

MPG MIDRANGE PERFORMANCE GROUP



Performance
Navigator®

Business Partner
Installation / SOS / Capacity Planning Guide

May 2005

Overview

Performance Navigator provides three main functions for the iSeries platform: on-going performance management, problem determination and capacity planning. This document will focus on the **basic** process for capacity planning. Although Capacity Planning can involve many areas or tasks (i.e. applications, hardware, budget planning, etc) this document will focus on three of the most common tasks: hardware upgrades, iSeries server consolidation and LPAR configuration. Many of the steps outlined below are suggestions derived from performing thousands of iSeries capacity plans. However, often times there are unique requirements for a capacity plan (i.e. moving workloads, adding unknown workloads, etc) which Performance Navigator can handle but which are not covered in this document. To cover more complex or detail capacity planning subjects, MPG offers a series of Performance Navigator classes. For details on all MPG's Education classes, click on our education link: <http://www.mpginc.com/education.htm> or contact MPG's Director of Education & Analysis, Doug Mewmaw, at (630) 554-9033 or (303) 939-9648. You can also contact technical support (303) 939-9648 or email questions to support@mpginc.com.

Prerequisites

In order for business partners to conduct capacity planning for customers, access to an iSeries is required. Business Partners must install the iSeries component of Performance Navigator on the iSeries on which the customer data will be stored. There are also a few unique steps business partners need to perform on the iSeries which are outlined below.

Performance Navigator is designed to handle customer performance data in several different formats. However, the preferred method is via a process called SOS (Second Opinion Service). SOS can drastically shorten the sales cycle by sending the customer's performance data to the business partner via email. The SOS process is covered in detail in this document.

Performance Navigator supports performance data collected by either QPFRMON (V3R2, V4R1, V4R2, V4R3, V4R4, and V4R5) or the Collection Services (V4R5, V5R1, V5R2, V5R3). The default iSeries component contains support for only V3R2, V4R4, V4R5, V5R1, and V5R2. If support for other releases is required, save files with particular OS/400 release support can be downloaded from MPG's FTP site <FTP://204.56.33.238>. These files are called MPGDR2xx.savf with the xx being the OS/400 release. For example, MPGDR241.SAVF is for V4R1. NOTE: converting the performance data files is NOT NECESSARY

Obtaining Customer Performance Data options:

1. SOS (preferred method) – see process outline below
2. Restoring a library with customer's raw performance data (QAPM....) on the iSeries on which you will be attaching to perform the capacity plan.
3. Restoring *MGTCOL object(s)

With options 2 and 3 you must run MPGLIB/MPGDR pointing to the library where the raw performance data or *MGTCOL files were restored. In all three cases, new members are created in the historical files in MPGLIB. To access a given customer's performance data, you just point to the data base member for that customer.

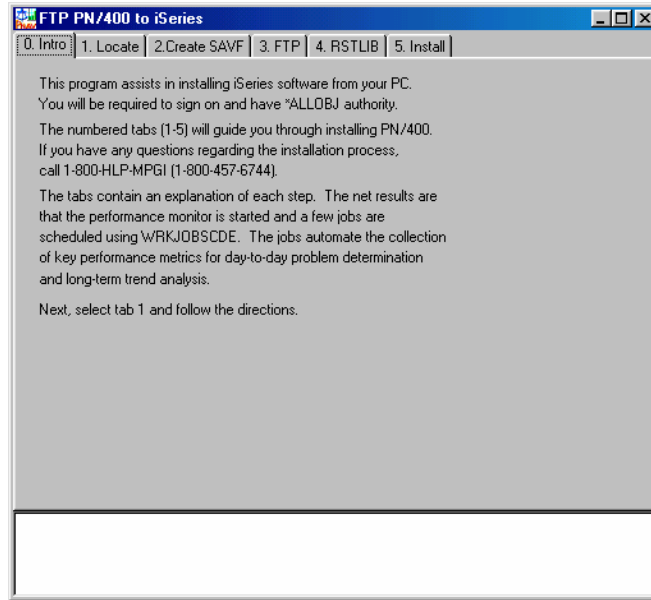
First Step

Direct the customer to download and install (see below) both the PC and iSeries components. This can be accomplished via MPG's website www.mpginc.com or the business partner website with a customized registration link. If the customer has been running PM/400, Performance Navigator will copy the ~90 days of performance history from the PM/400 library to MPGLIB. If this is the case, you can have the customer SOS the data to you. This whole process will take about 30 minutes. If PM/400 was not running, Performance Navigator will start QPFRMON (pre-V4R4) or the Collection Services to start collecting the data. As soon as the desired amount of data has been collected, usually a week or so, the customer can then SOS the data to you.

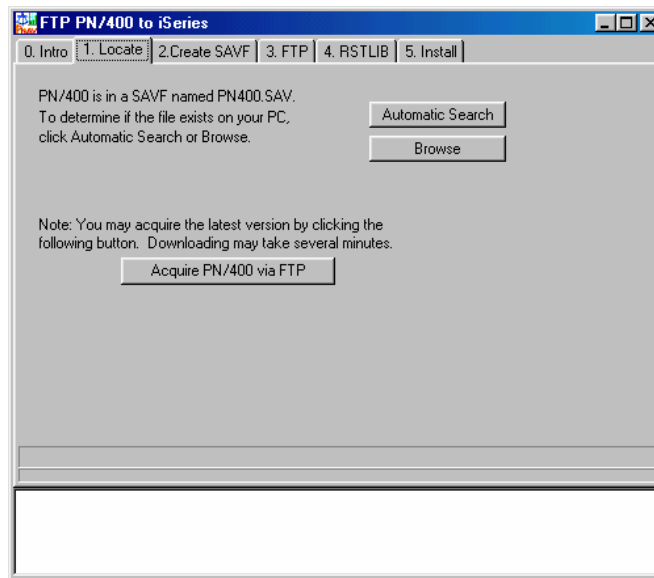
Performance Navigator Installation

Installation of Performance Navigator (PerfNav) is accomplished in two steps. First is the download of the PC component. PerfNav can be downloaded from MPG's web site <http://www.mpginc.com> or from the business partner's web site via a customized registration link to MPG's web site. Currently PerfNav is about 6MB and is a self-extracting zip file. Double clicking on the PerfNav.exe file will start the installation via a standard Windows Wizard. Customers can choose to launch the program from the installation or go to Start/Programs/Performance Navigator to start PerfNav. **Note:** The PC component of Performance Navigator is updated often, you should check at least once a quarter to download the latest version.

The first time PerfNav is started the user will be prompted to install PN/400, the iSeries component. When the user clicks 'YES' to the PN/400 installation prompt, the following Window appears.

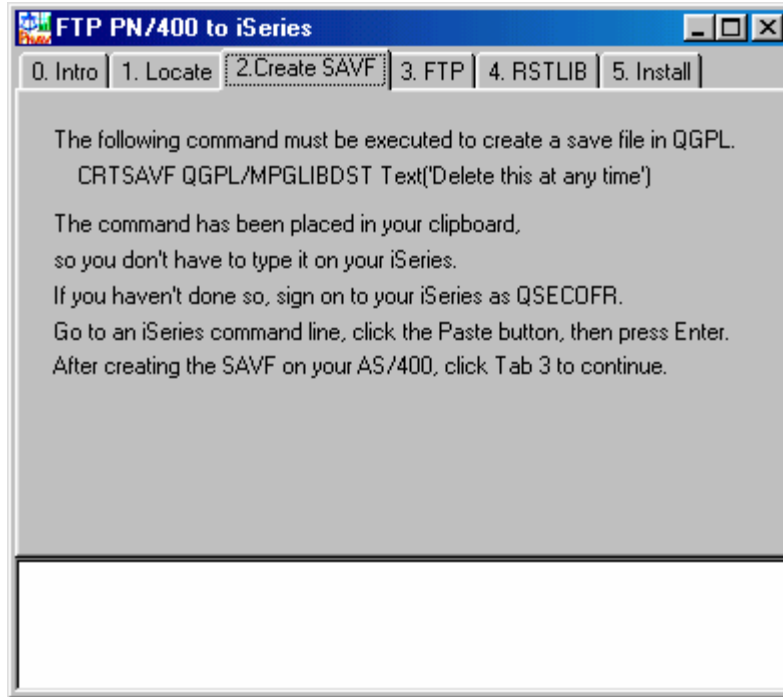


This FTP window will guide the user through the steps to install PN/400. Step “1. Locate” will locate the PN400.SAV file. See below:



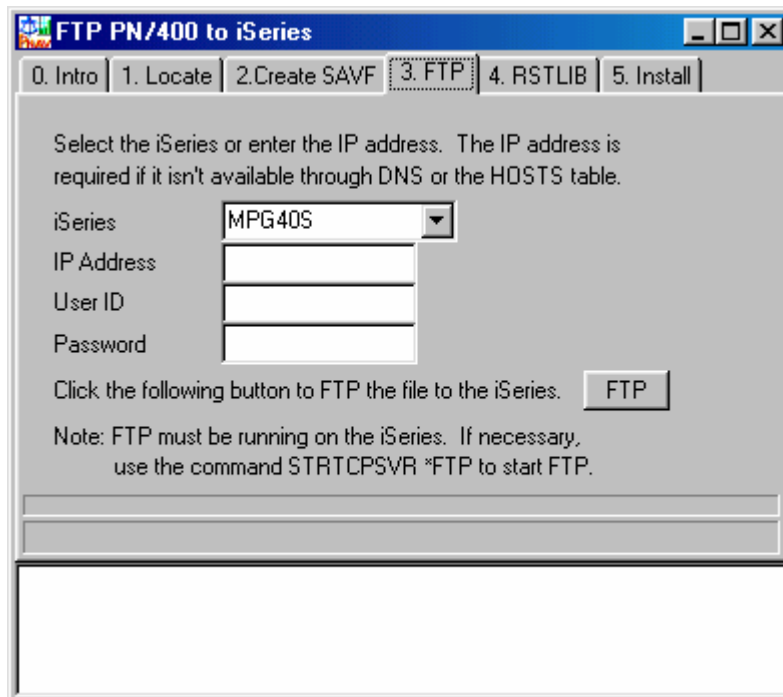
On this step the user clicks the “Acquire PN/400 via FTP” button, which starts an FTP process from MPG’s FTP server. This process sometimes fails due to firewalls. If it fails, the user is instructed to send an email to support@mpginc.com requesting the PN400.sav be emailed. In this case, the user will detach PN400.sav and click the ‘Automatic Search’ button. This button ONLY searches the “C” drive. If the PN400.sav file was detached to another drive, click the ‘Browse’ button to find the save file.

Step two is to create a save file on the iSeries. The command below is *automatically* placed on the PCs clipboard.



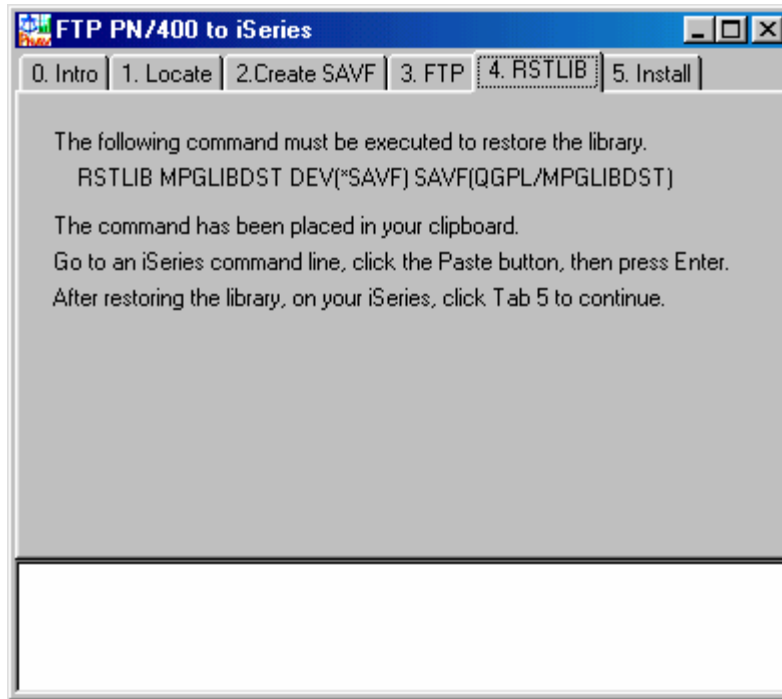
The user starts a 400 session and clicks the Paste button (or goes to Edit/paste) and hits enter.

Step three will FTP the PN400.sav file from the PC to the save file just created on the 400.

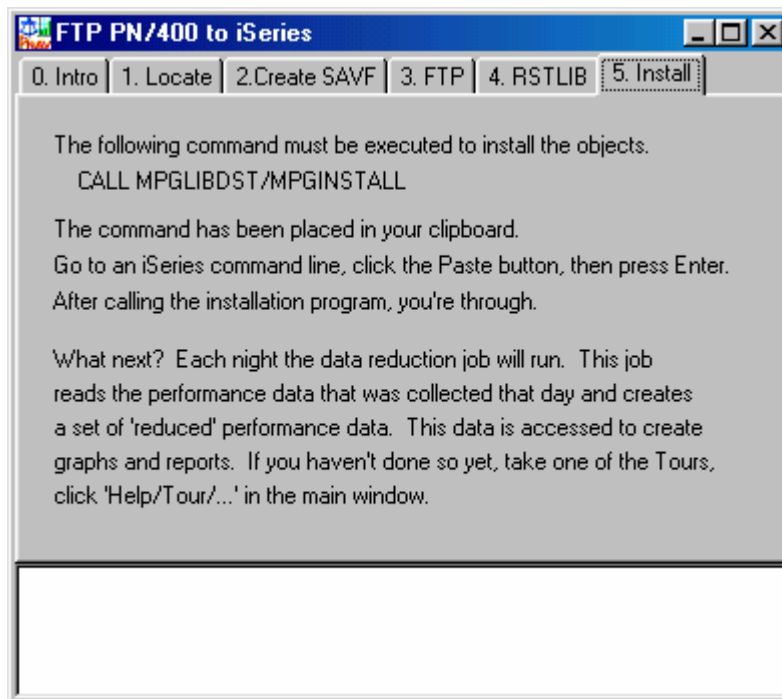


User enters the iSeries system name or the IP address (IP is more reliable), User ID and password, and clicks FTP. Please note that FTP must be started on the 400.

