What I Learned This Month: The One-Page Capacity Report
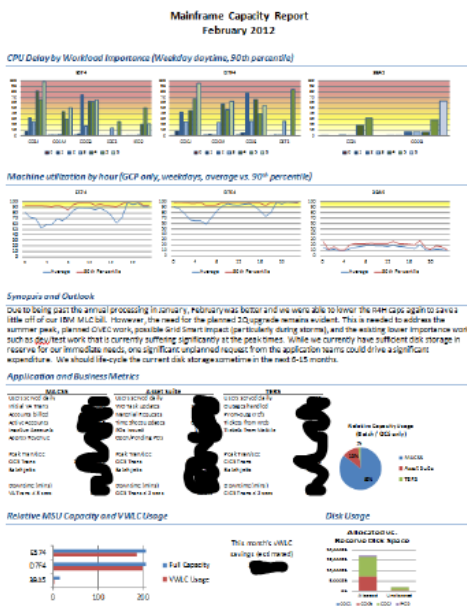
Scott Chapman

American Electric Power

I gave up creating annual capacity plans a few years ago. It took several days of effort to produce what I thought was a very thorough document detailing the changes over the past year and my expectations for the next 12-18 months. Unfortunately there was no indication that anybody actually read or acted on them. One year when I was too busy to produce it, I wasn't surprised that no one commented on the lack of an annual capacity plan. The lack of a formal document has occasionally nagged at me, but there have been plenty of other interesting things to keep me busy.

So when I received the news that management now wanted regular (monthly) capacity reports, I was actually somewhat happy. The downside was the restriction that came with it: no more than one or two pages. While that makes good sense to me (any longer and we're likely back to nobody reading or acting on it), it is a challenge to condense such a complicated story into a single page or two.

What I created was a single-page report with 5 sections. Because some of the graphs are relatively small, it actually works better in printed form. In that form, the back of the page contains a key that describes each section. That key is shown below, in a slightly smaller form. I realize that you can't read these graphs, but the overall form of the report is more important than the actual values and you can find a readable form at the end of this article.

The report starts with bar charts showing the relative CPU delay suffered by workloads on each mainframe, broken down by LPAR and workload importance within the LPAR. These are 90th percentile from daytime work hours during

weekdays. In other words, it reports on the times during which people are likely to complain about a lack of capacity. And it avoids being skewed by weekends and overnight where CPU capacity is either generally not a problem, or at least not a significant concern for us.

I show the CPU delay stats first because mainframe systems often run very highly utilized, and so running at 90% busy does not necessarily indicate a capacity problem. However, I knew I couldn't get away with not showing the utilization values, so the second section shows both the average and 90th percentile utilization values for weekdays for each machine. Here I decided to show the average as well as the 90th percentile because it was easy to compare those values, and the relative distance between them gives you a feel for the distribution of values: if the average and 90th percentile values are very close together, you can reasonably assume that the distribution is pretty narrow.

Having shown the amount of suffering due to a lack of capacity and the overall machine utilization, the middle section is a written description of interesting things that might affect capacity. The full text is not shown here, but this is where I also mention that we're planning to do an upgrade soon.

Because no capacity investment should be made to systems that aren't providing value to the business, the fourth section contains a selection of application and business metrics for our three most important applications. In here I mention how much revenue the applications process, selected business events (such as customer calls), the number of users served, down time, and some very high level performance numbers. The pie chart is a measure of relative capacity usage for each application.
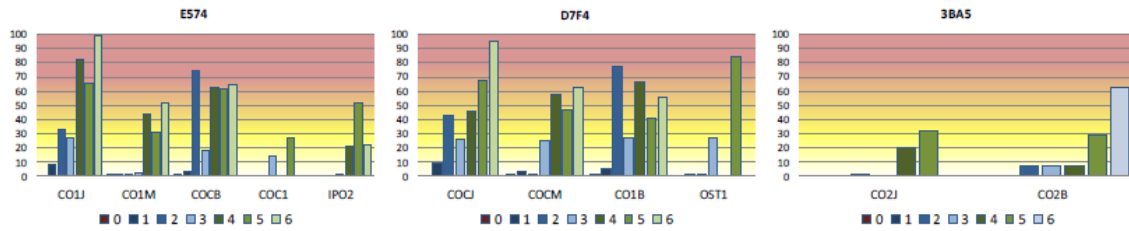
The final section shows the relative capacity of each machine in MSUs as well as the R4H (Rolling 4 Hour average) usage for the month which sets the IBM MLC software costs. The approximate savings obtained from using VWLC is shown to help illustrate the tie between our capacity decisions, performance, and software cost. Forgoing the shown savings would provide a few hours of capacity relief per month, although the exact amount of potential relief is not described in the report. The disk capacity is stuck in the lower right corner primarily because that is the spot I had left on the page. It probably deserves a more prominent spot.

