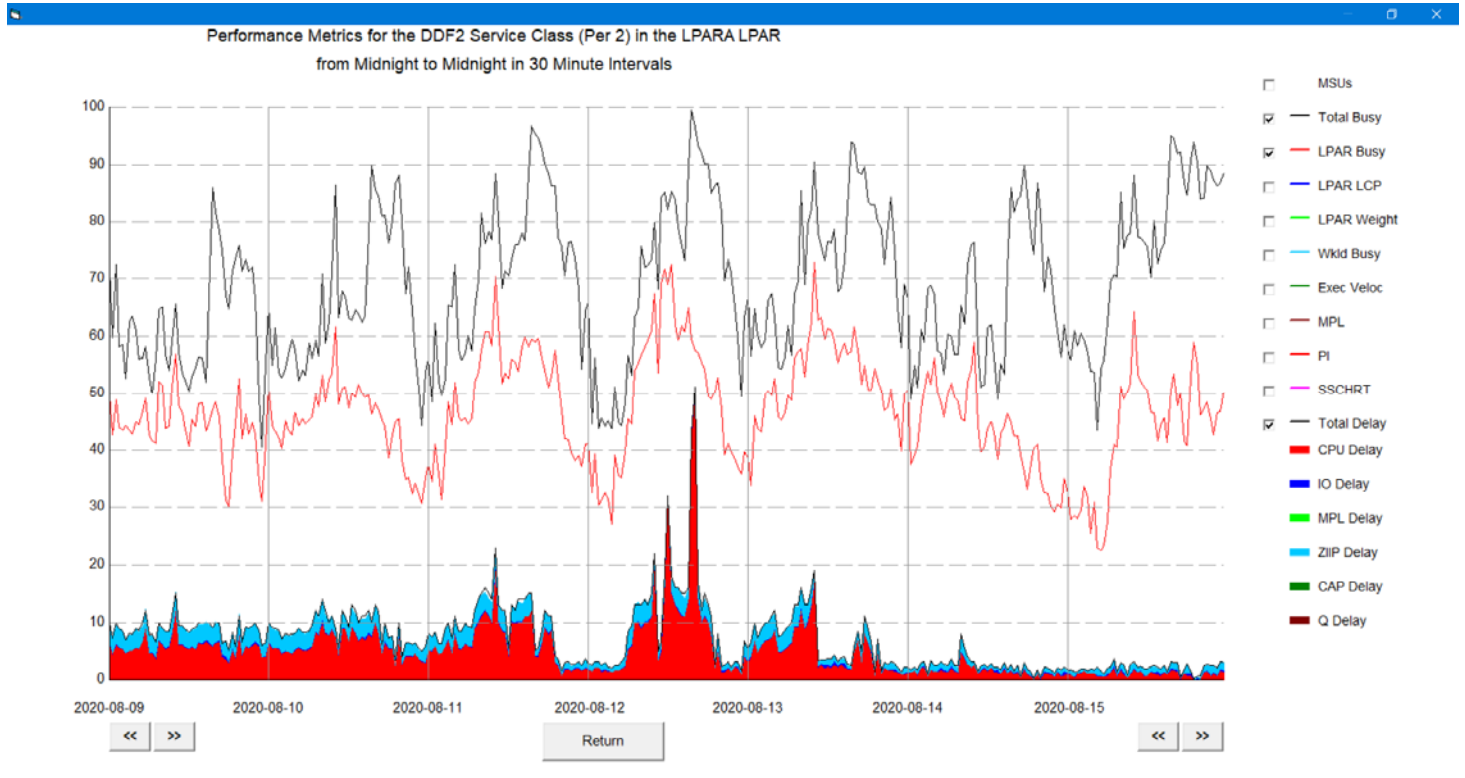

Figure 3. Workload Performance Metrics

VPAT can drill down to a specific interval and diagnose the root cause for poor performance during that interval (Figure 4).

Performance Analysis

LPAR	Service Class	Period	Priority		Date	Time
LPARA	DDF2	2	470	Selected Interval	2020-08-12	16.00.00

Performance Analysis Summary

Top 2 Delay Factors are CPU Delay and ZIIP Delay.
Total Delay is 51.00%, CPU Delay is 50.00%, ZIIP Delay is 0.70%.

Total CPU busy (96.47%) is near 100% and this LPAR Busy (57.48%) is near or over its Weight (59.81%).
LPARs running near or over their Weight while Total Busy is near 100% will experience performance problems.
Consider raising the Weight for this LPAR.
Keep in mind that raising the Weight of one LPAR may impact performance in another LPAR.

