

# Performance Management

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# Topic Overview

## Management Central

- Real-time Monitoring
- Collection Services
- Management Central - Pervasive

## Performance Management

- Performance Reports
- BEST/1
- BMC's Patrol for AS/400

## PM/400

- Trend Analysis

## Workload Estimator

- PM/400 Integration

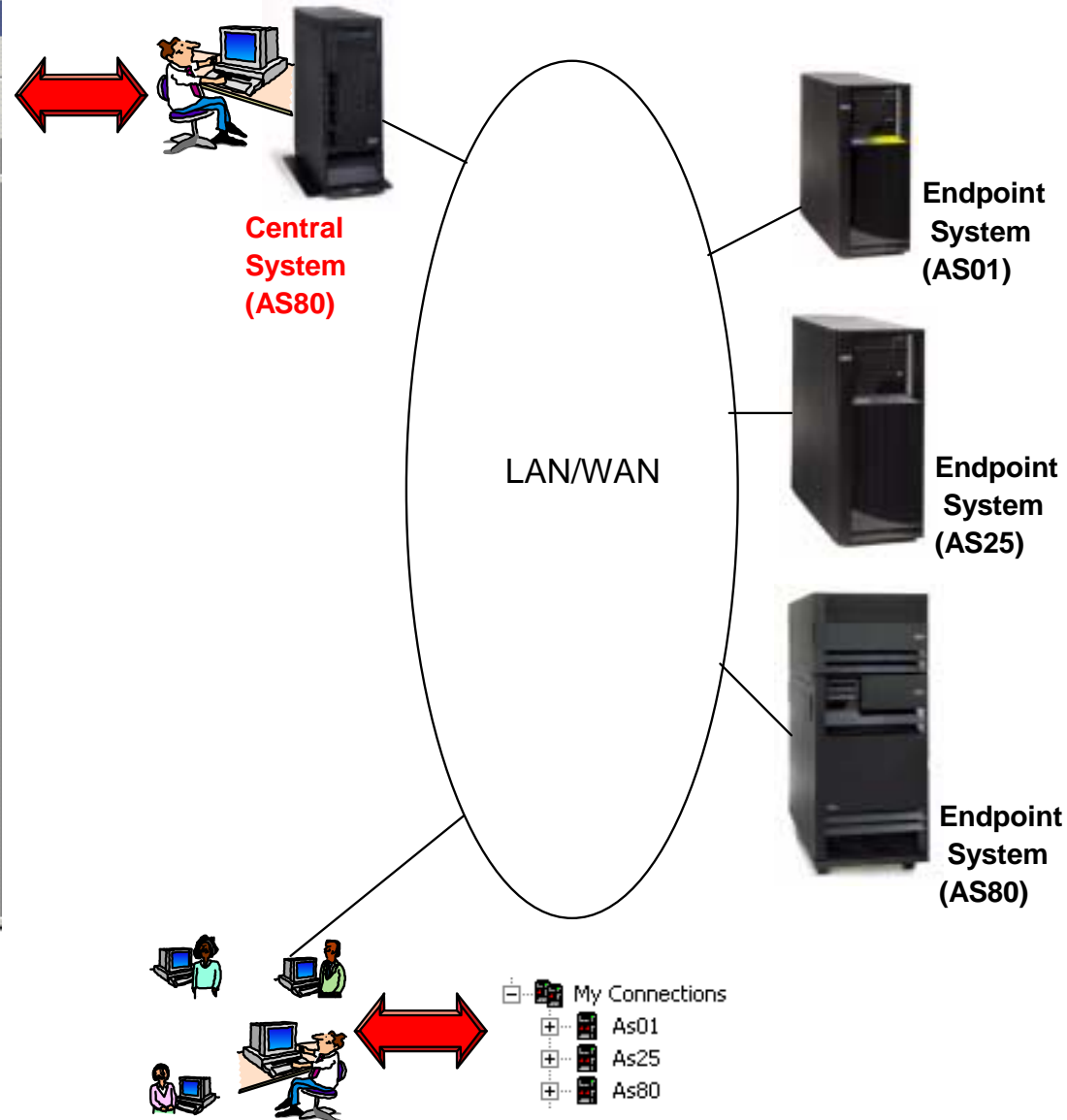
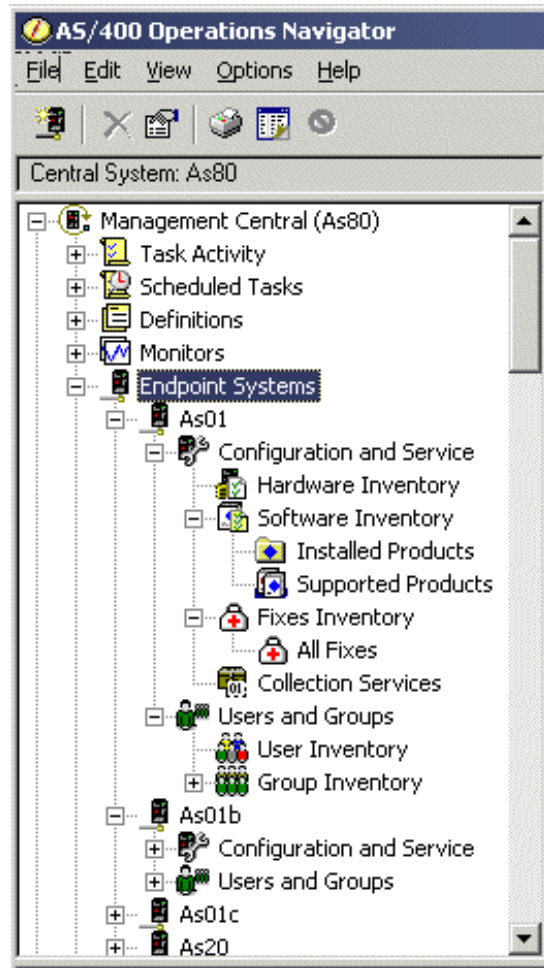
# Management Central