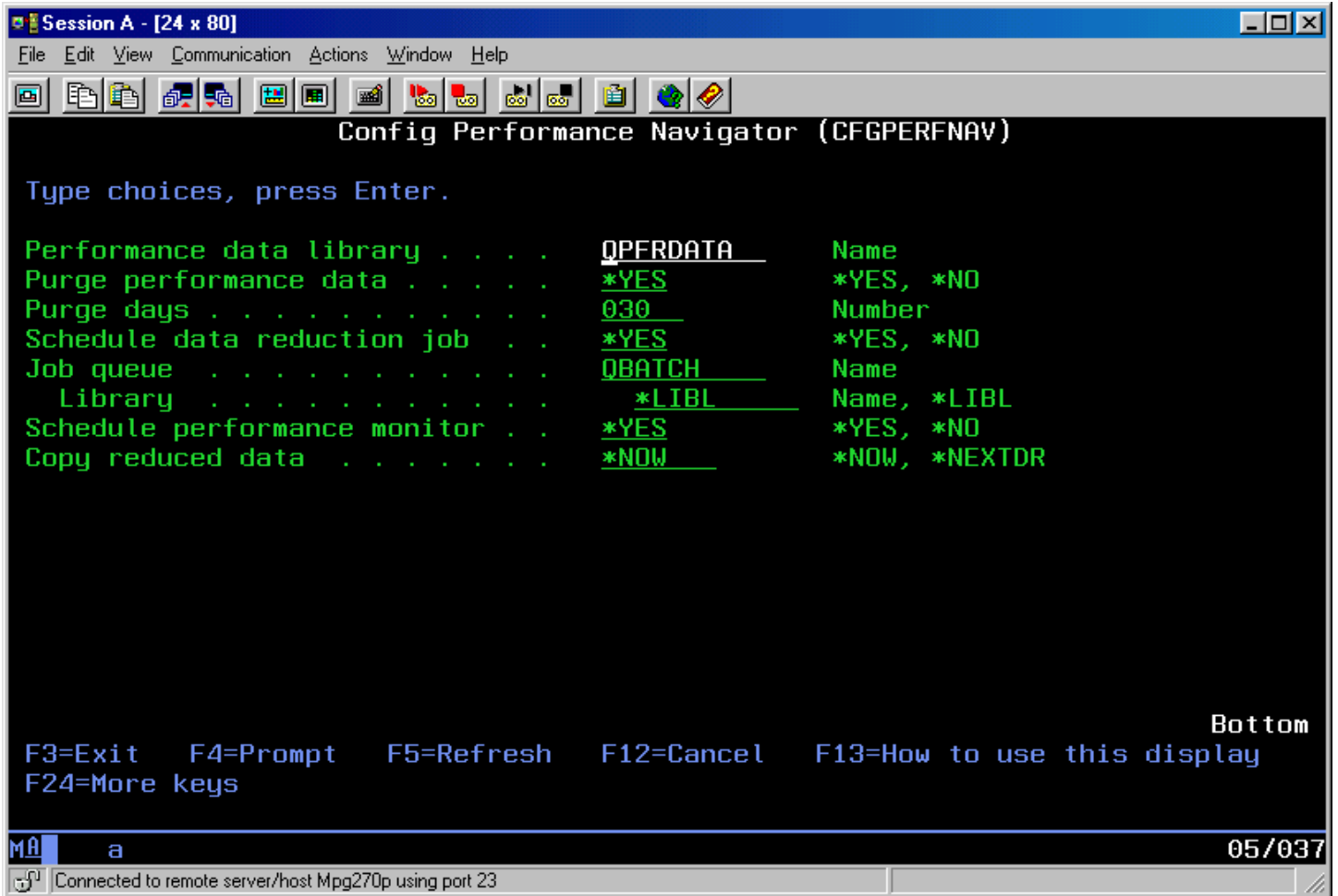
The next step is to restore the save file. The command below is placed on the PC's clipboard. Switch to the 400 session and click paste and enter.



The last step is to run the installation program. The command is again placed on the PC's clipboard.



The first screen that appears is below. Ninety-nine percent of the time, the default parameters should be OK and the user can just hit enter.



However, the user can change any of these defaults. A brief explanation of these parameters follows:

- | | |
|------------------------------|---|
| Performance data library | - The library shown contains the most current raw (QAPM*) performance data. |
| Purge performance data | - The default of "YES" will automatically purge the QAPM files based on the # of purge days. |
| Purge days | - The number of days to keep the QAPM files. The default is 4 days (copied from PM/400). |
| Schedule data reduction job | - This will place the data reduction job on the OS/400 job scheduler. |
| Job queue | - The default job queue is QBATCH. The user may select any job queue. |
| Schedule performance monitor | - This will place a job on the OS/400 job scheduler that will start the OS/400 monitor. |
| Copy reduced data | - The default of *NOW (if Purge days is less than 7) will copy the PM/400 historical performance data. *NEXTDR will copy the data on the next data reduction, which by default is scheduled for 00:30:00. |

The next screen will be the WRKJOBSCDE screen showing the four jobs placed on the OS/400 job scheduler.

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
Work with Job Schedule Entries
MPG270P
08/25/02 13:59:29

Type options, press Enter.
2=Change 3=Hold 4=Remove 5=Display details 6=Release
8=Work with last submission 10=Submit immediately

-----Schedule-----
Opt Job Status Date Time Frequency Recovery Action Next Submit
Date
-- PERFAVDR SCD *ALL 00:30:00 *WEEKLY *SBMRLS 08/26/02
-- PERFAVDS SCD *SUN 03:30:00 *WEEKLY *SBMRLS 09/01/02
-- PERFAVPG SCD *MONTHSTR 02:30:00 *MONTHLY *SBMRLS 09/01/02
-- PERFAVPM SCD *ALL 14:00:00 *WEEKLY *SBMRLS 08/25/02

Bottom

Parameters or command
===>
F3=Exit F4=Prompt F5=Refresh F6=Add F9=Retrieve
F11=Display job queue data F12=Cancel F17=Top F18=Bottom

M& a 12/002
Connected to remote server/host Mpg270p using port 23

```

A description of these jobs is below:

PERFAVDR - Data Reduction

This job reads performance data (output from the performance monitor) and writes a summarized (reduced) set of data into files in MPGLIB. The files in MPGLIB are used by Performance Navigator to draw graphs.

PERFAVPM – Check Performance Monitor

This job makes sure the performance monitor (Collection Services) is running. Since the performance monitor usually keeps itself running, PERFAVPM usually doesn't do anything.

PERFAVPG – Purge Reduced Data

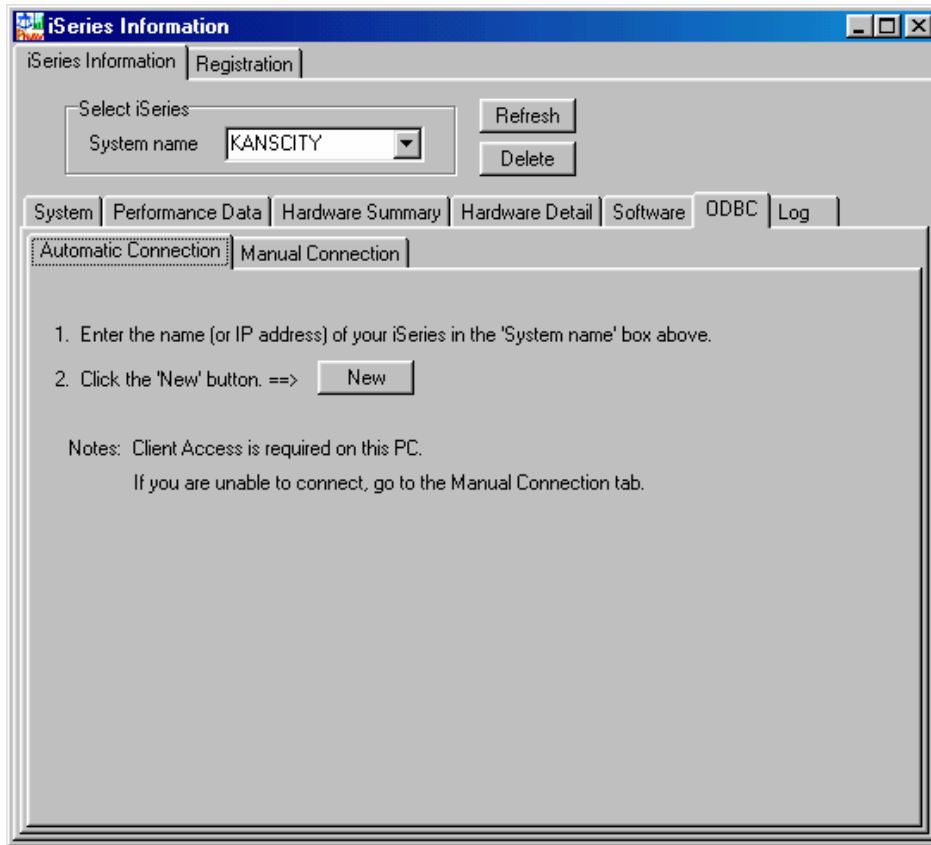
This job runs once a month and trims back the amount of reduced performance data. Three years of highly summarized data is kept. Four months of not-so-highly summarized data is kept.

PERFAVDS – Disk Collection

This job does a DSPOBJD *ALLUSR/*ALL *ALL OUTPUT(*OUTFILE) OUTFILE(MPGLIB/MPGOBJD). This is scheduled to run once a week at 3:30 am on Sunday. The data in MPGOBJD is used by PERFAVDR (the next time it runs) to collect information on library and object sizes. If the customer has scheduled the Retrieve Disk Info command, PERFAVDR will process this data instead of the DSPOBJD data. If this is the case, you can place a hold on the PERFAVDS job.

Users may move these jobs to another job scheduler and/or change the times of execution.

The installation is now complete. The whole process shouldn't take more than 30 minutes. The user closes the 'FTP' window and the iSeries Information Window appears.



The user is prompted to enter the system name or IP address and click the 'NEW' button. This will automatically create a Client/Access ODBC data source and connect to the iSeries. The user will be prompted for an iSeries-user ID and password. **IF THE REDUCED DATA IS AVAILABLE, THE CONNECTION WILL BE SUCCESSFUL.** On the first day the reduced data will ONLY be available if PM/400 has run. If not, the user must wait until tomorrow to connect. The reduced data will be produced when the data reduction job runs after midnight.

If the user does not have Client/Access, click on the 'Manual Connection' tab and follow instructions. If the user's 5250 emulation product provides an iSeries ODBC data source, then this method should work. If not, have the user install the FREE version of Client Access Express and follow the instructions on the 'Automatic Connection' tab.

YOU CAN NOW RELAX BECAUSE PERFORMANCE NAVIGATOR IS COLLECTING AND ANALYZING PERFORMANCE DATA 7 DAYS A WEEK, 365 DAYS A YEAR. When you have collected enough data (i.e. one week) you can have the customer email you the performance data. Remember that PM400 keeps 90 days of performance history. If the customer was running PM400, you can have them email the performance data now.

Next we will discuss how the customer sends you the performance data.

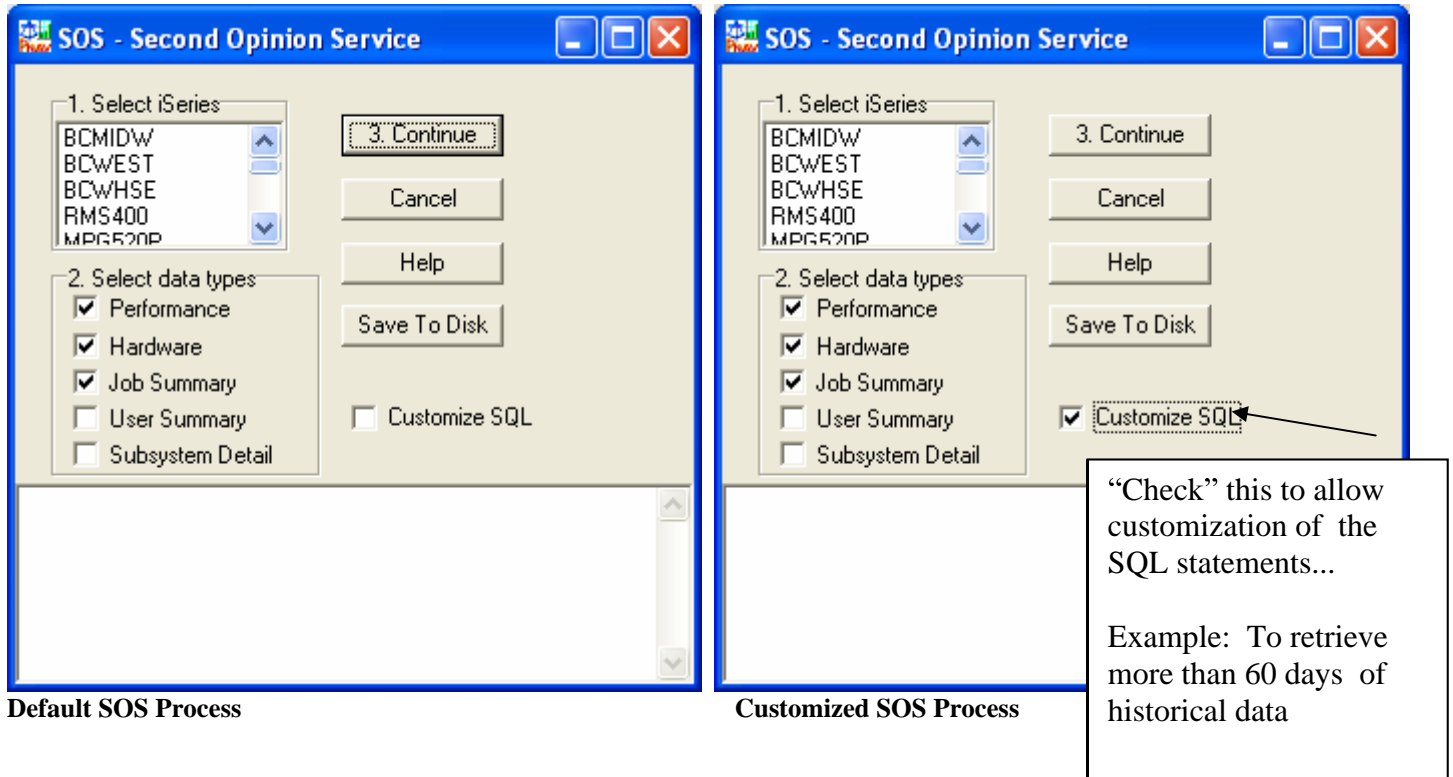
SOS - Receiving/Uploading Customer Performance Data

You will need the following items:

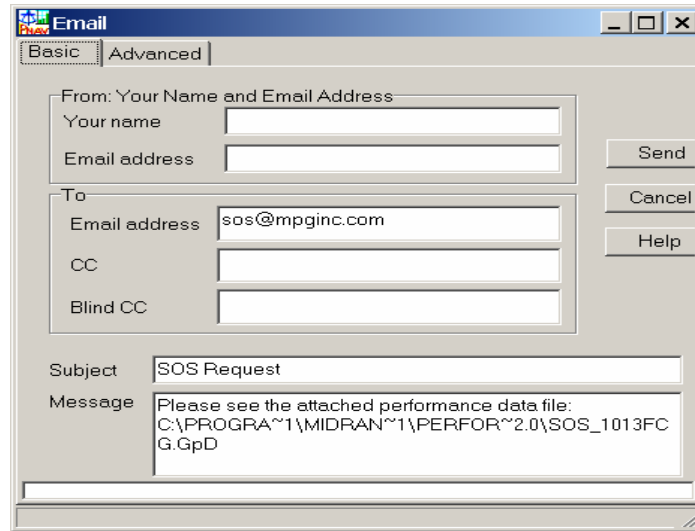
- a. An SOS file emailed from the customer.
- b. The SOS2.EXE program, provided by MPG.

The following procedure will step you through retrieving your customer's data, (SOS data), uploading data to your AS/400 in preparation for Performance Management, Capacity Planning and Problem Solving.

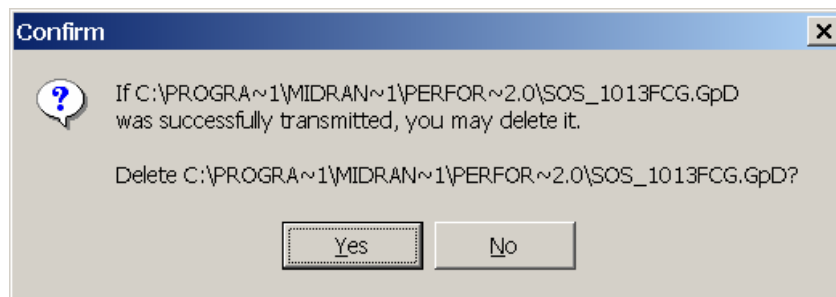
1. At your customer's PC, start PerfNav. Go to File/SOS...the following screen will appear:



2. At step 1, highlight one of the iSeries.
At step 2, make sure the first 3 options are selected. Select User data for User Profile/System Usage info.
At step 3, Click Continue. After data has been collected, the following screen will appear. Fill out the respective information. The default sends file to SOS@MPGINC.COM. Since you are the BP, change this address to the person who will be doing the actual SOS. If the email fails due to a firewall, just close the Email window reply NO to the delete and use an email client to send the file. The file is in c:\program file\midrange performance group\performance navigator 7\sos.10xxxx.GPD

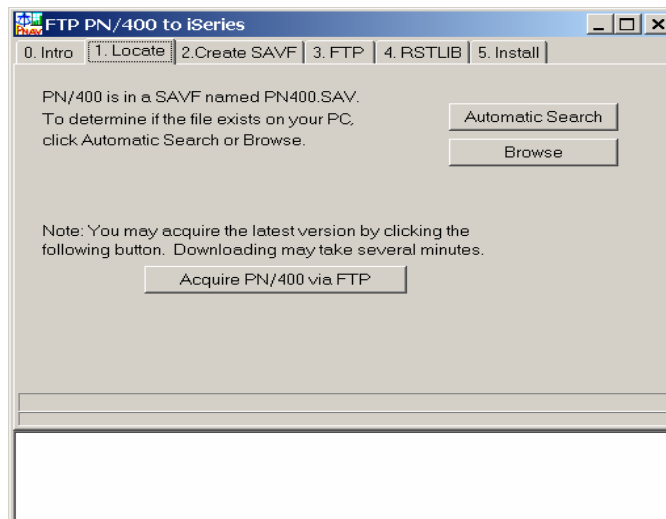


3. After sending, the Confirm delete screen will appear. This will delete the temporary SOS file.



This completes the capture/send of the SOS file. Continue on to start the basic Performance Management, Capacity Planning and Problem Solving.

4. In order to upload and access the customer's performance data with PerfNav, you must first install PN400 on the system to which you are going to upload the data. To install PN400, follow the five steps in the File/Install PN400 menu.



Follow the same instructions as on the customers system.

After the first install of PN400, the BP must create a few duplicate objects in the MPGLIB library. Issue the commands below if this is your first time install. If already installed, skip this step