Workload has an Importance of 4. Consider raising the Importance to 3.
Keep in mind that raising the Importance of one Workload may impact performance of another Workload.

CPU Contention Summary:
   Based on LPAR Defs and LPAR usage, maximum capacity available to this LPAR is 61.01% (based on LPAR Weights and actual utilization).
   LPAR is using 57.48% of total CEC or 94.21% of maximum available capacity. Contention increases exponentially as this metric nears 100%.

Return

Figure 4. Performance Analysis for a specific interval

VPAT includes a capacity planning function that makes it easy to model new processors against current utilization (Figure 5).
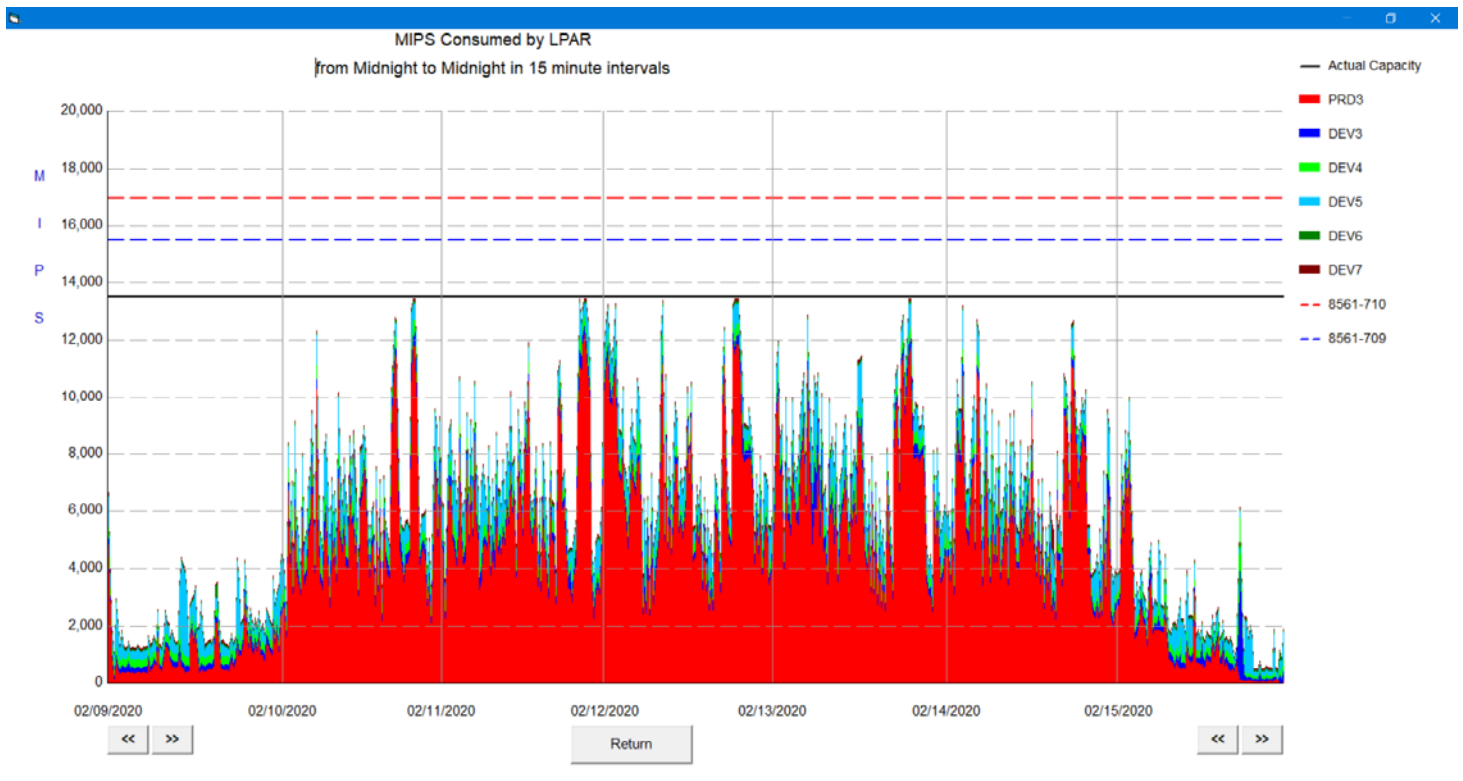

Figure 5. MIPS Projection for capacity planning

You can also model expected growth scenarios as:

- a total growth rate for all LPARs, or
- a separate growth rate for each LPAR, or
- a separate growth rate for each workload within an LPAR