As with anything, I'm not 100% satisfied with some aspects of this report, but overall I am quite pleased with how it turned out. I also have the infrastructure in place to be able to generate it semi-automatically every month, so it should only take about an hour of additional work each month, which was a key requirement for me. Most importantly, the management feedback I've received so far has been positive.
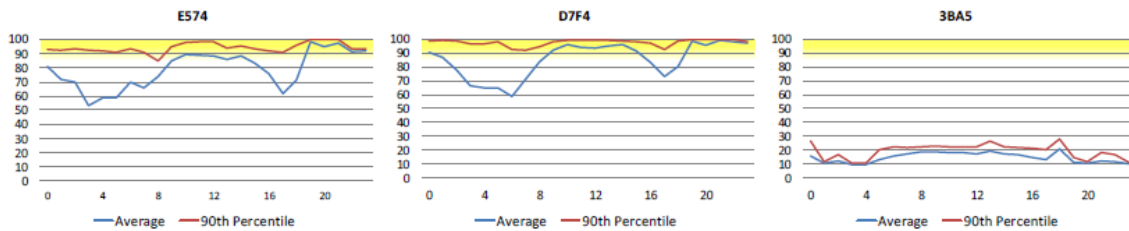
As always, if you think I've got it all wrong, or have ideas for improvements, please email me at sachapman@aep.com and let me know!

Since probably a few of you *are* interested in the details of the charts, larger versions of each section can be found below.

CPU Delay by Workload Importance (Weekday daytime, 90th percentile)

E574

D7F4

3BA5

Machine utilization by hour (GCP only, weekdays, average vs. 90th percentile)

E574

D7F4

3BA5

Synopsis and Outlook

Due to being past the annual processing in January, February was better and we were able to lower the R4H caps again to save a

(The "Synopsis and Outlook" section was intentionally truncated for this publication.)
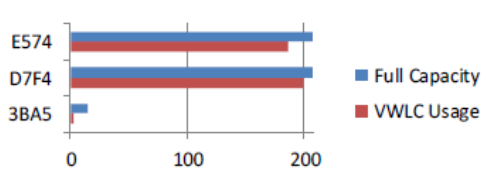
Application and Business Metrics

MACSS		Asset Suite		TERS	
Users served daily	■	Users served daily	■	Users served daily	■
Initial VA Trans	■	WO Task updates	■	Outages handled	■
Accounts billed	■	Material Requests	■	Prem-outg xrefs	■
Active Accounts	■	Time Sheet Updates	■	Tickets from Web	■
Inactive Accounts	■	POs Issued	■	Tickets from Mobile	■
Approx Revenue	$■	Open/Pending POs	$■		
Peak Tran/sec	283	Peak Tran/sec	10	Peak Tran/sec	10
CICS Trans	181,977,825	CICS Trans	8,021,995	CICS Trans	1,967,529
Batch jobs	156,282	Batch jobs	75,225	Batch jobs	1,267
Downtime (mins)	106	Downtime (mins)	96	Downtime (mins)	147
VA Trans < 3 secs	94.7%	CICS Trans < 2 secs	98.2%	CICS Trans < 2 secs	99.4%

Relative Capacity Usage (Batch / CICS only)
- MACSS — 86%
- Asset Suite — 13%
- TERS — 1%

Relative MSU Capacity and VWLC Usage

- Full Capacity
- VWLC Usage

(E574, D7F4, 3BA5)

This month's VWLC savings (estimated)
$■

Disk Usage

Allocated vs. Reserved Disk Space
- Asset Suite et al
- MACSS et al
- Test system
- TERS HA et al