```
CRTDUPOBJ OBJ(QAPMCONF) FROMLIB(QSYS) OBJTYPE(*FILE)TOLIB(MPGLIB)
CRTDUPOBJ OBJ(QAPMDISK) FROMLIB(QSYS) OBJTYPE(*FILE)TOLIB(MPGLIB)
```

Make sure the following object exists by issuing the following:

```
WRKOBJ MPGLIB/QAPMHDWR
```

You should see:

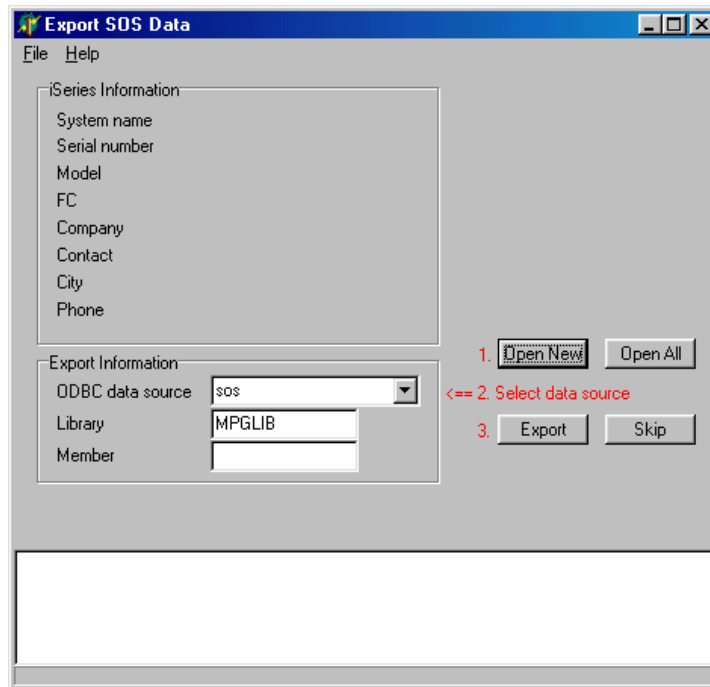
Opt	Object	Type	Library	Attribute	Text
	QAPMHDWR	*FILE	MPGLIB	PF	Output file for DSPHDWRSC

If it does not exist, create the object:

```
CRTDUPOBJ OBJ(QAPMHDWR) FROMLIB(QSYS) OBJTYPE(*FILE)TOLIB(MPGLIB)
```

5. Upload the SOS customer file to your iSeries.

Once you have received the SOS file, and have detached it to a temp library on your PC that has PerfNav installed. Open up the SOS2.EXE upload program, the following screen will appear: This program can be downloaded from MPG's FTP site <ftp://204.56.33.238>



Clicking on the “Open New” button will access an SOS file, which has not been uploaded. The “Open All” button will let you select the SOS file. You can verify if you have the right customer via the iSeries Information.

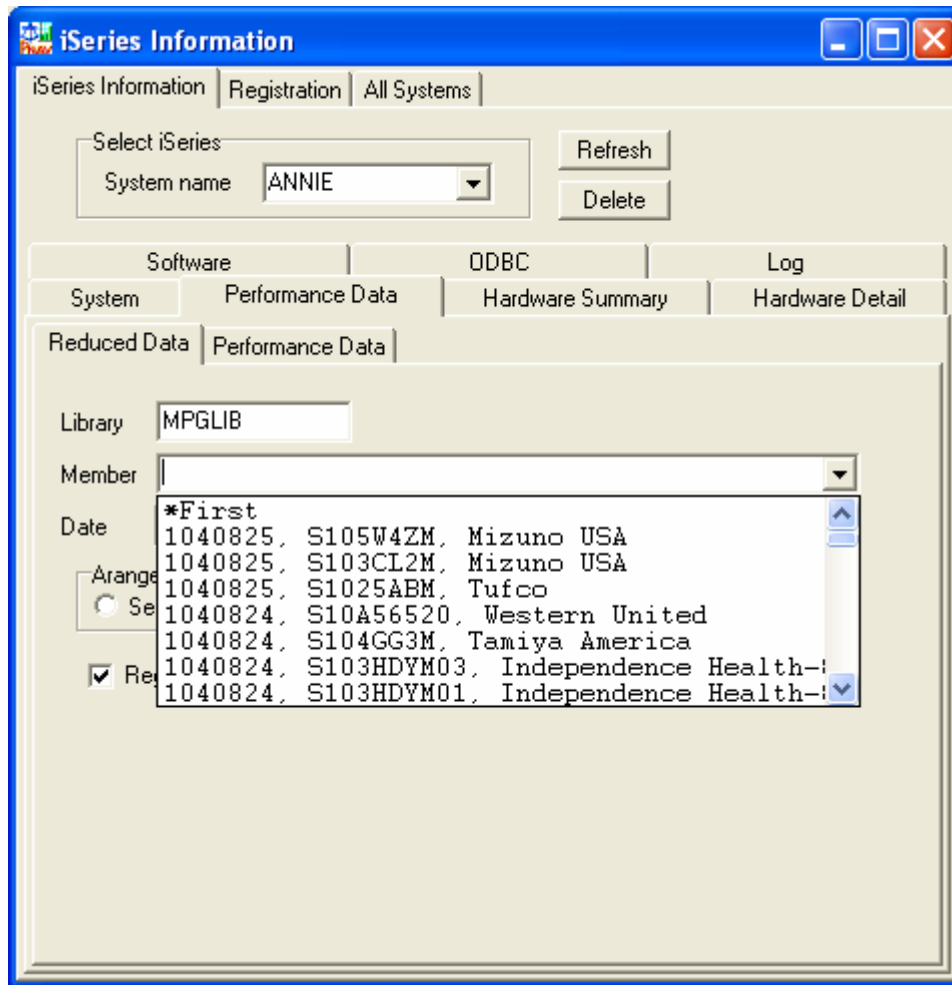
Enter the ODBC data source for your iSeries. Export the file to your iSeries. Because a data source called SOS is the default, creating a data source called SOS for your system would make this step automatic.

Click the Export button, which will upload the customer performance data to your system.

This completes the upload process.

6. Access customer data with PerfNav.

Open up PerfNav. Go to **Edit/Connection/Performance Data**, select the Performance Data tab, the following screen will appear. (**Note:** you can also double click on the system name in the lower left hand corner) Click the arrow to the right of the member name and select the customer SOS file. PerfNav is now ready to access your customer's data. You must enter a key code for your customer's data. Go to Edit/iSeries Options/Keycode, select your customer's system name, and enter the key code. NOTE: Key codes can be obtained via MPG's BP web site <http://www.mpginc.com/bp>.



YOU ARE NOW READY TO PERFORM A CAPACITY PLAN.

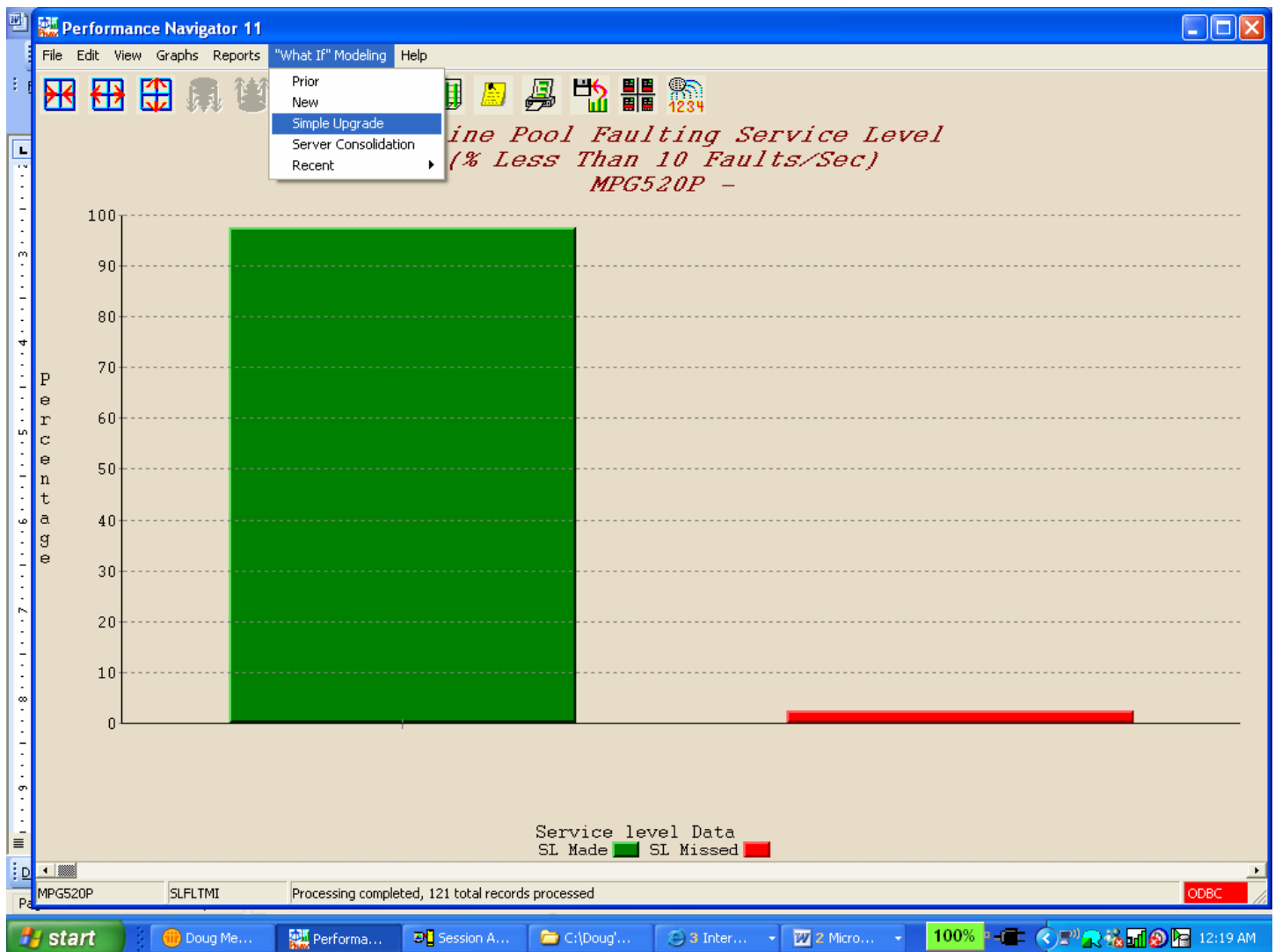
Capacity Planning Basic Deliverables

Capacity planning involves the analysis of historical performance data and future customer requirements. Depending on the complexity of the customer's situation (i.e. SCON, LPAR, Fractional Partition) the deliverables will vary in number and type. However, after performing thousands of capacity plans we have found that a straightforward MES upgrade has 9 basic graphs for a capacity plan. The first six graphs can be created via a **What-If™ Script**.

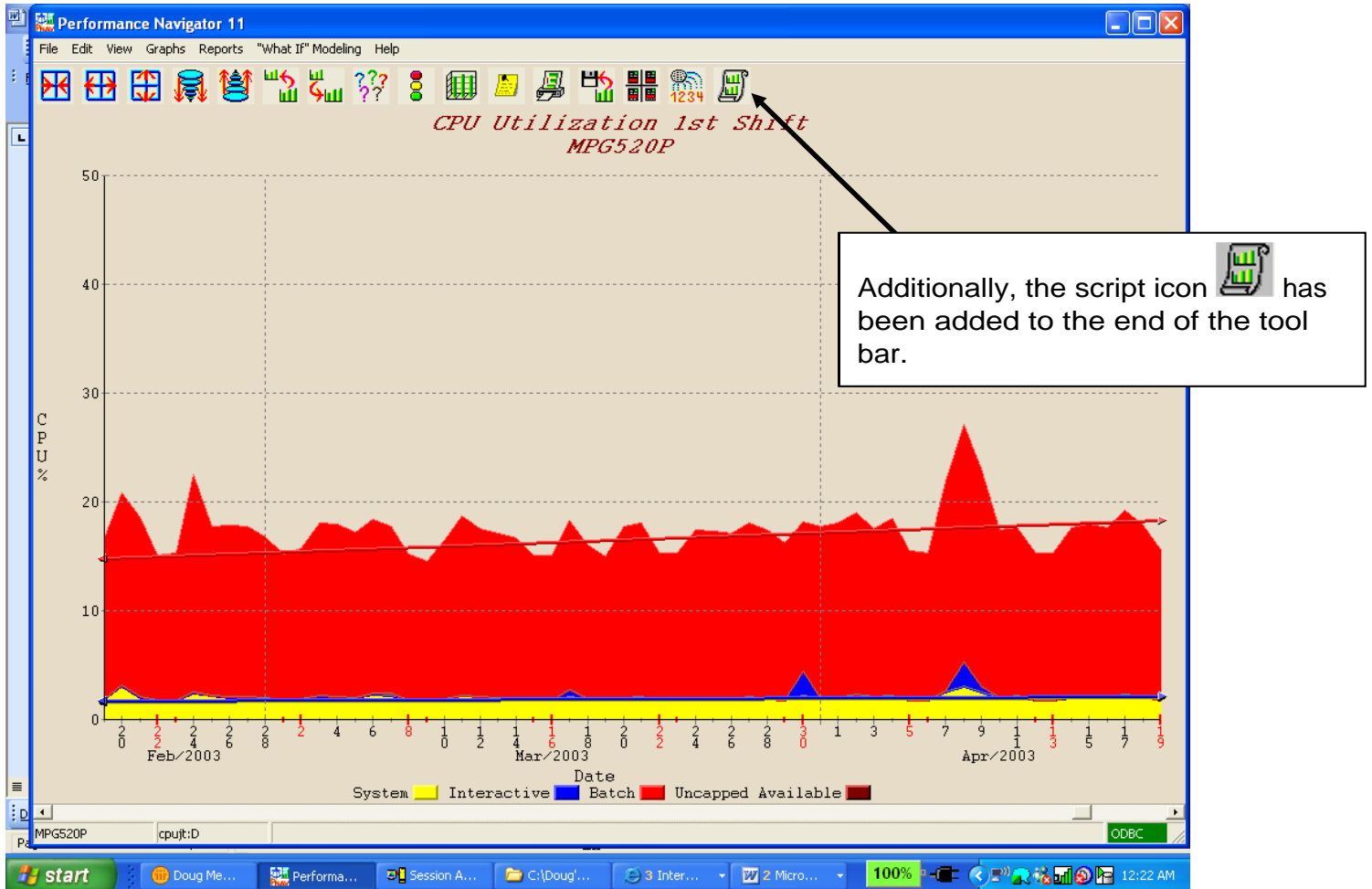
Understanding the What-If™ Script Process – *Simple Upgrade*

The Performance Navigator What-If Script simply automates the retrieval of the first 6 graphs in the standard set of 9 graphs and then brings you into the What-If function and exits the script.

1. To start the Script, select the option "**Simple Upgrade**" under the What-If menu. See below:



2. Upon selecting **Simple Upgrade** from the What If menu, the first graph (**CPU Utilization 1st Shift by Date**) is automatically displayed. See below:



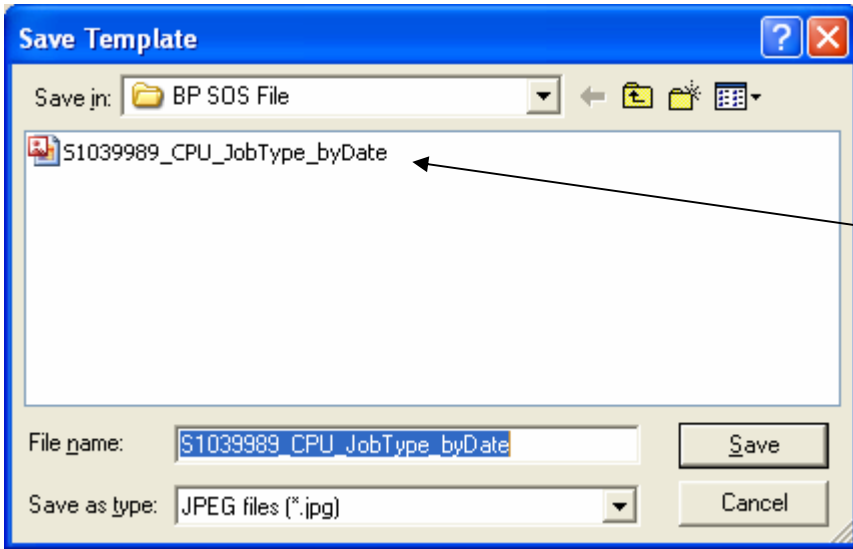
In the above example the date range is from June 12th to August 10th. The system's interactive workload averaged around 8% with a peak average of 53%.

CPU Utilization 1st shift/by Date – This graph has three main purposes. First it shows the customer the date range of our analysis. The more data you have the more accurate the outcome. The second is to gain an understanding of average workloads and any cyclical trends. The third is to show any positive workload trending. The trending can only be done if you have at least 3 or more months of data.

At this point, you can customize the PerfNav graph as desired.


It's important to note: The Script is designed to stop on every graph


- Once you have the graph as you like it, save the graph via File/Save Graph As. See below:

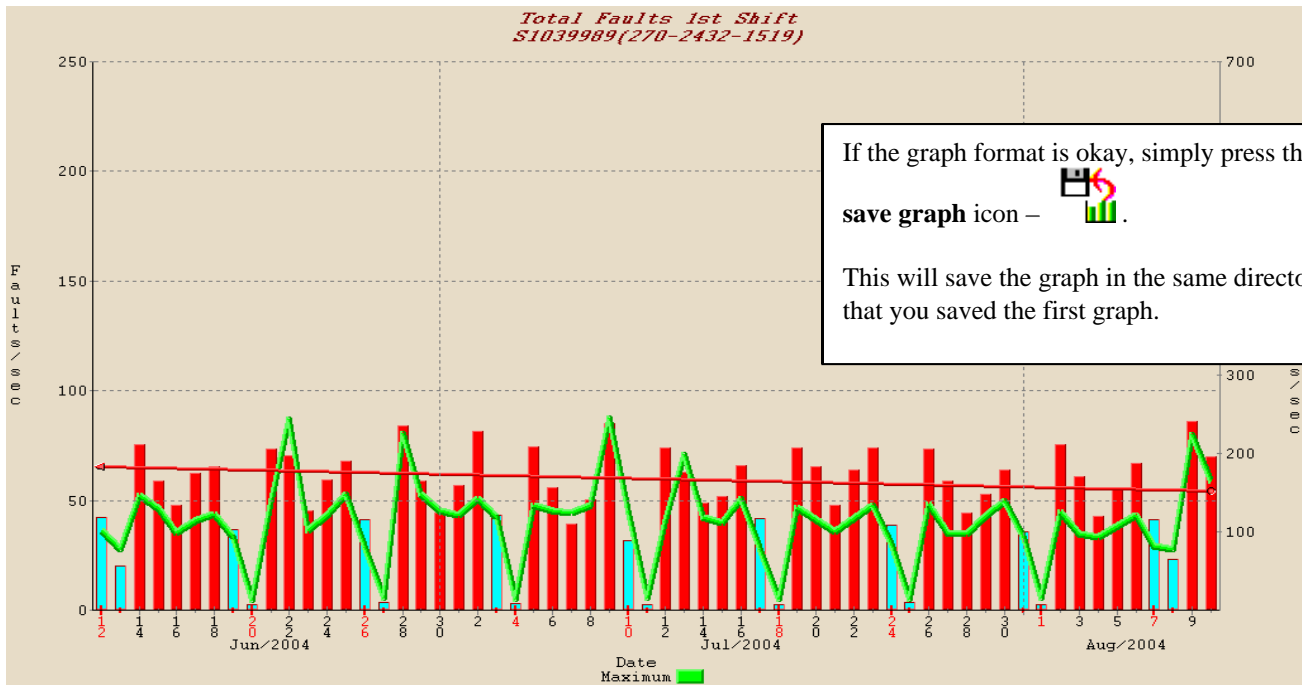



Saving the graph...

NOTE: All the graphs have default saved names. The saved name consists of the system name, the name of the graph, and maybe the date. The process of **pressing the script icon / pressing the save graph icon** will continue until the **What-If™ window appears**. Once the What If window appears,

we simply press the save graph icon  to save the desired graphs.

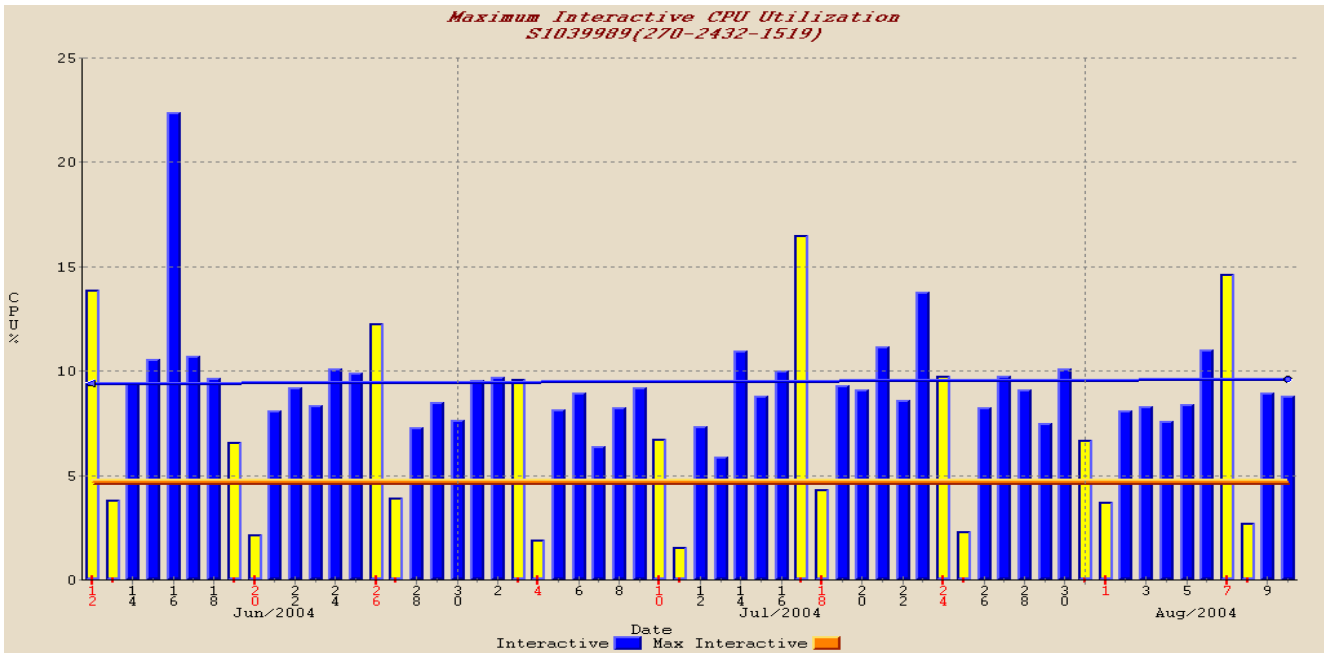
- Upon saving the first graph, press the **Script ICON**  to continue the script process. Upon pressing the ICON, the second graph (**Total Faults – 1st Shift**) is displayed. See below:



If the graph format is okay, simply press the **save graph icon** – . This will save the graph in the same directory that you saved the first graph.