VPAT also includes a function for storing utilization data into a historical data base. This can be used for long term tracking of workload trends or MSU usage (Figure 6).
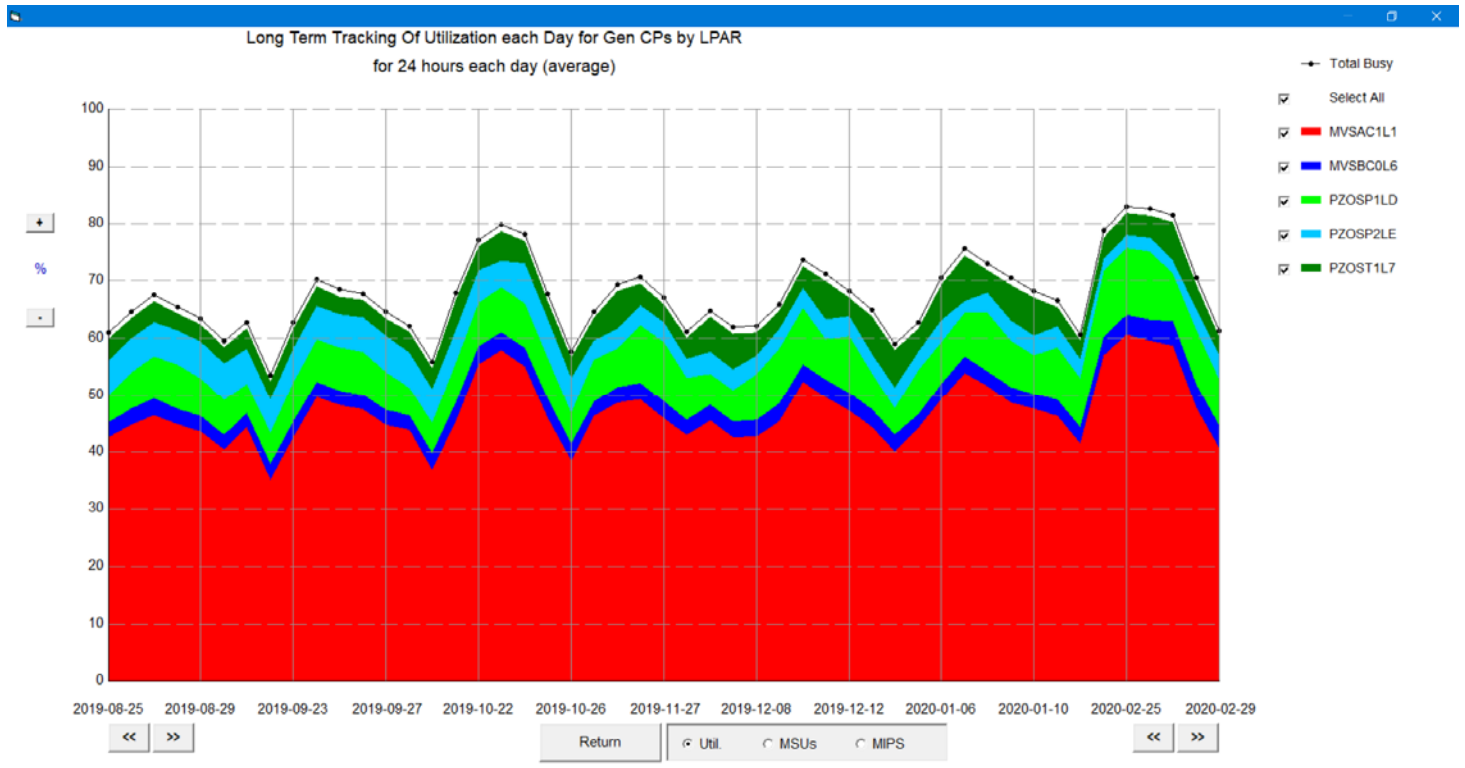

Figure 6. System Utilization Trend report

Integration for direct import from Zebra – open-source SW

Zebra is an incubation open-source SW project by Linux Foundation's Open Mainframe Project Zowe. VPAT has an interface to import both RMF I and RMF III real-time data into VPAT. To learn more about Zebra and it's code, visit www.github.com/zowe/zebra

VPAT also includes a Performance Modeling function (Simulator). The Simulator can be used to model the effects of change on workload performance. Changes can include workload volumes or multiple changes to the configuration. Configuration changes can include changes to the number and speed of CPs, LPAR definition changes, or even the priority of workloads.