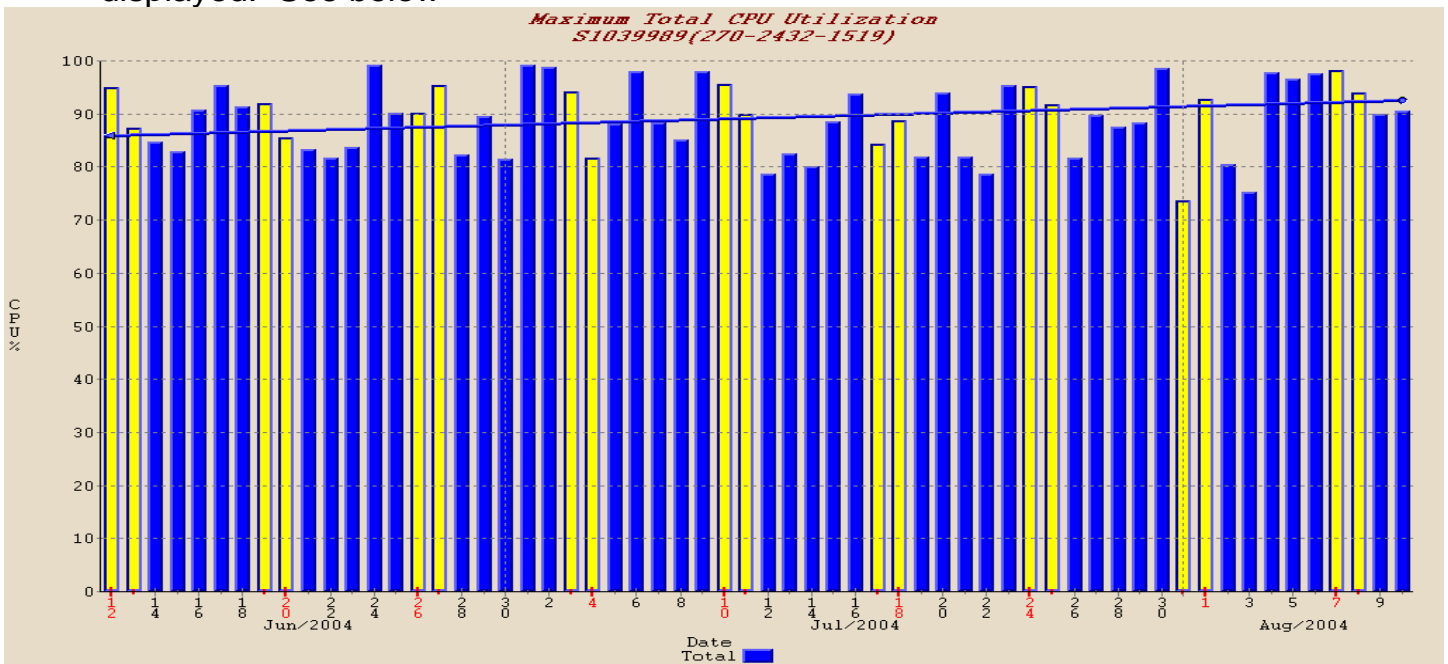
Total Faulting 1st Shift/by Date – This graph shows the average and maximum faulting rate for the 1st shift each day. This graph is used to determine the current system’s memory performance. Determining if a customer needs more memory involves more than just looking at current faulting rates. Usually if the customer has a fair amount of faulting, it is wise to configure more memory on the new system. Because of the dynamics of OS/400s single level of storage and memory management, **IT IS IMPOSSIBLE TO ACCURATELY MODEL MEMORY**. The graph below shows an average faulting rate of 40-50 with a maximum 15-minute interval during each day of 160. (Maximum is read on the right y-axis)

5. Upon pressing the ICON again, the third graph (**Maximum Interactive CPU Utilization**) is displayed. See below:



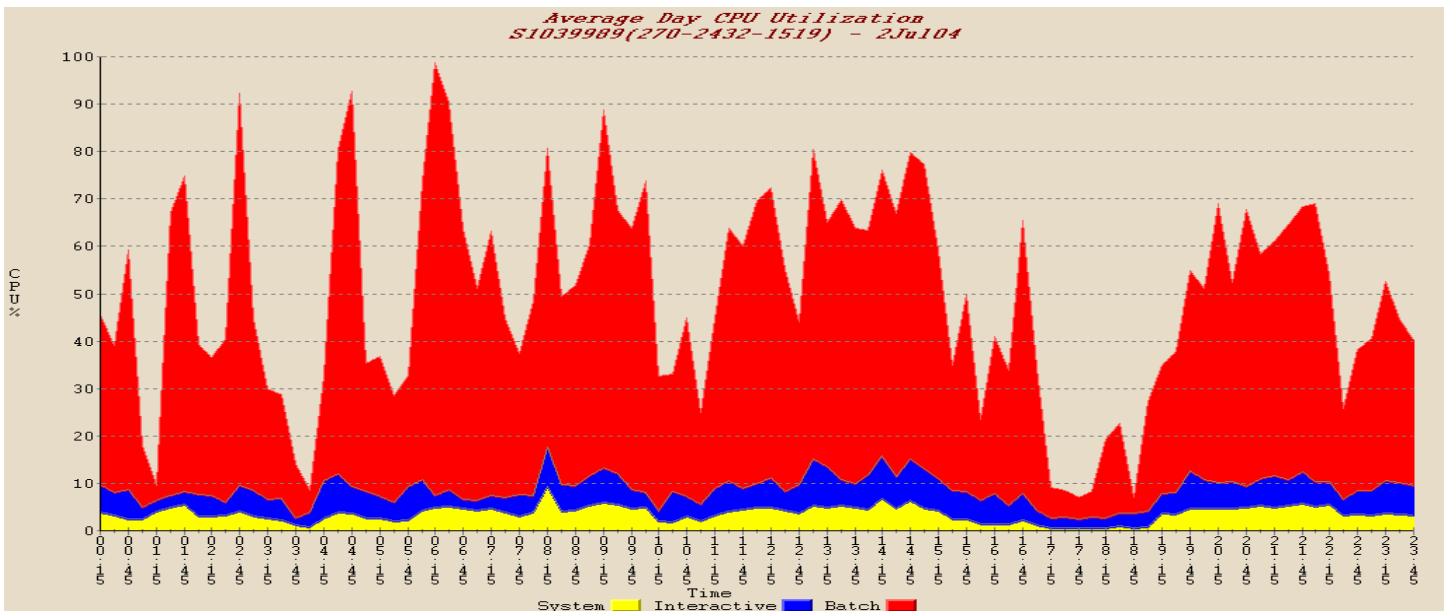
Maximum Interval/by Date – One of the most important issues in a capacity plan is sizing the interactive feature card. This graph shows the maximum interactive 15-minute interval each day. The peak day can be easily chosen from this graph. The peak day may not be highest point. Often, interactive spikes can be caused by anomalies like programmers running interactive compiles. This graph will help explain the relevance of the peak day you have chosen for the capacity plan.

6. Upon pressing the ICON, the fourth graph (**Maximum Total CPU Utilization**) is displayed. See below



Maximum Total/by Date – More importantly on more current models is the Total/By Date. This graph shows the maximum interactive 15-minute total CPU utilization each day. A peak day might be easily chosen from this graph as well. The peak day may not be highest point. Often, spikes can be caused by anomalies like programmers running SQL. This graph will help explain the relevance of the peak day you have chosen for the capacity plan.

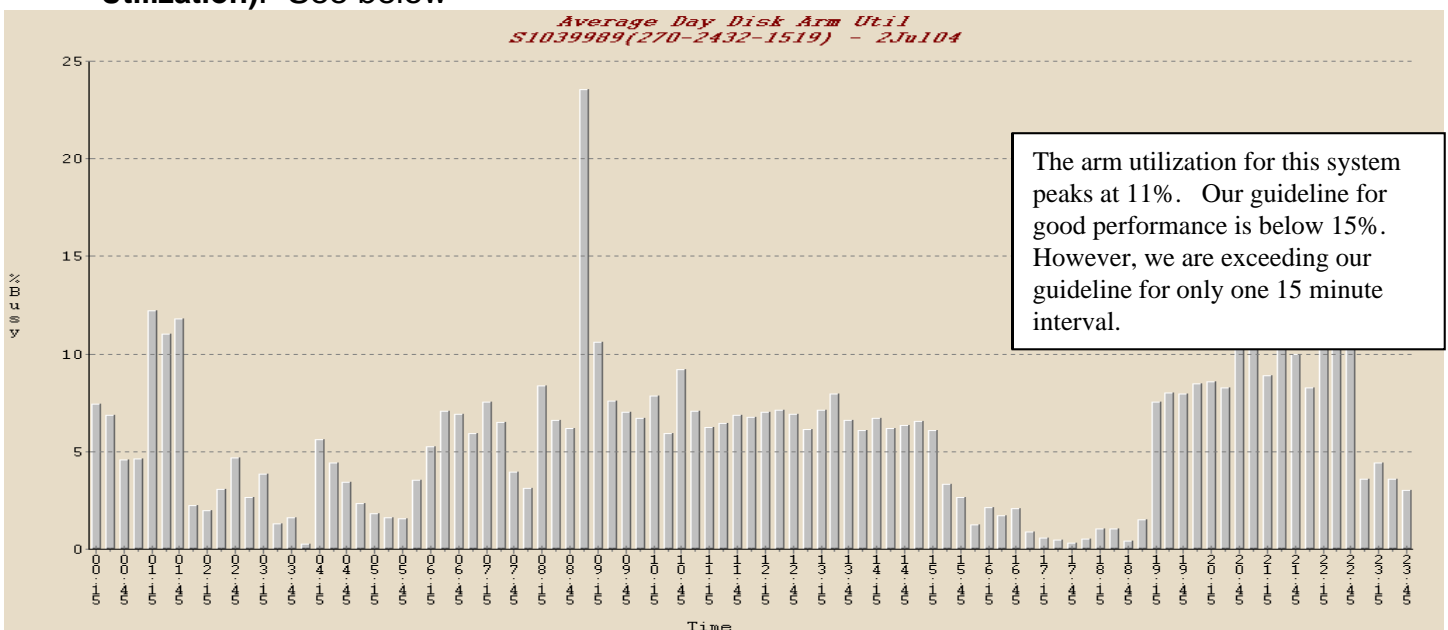
7. Next, pressing the script ICON, brings up the fifth graph (**Average Day CPU Utilization**)
See below



The graph above is an Average Day CPU for July 2.

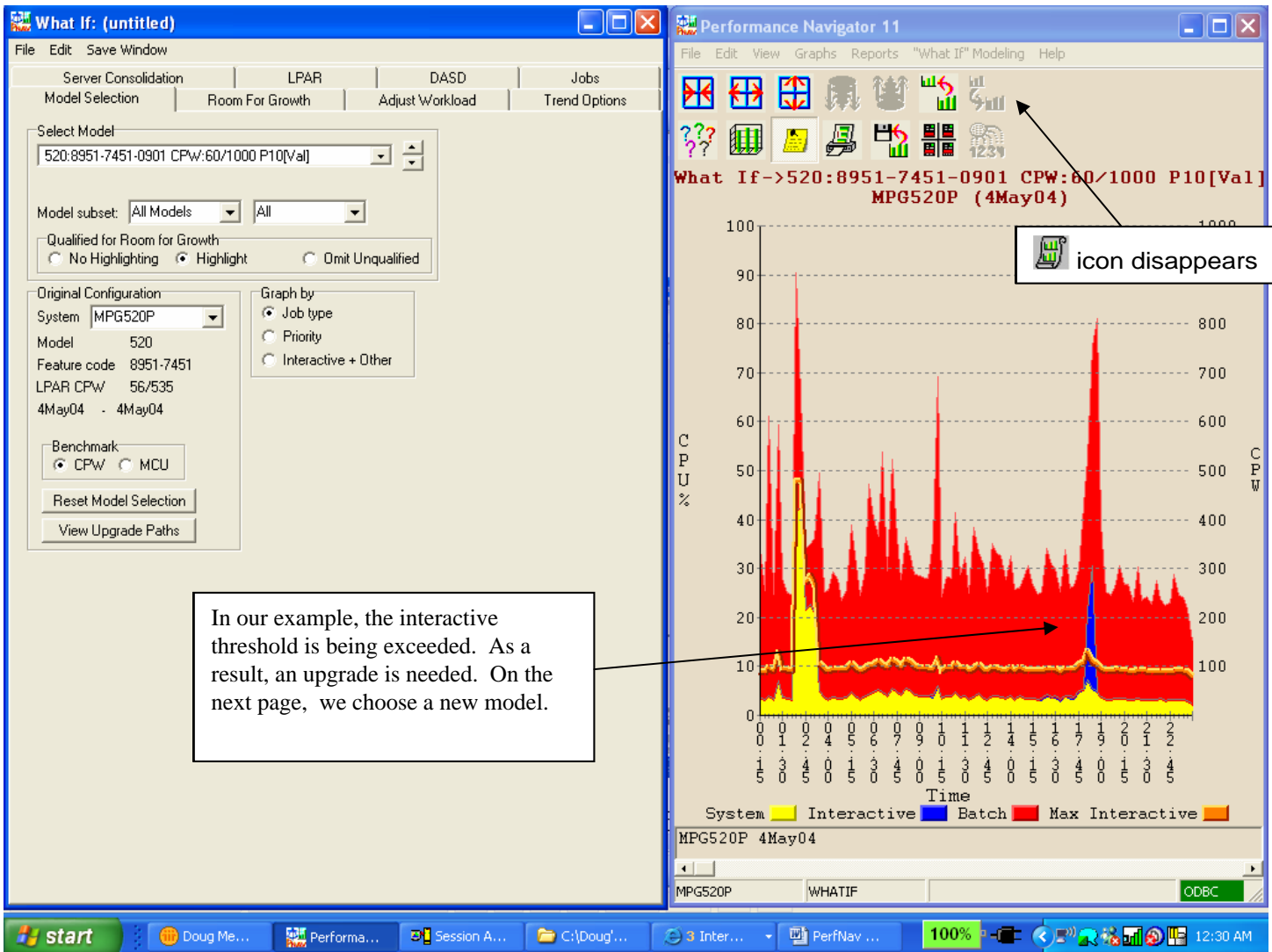
Average Day CPU by Job Type/Peak Day – This graph shows the 24-hour view of the peak day chosen for the capacity plan. Usually, this is the peak interactive day or peak total or batch day if there is very little interactive workload. To select the peak day, go to Graph / Peak Day / CPU Interactive graph. This will search the last 30 days of 15-minute interval data and select the day with the most interactive CPU milliseconds used. This may not be the day with the highest peak. By default, this option searches 24 hours each day. You can change the day range and the time search via the Edit / iSeries Option / Date menu. From the Peak day graph, you can set the average date range by right clicking in the graphed area and selecting “Average Date Range From and To”. Then go to Graph / Average Day / CPU / Job Type

8. Next, pressing the script ICON, brings up the sixth graph (**Average Day Disk Arm Utilization**). See below




Average Day Disk Arm Utilization/Peak Day – Once the peak day has been selected, you can now select Graph / Disk / Arm Utilization to show the average disk arm utilization of the current system.

9. Next, we press the script ICON for one final time. At this point, we begin the What If modeling process. That is, upon pressing the script button, the What If “untitled” window appears:

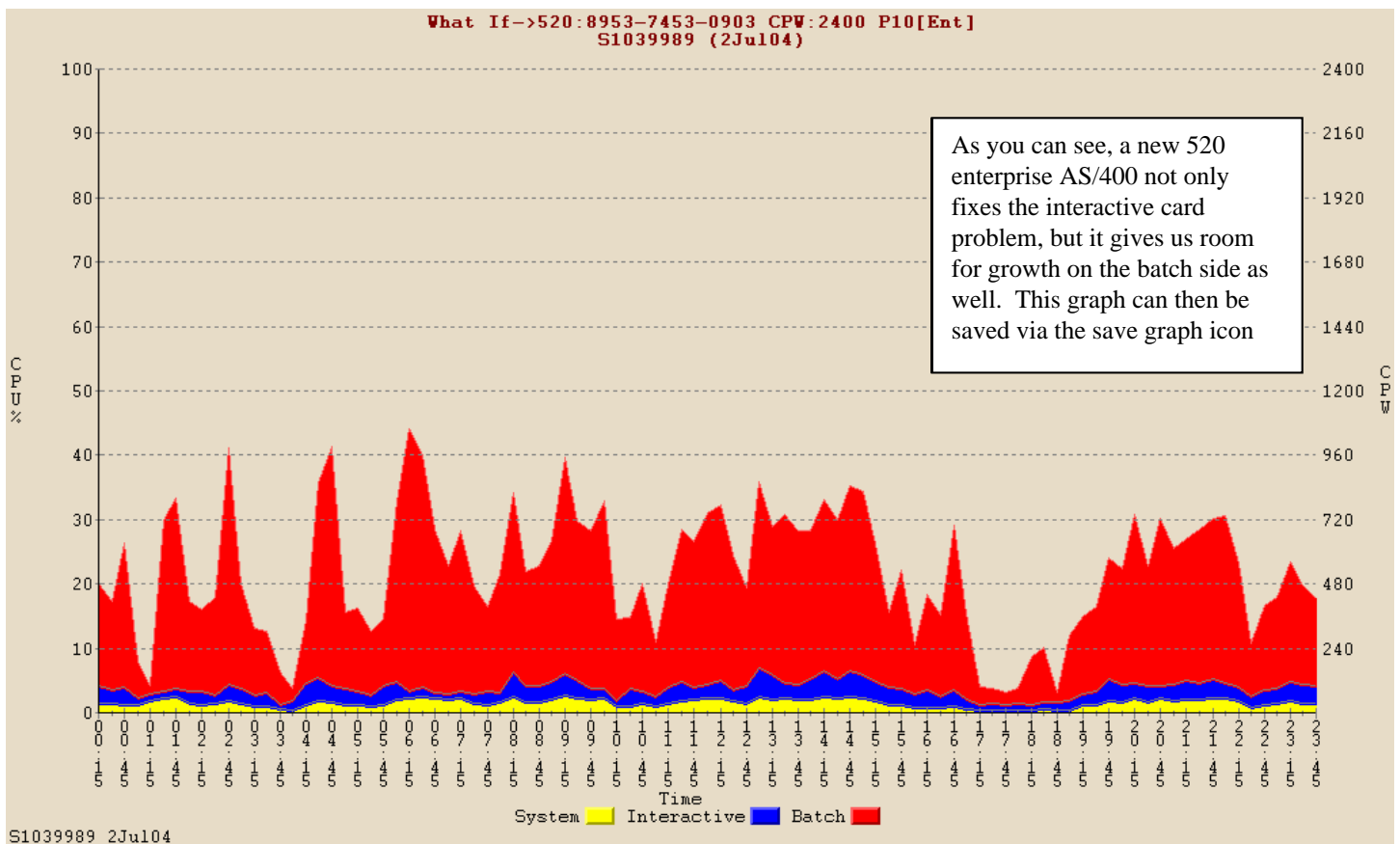
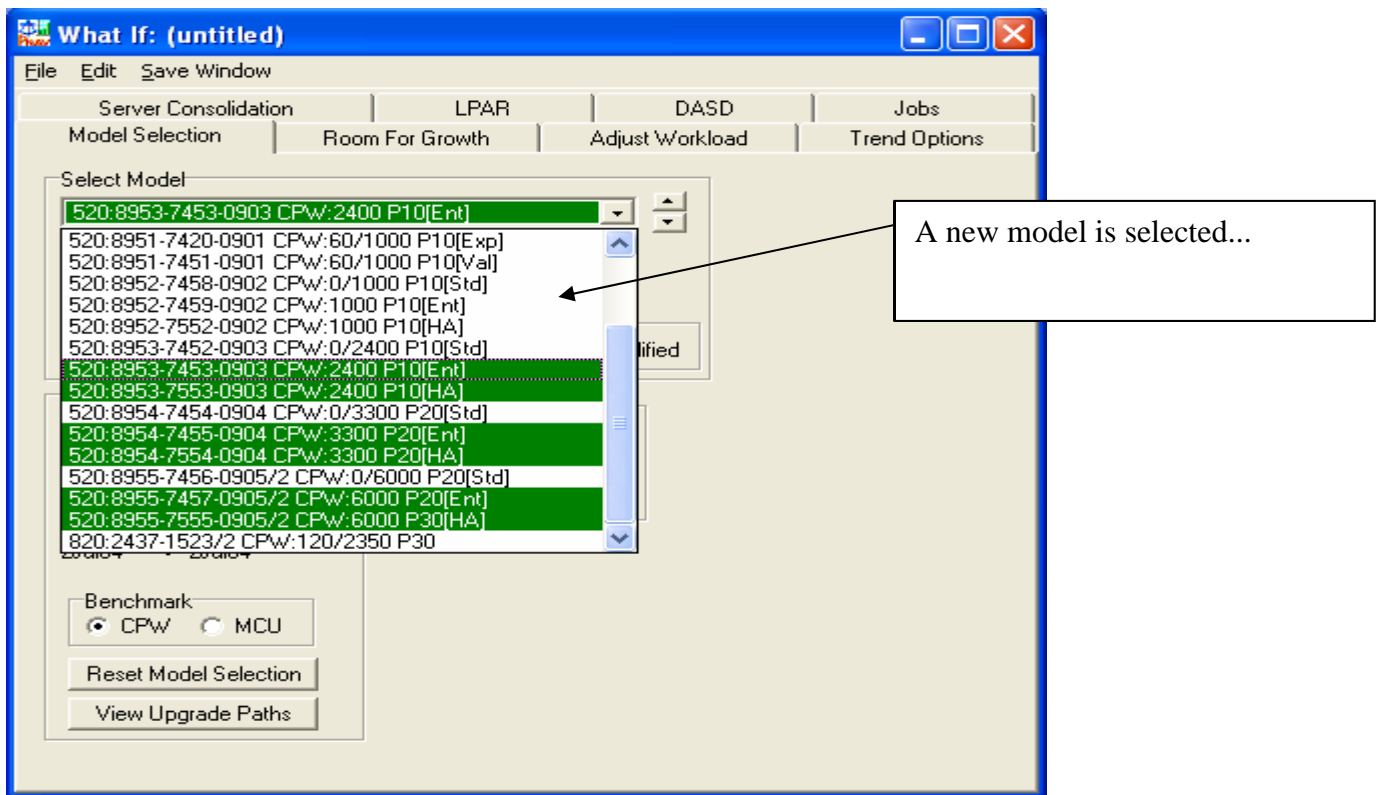


What-If™ CPU Utilization NEW Model - This graph models the Peak Day workload on a NEW iSeries Model. Special attention should be given to the Maximum Interactive line (orange line). This is the system’s interactive feature card. The blue area (interactive workload) can’t get above that line. **Enterprise Edition systems will not have the orange line.**

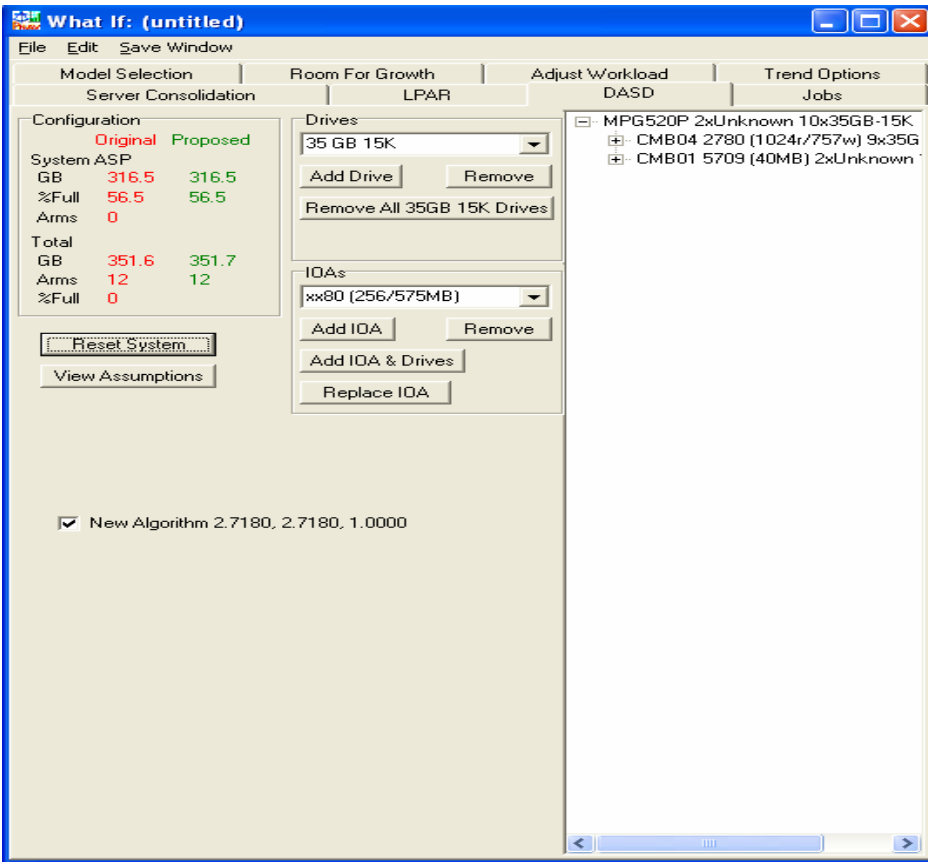


Notice that the script icon  is no longer present. This indicates that the script has completed. At this point, we simply create the desired graphs via the normal What If process.

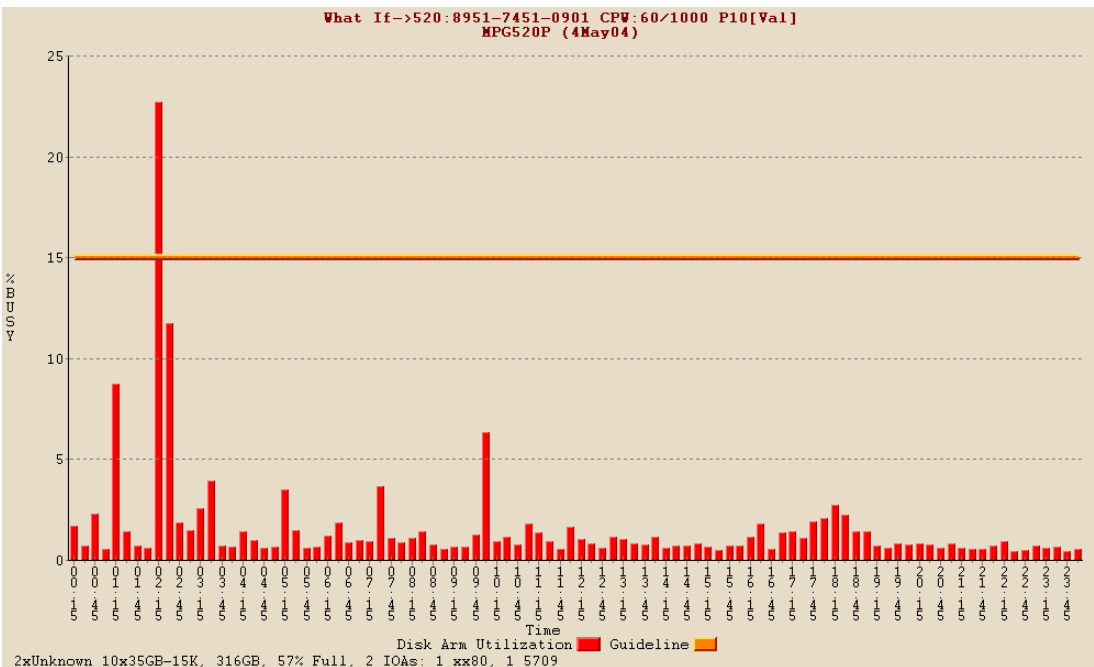
10. Next, we choose a new model via the WHAT IF *Model Selection* tab. See below:



11. Next, we ensure our disk configuration is configured to give us 'best practice' service levels. For disk utilization, the goal is to have the disk arm utilization under 15% busy. To model our disk, press the What IF *DASD* tab. See below:



What-If™ Disk Current Configuration - This graph shows the current disk configuration in terms of % full, number of arms and hardware configuration. The disk capacity information is in the Configuration box on the left and the disk hardware configuration is in the box on the right

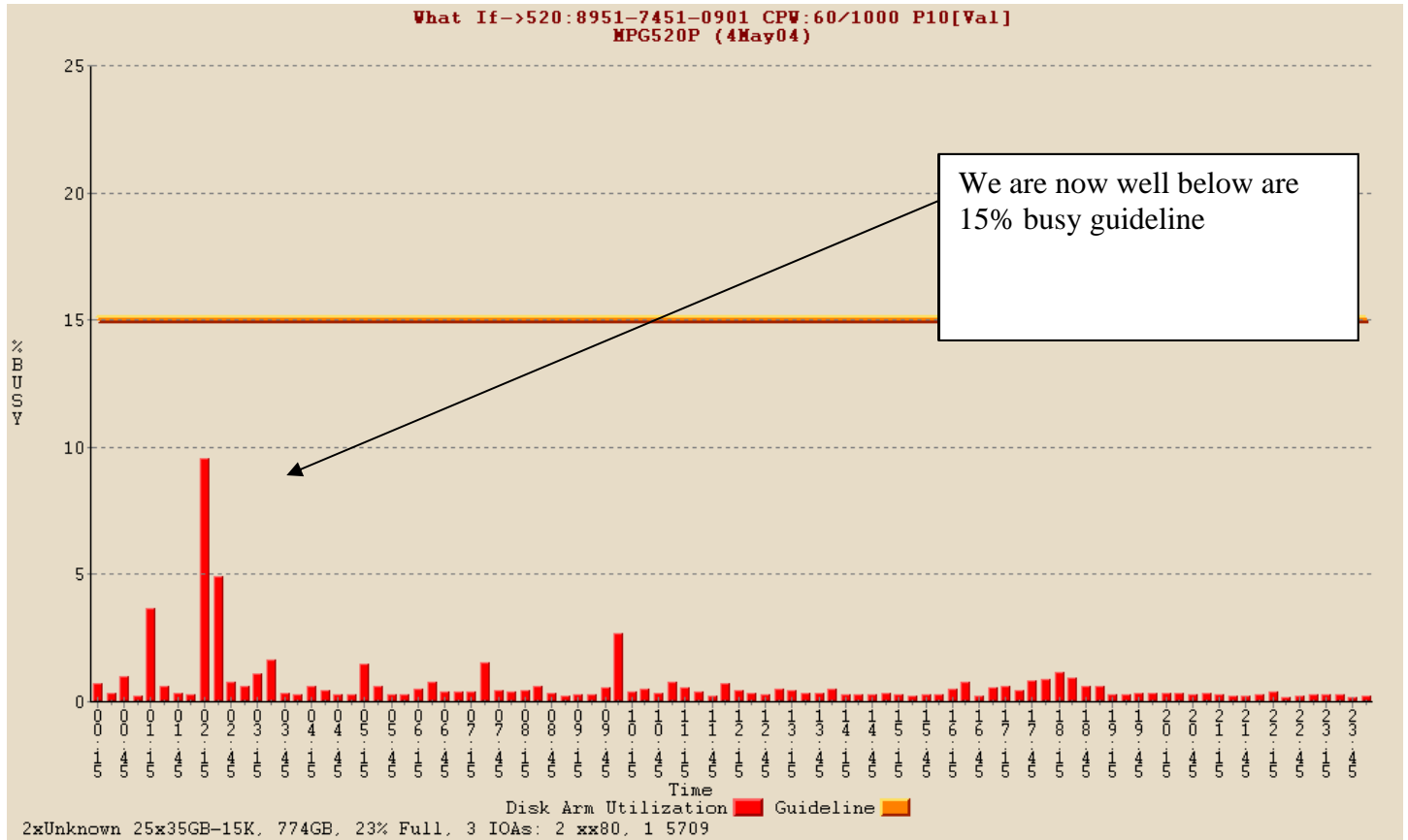


This system is currently 56.5 percent full with one controller, 10 35 GB arms

What-If™ Disk Future Configuration - This window shows the disk configuration on the new system. There are many factors in determining the new disk configuration. (i.e. # of arms, type of disk drive, type of disk controller, amount of write cache, # of disk expansion units, average arm utilization, etc.) However, the most important, from a performance perspective, is the arm utilization.

What If DASD – Creating a New Configuration

In this capacity plan we add a new IOA (with xx57 controller) and 15 35GB drives to achieve better performance. See graph below.



Simple Upgrade Summary

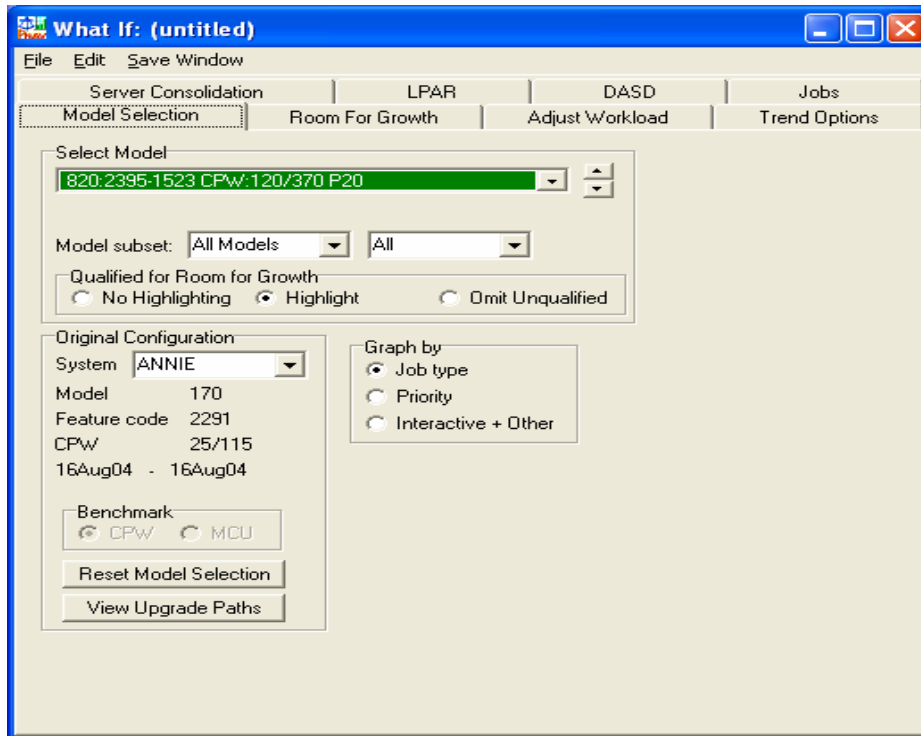
The above sets of 9 graphs are the basic set for a simple MES. If the capacity plan involves server consolidation and/or LPAR configuration, there should be a set of the first 6 graphs for each system. Following is an example of a two system server consolidation and LPAR configuration. This is just the basic set of graphs that would be produced.

Understanding the What-If™ Script Process – *Server Consolidation*

iSeries Server Consolidation is the process of combining two or more systems in to one. This usually involves configuring these separate systems into LPARs. The example below will demonstrate an iSeries server consolidation of two systems and then configuring them into separate LPARs.

As mentioned above, you should produce the standard 6 graphs for each system. These graphs will show the current “State of Performance” for each system. After the last system’s standard graphs have been produced, select the “New” option under the “What-If” menu. **NOTE:** While in What-If mode, make the graph window about 90% full screen. Then move the What-If window into the upper left hand corner. During the What-If process you will be moving from the What-If and main graph window often.

Before we discuss server consolidation and LPAR configuration, an overview of the tabs on the Performance Navigator What-If window is in order.



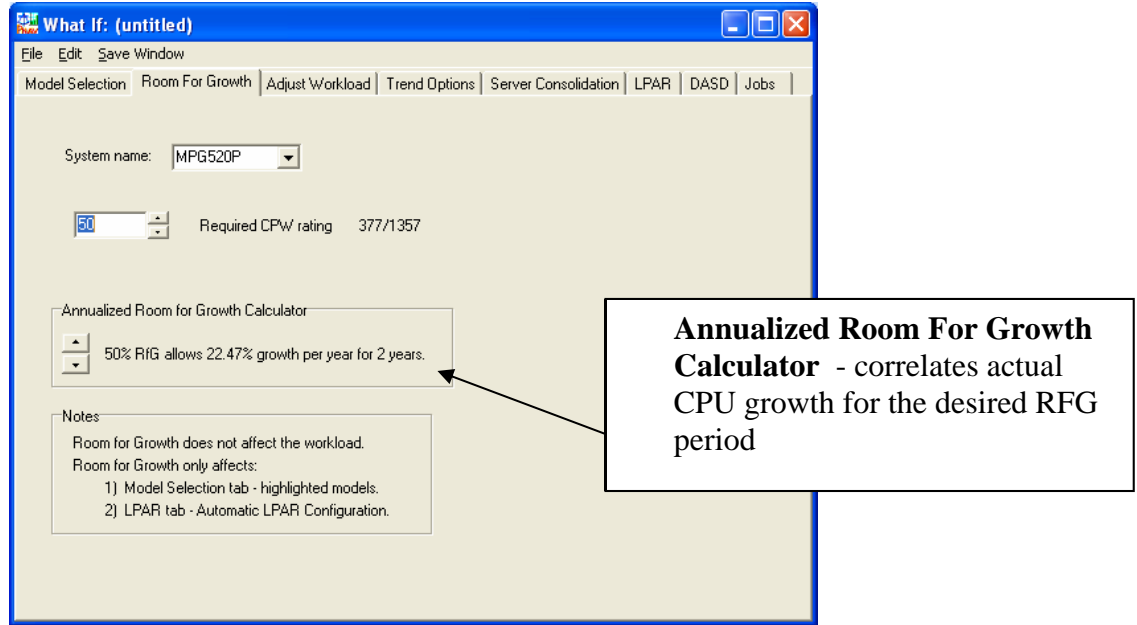
Model Selection: There are three main boxes on this tab. “Select Model” is where you select a different system to model a given workload. By clicking on the right arrow in the model number field, you will see a list of all the AS/400s and/or iSeries. Just scroll down until you see the one you want and click. The graph window will change to show the relative performance (in terms of CPU utilization and CPW) of the selected workload on this model.

In order to shorten the list of models, you can click the arrow on the right of the first field below the model number called “Model Subset”. Select the general model you would like to model. For example, model 520. Then when you click the arrow in the model field above you will only see the selected model, in this case 520. You can further subset the models list by selecting a particular function in the second field for Model Subset. For example, select DSD to see only the Domino models.

The third area in the Select Model box is called “Qualified for Room for Growth”. The options are No Highlighting, Highlight, and Omit Unqualified. “Room for Growth” is an exclusive feature of Performance Navigator. Often in a capacity planning exercise, the customer might ask how long until the next upgrade or say, “I want a system that will last for ‘x’ number of years.” After having done thousands of capacity plans, we have found that turning the questions around and asking “How much room for growth do you want?” is the best approach. This is mainly because the answer is now in the hands of the customer. Once the customer and you have decided on a percentage for Room for Growth, Performance Navigator, by default, will highlight the model in the pull down list in green that qualify for the specified Room for Growth. The default Room for Growth is 50%. This simply means that any system that is highlighted in green will be less than 62% CPU utilization at the peak. The Room for Growth percentage will also be used in LPAR configurations.

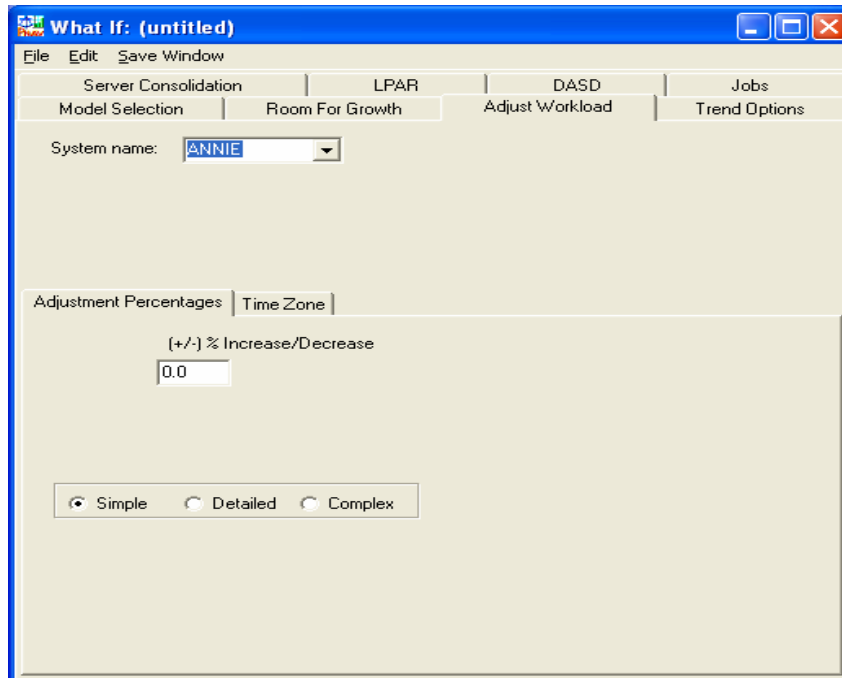
Room for Growth: This tab is where you can change the Room for Growth percentage. By default it is set to 50%. **NOTE:** This value is for each individual system. If you are doing a server consolidation, changing the value will only affect the system shown in

the System Name field above. If you want to change the Room for Growth percentage of another system in a server consolidation, just click the arrow and select another system name.

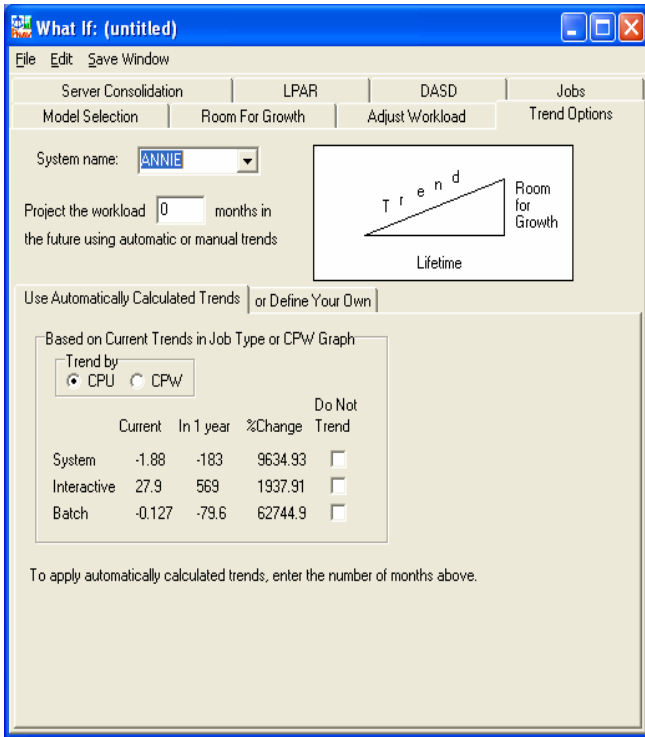


Adjust Workload: This is where you can add or subtract a percentage to the existing workload. For example, the customer has told you that the workload will double because of an acquisition. You would enter 100% in the interactive and batch fields. This would double the interactive and batch workload. Another example would be if the customer wants to take development off the production and set up a separate LPAR for development. For example, if development consists of 20% of the current workload, you would enter -20% in both interactive and Batch. The “Complex” option allows you to enter three columns of percentages. For example, say you want to subtract development and grow the rest by 10%. You would enter -20% in the first column and 10% in the second column.

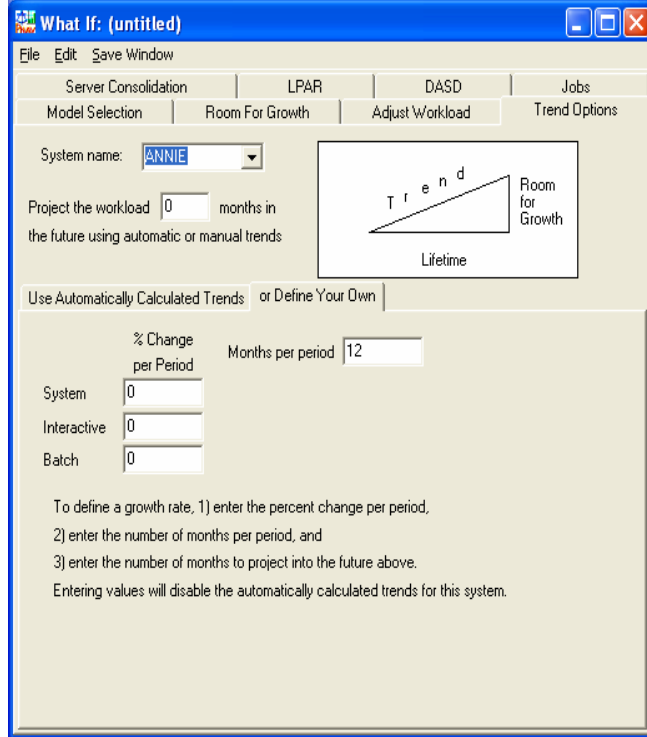
You can also adjust time zones for each system. If for example you want to consolidate a system in New York to a system in Chicago, you might want to change the time zone of the New York system by -1 hours.



Trend Options: The Trend Options Tab is where you can grow a given workload by a percentage over 'x' period of time. There are two options for this percentage. The Automatic percentage is the current percentage growth rate of either the CPU utilization or CPW. If you have more than 90 days of performance data, this might be a good option. However, if you have less than 90 days or want to use a different percentage, the 'Define Your Own' tab will allow you to enter a percentage for system, interactive and/or batch. Once you make your choice, just enter the number of months to project the workload.

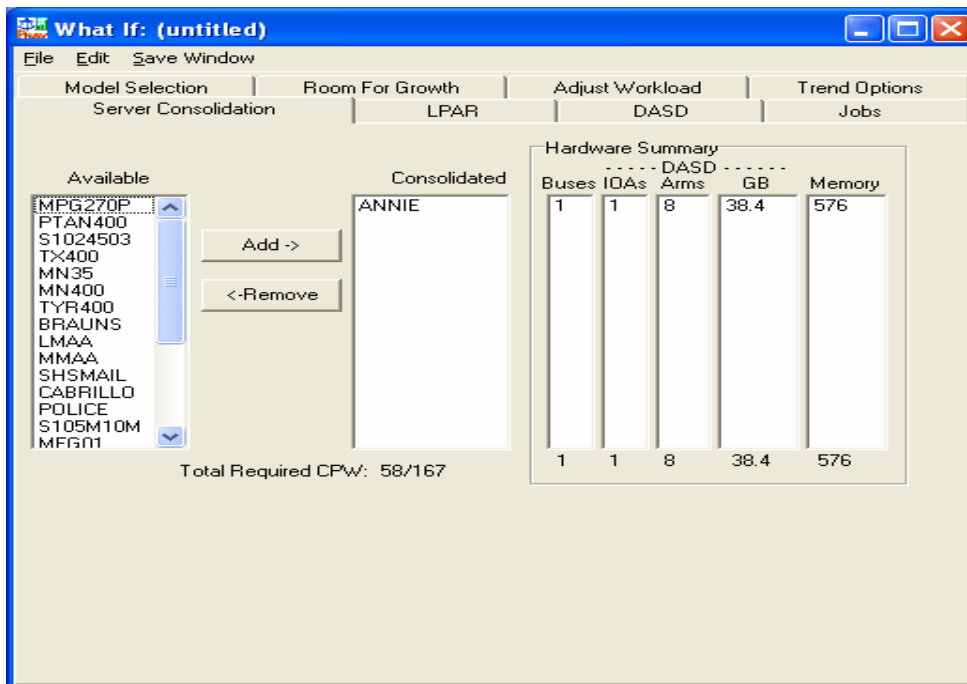


Using Automatic Trends

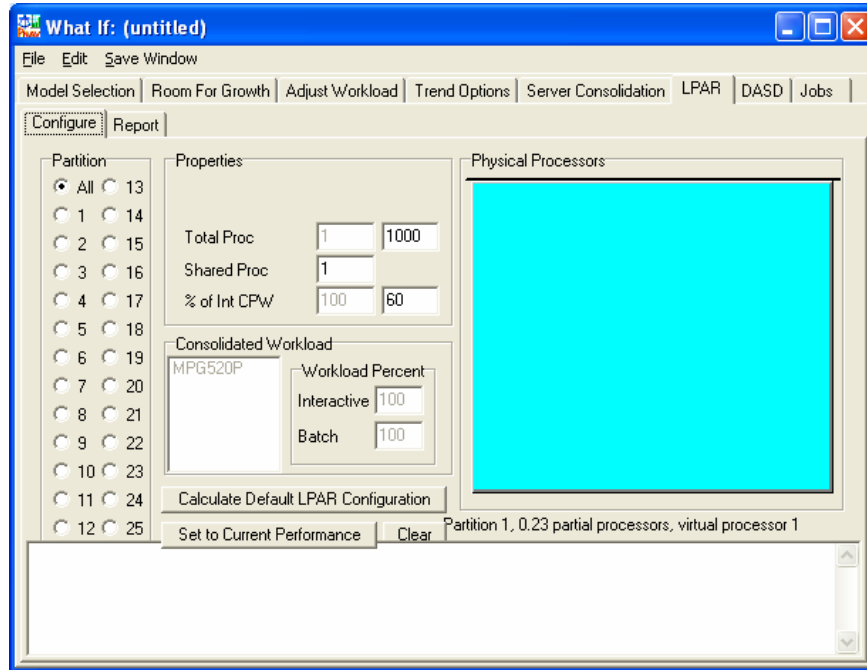


Defining Your Own trends

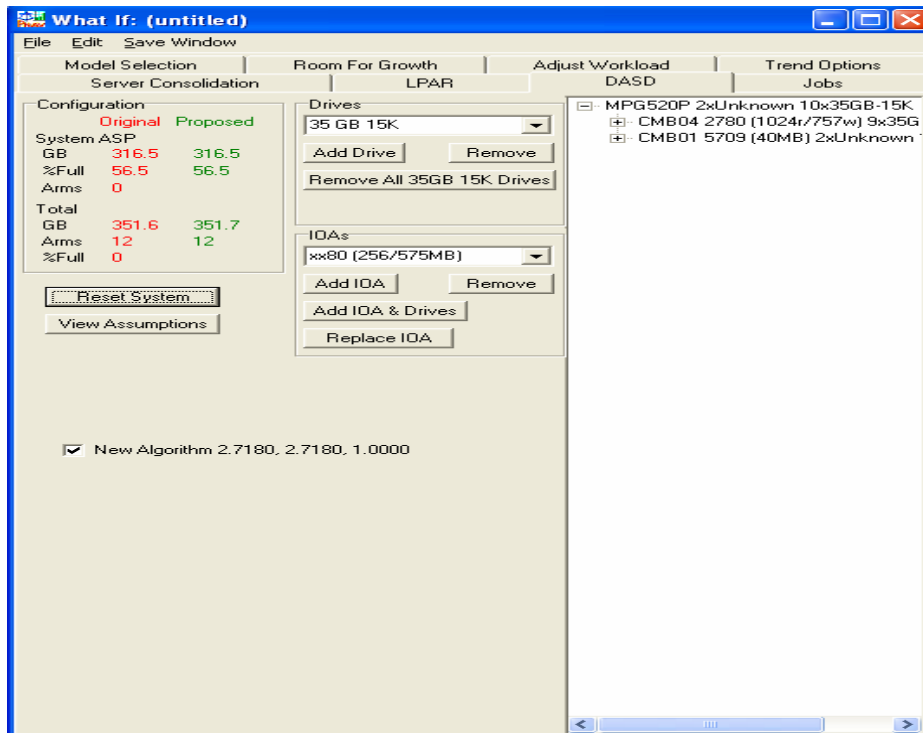
Server Consolidation: This tab is used to consolidate systems. Just highlight the system name in the Available column and click add. A given system name will only appear in the Available column if you have connected to that member and have a keycode. The Hardware Summary is helpful to see the big five (buses, IOAs, Arms, GB, and Memory) of all the system being consolidated.



LPAR: This tab is where you will configure the proposed LPAR configuration. The first step is to click the “Calculate Default LPAR Configuration” button. You will first be asked if you want a managing partition. Then Performance Navigator will calculate the amount of CPU resources that will be needed to support 100% of the workload with the Room for Growth. Once the default LPAR is calculated, you can modify the configuration to meet any specific needs. The report tab is useful as input to the LPAR validation Tool (LVT).



DASD: Used to configure the disk on the modeled system. It is important to note the graph window. The graph window is showing the average disk arm utilization. As you remove controllers or disk, the arm utilization graph will change. So the task is to add enough disk so the disk performance is acceptable. The disk space calculation for the new configuration is under the Proposed column in the Configuration box.



Jobs: Performance Navigator tracks every job and calculates month to date numbers. The Jobs tab will project the run time of every job on the new system. This is a CPW analysis only. This makes the projected run time conservative because in most cases the disk IO subsystem will improve.

What If: (untitled)

File Edit Save Window

Model Selection Room For Growth Adjust Workload Trend Options
 Server Consolidation LPAR DASD Jobs

Job name

Job data from: ANNIE 170:2291 CPW:25/115 P05
 Projected on: 820:2395-1523 CPW:120/370 P20

August/2004

Job Name	Average Run Time	Projected Run Time	Percent Change	Number Of Runs	Run Time CPU %
Average of 90 jobs	03:27:50.1	03:27:40.5	-0.1	11	0.1
DSP21	00:20:46.3	00:20:43.7	-0.2	3	0.3
DAVID1	00:31:52.5	00:31:50.9	-0.1	8	0.1
DSP16	01:17:45.7	01:17:36.4	-0.2	6	0.3
QPADEV0002	00:34:23.8	00:34:22.8	-0.1	6	0.1
PRTMARG	00:42:51.9	00:42:50.9	0.0	7	0.1
DSP01	00:07:35.7	00:07:33.8	-0.4	20	0.6
QPADEV0009	01:01:39.3	01:01:38.0	0.0	6	0.1
QPADEV000B	01:39:46.6	01:39:23.5	-0.4	12	0.6
DSP20	04:38:02.8	04:35:02.9	-1.1	5	1.6
QPADEV000G	00:21:00.8	00:20:57.4	-0.3	4	0.4
QPADEV000H	01:27:49.8	01:27:31.5	-0.3	4	0.5
DSP07	02:17:00.4	02:16:33.8	-0.3	5	0.5

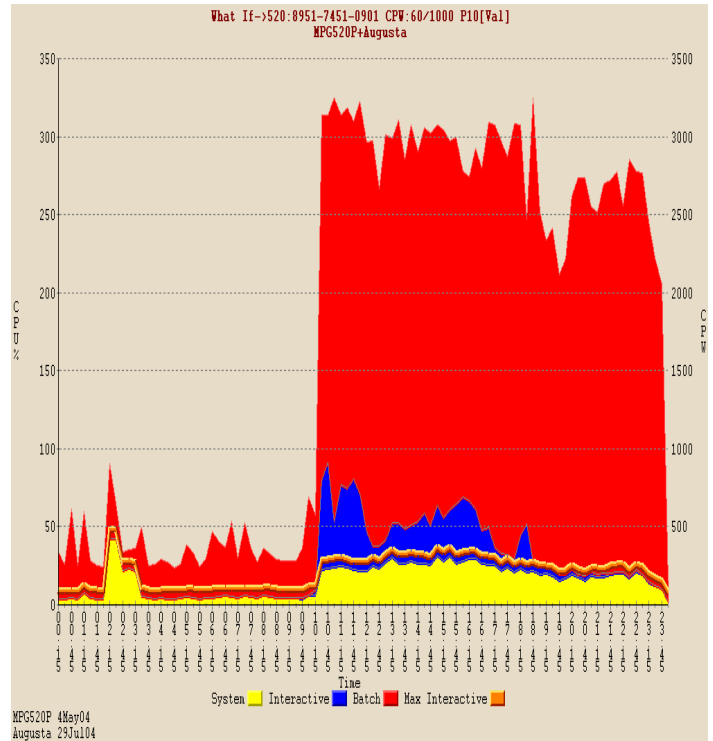
iSeries Server Consolidation (continued)

After producing the standard six graphs for each system in the consolidation, select the “New” option under the What-If menu. Then go to the Server Consolidation tab and highlight the system name (one at a time) in the available column and click add. The graph will change to reflect the added system name in the title and the date range for the workload is added to the footnote section at the bottom.

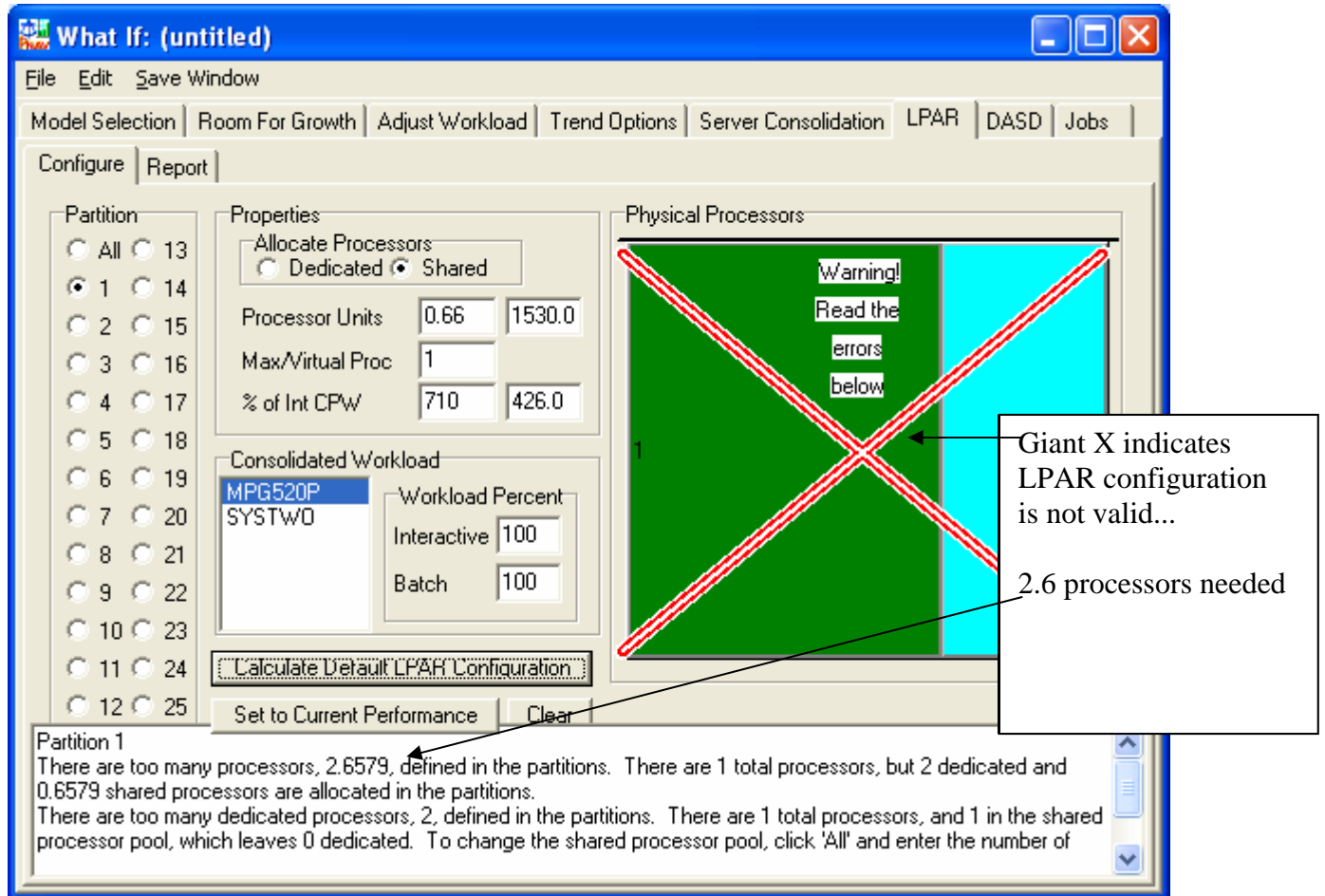
Once you have added the system, go to the Model Selection tab and select a new system to model. Save the graph as an example of the consolidated systems without LPARs.

Hardware Summary		-----DASD-----				
Buses	IOAs	Arms	GB	Memory		
4	2	12	351.6	1984		
13	7	105	2284.0	16896		

Total Required CPW: 1396/5647



Now go to the LPAR tab and click “Calculate Default LPAR Configuration”.



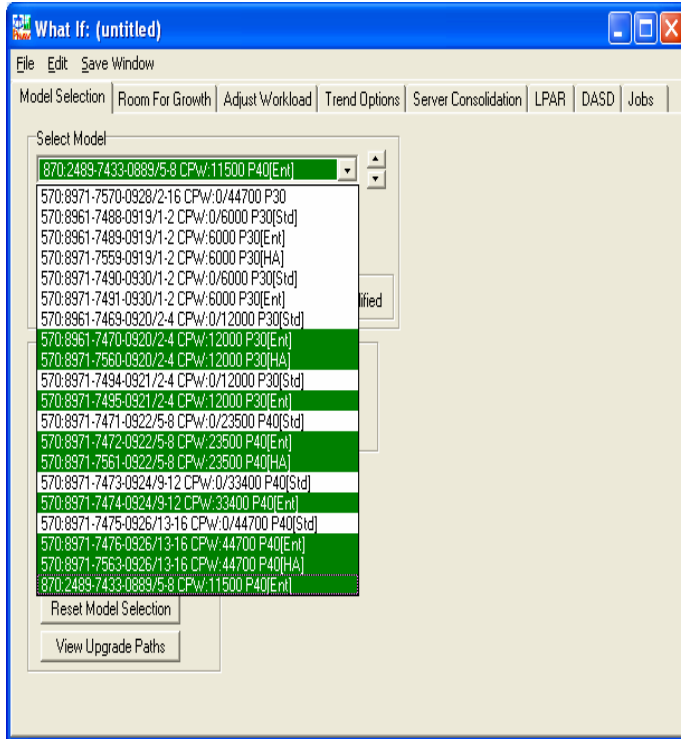
The Physical Processors window is intended to show graphically how the LPARs are configured. You will see one box for each physical processor. The colors represent the following: Red=Allocated Dedicated, Yellow=Unallocated Dedicated, Green=Allocated Shared, Turquoise=Unallocated Shared. Performance Navigator will allocate enough resources for the Room for Growth percentage. You can also see the partition number in the box (i.e. P for primary, 1,2,3, etc for the partitions). By default 100% for the interactive and batch workload for each system is allocated to a partition. However, the Workload Percent fields in the Consolidated Workload box allow you to change this percentage. To see the actual allocation of CPU to each partition, click the Report Tab.

In the example above, we have consolidated two systems, MPG520P & SYSTWO. The default LPAR configuration created a system that will not support the work having 50% room for growth. This is simply due to the model 520 being too small. As a result, we need to select a new model and re-calculate the LPAR configuration (Press the *Calculate Default LPAR Configuration* button again).

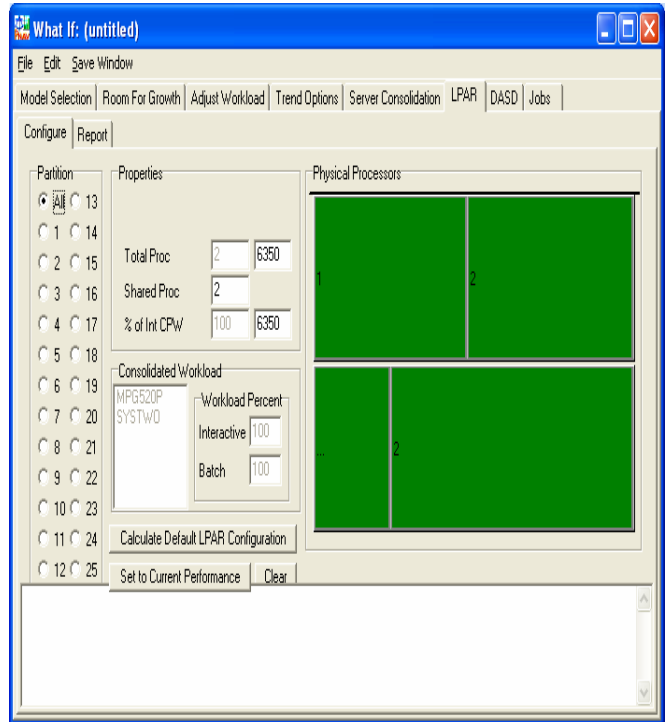
Choosing a New System

We will select the model 570 8961-7470-0920

Once we choose a new system, we simply reconfigure our LPAR environment – We simply press **Calculate Default LPAR Configuration** again. By choosing a 570 8961, our work loads comfortably fit into our new LPAR environment.



Choosing a new system via the *model selection* tab



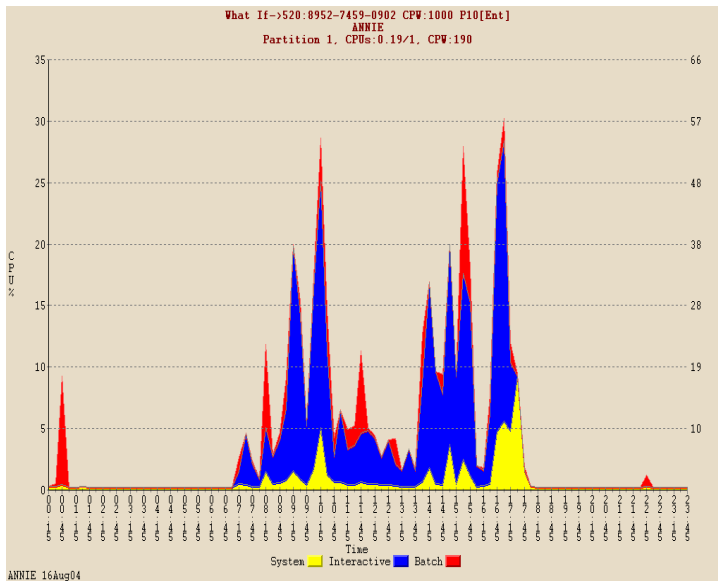
New LPAR Configuration Has No Errors

Choosing a New System – Supporting Documentation

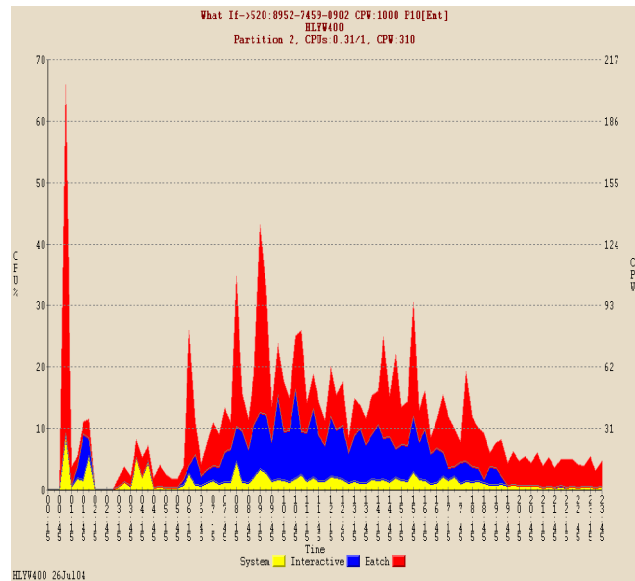
During the upgrade process, the corresponding graphs can be used as supporting documentation:

Partition	Dedicated or Shared	Desired/Shared Processors	Minimum Processors	Maximum/Virtual Processors	Percent of Interactive	CPW	MPG520P	Augusta
1	S	0.48	0.40	1	7	445/1524	100/100	
2	S	1.52	1.13	2	18	1143/4826		100/100
Total	00/2S	2.00	1.53		25	1588/6350	100/100	100/100

New LPAR Configuration for LVT



Supporting Documentation – LPAR 1



Supporting Documentation – LPAR 2

Note: When you are in a server consolidation mode, the DASD tab will add partition buttons at the bottom. You then can configure disk configuration by partition.

Summary

As with any new product, it will take some practice before you are familiar with the process. Please feel free to call or email with any questions. We are also VERY interested in your comments. Please pass along any suggestions that can improve the product.

GOOD LUCK.

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