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Management Central uses the basic system operations on each of the endpoints (e.g., APIs for performance monitoring, system commands, etc.).

- PC
  - the graphical interface (i.e., view) both input and output of management activities
  - only needs to connect to the central system
- Central System connects to other systems (called endpoints).
  - Accepts user input and directs all systems (called endpoints) on what do to (e.g. coordinates all activity)
  - Location where information on activities is stored
- Endpoint system
  - iSeries and AS/400e systems Managed by the Central System

# Management Central - Overview



# Notes: Management Central - Overview

The "real-time" Monitoring function is a component of Management Central support of Operations Navigator.

## Environment

- Accessing any system directly will usually be performed through the Environment (e.g.: My Connections), which is a container of your direct AS/400 connections.
- Use of "Configuration and Services" from the Environment, would require signing on to the Central System.

## Endpoint system

- Defined on the central system for the purpose of performing Management Central functions. An endpoint system must be connected to the central system and must be running OS/400. The level of OS/400 that is running on the endpoint system determines which Management Central functions are available on that system. The endpoint system cannot be running a release of OS/400 earlier than V3R1.
- To add or delete a Management Central endpoint system, you must have \*IOSYSCFG special authority.

## ■ Central System

- The central system stores all Management Central data and connects to the AS/400 endpoint systems. The central system must be a system that is connected through Client Access, accessible through TCP/IP, and running OS/400 V4R4 or later. To use a particular AS/400 system as your central system, you must have authority to use Management Central on that system. Authority is controlled by the Application Administration function in Operations Navigator.

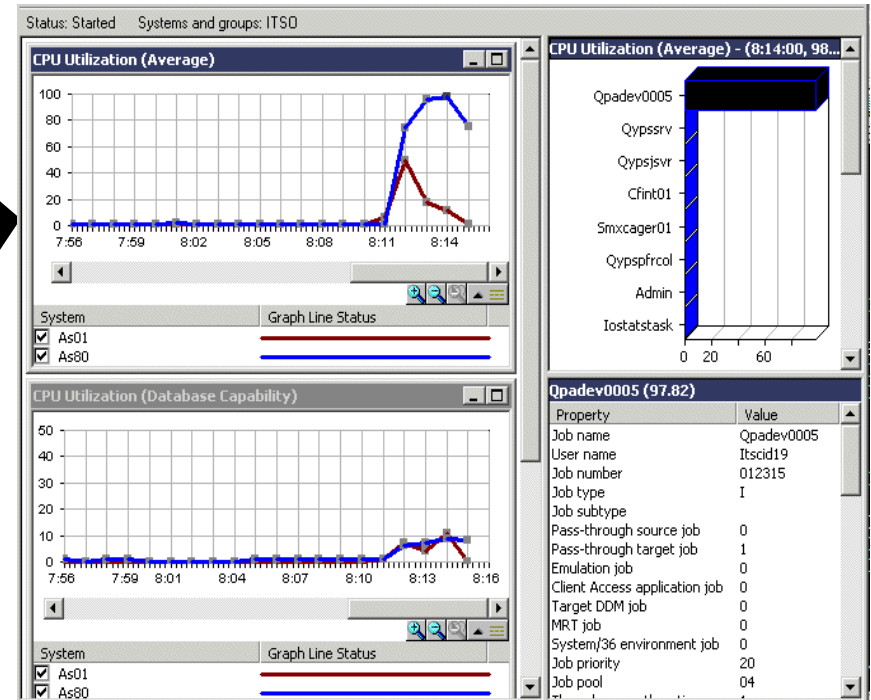
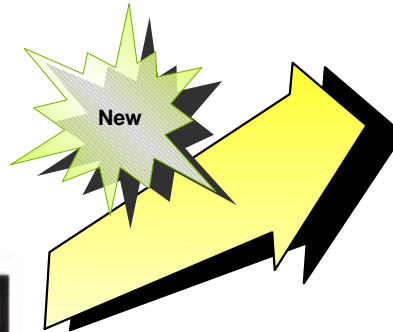
## ■ Operations

- Ensure that Management Central support is activated on every machine in the Management Group (Central System and Endpoint Systems)
  - ✓ < *Environment* >> < *system-name* > > **Network > Servers > TCP/IP .... Management Central**
  - ✓ e.g.: My **Connections > AS01 > Network > Servers > TCP/IP .... Management Central**
- Any one of the systems in the Management Group can be designated as the Central System.
- To use Management Central support, you must have the same **user-id** and **password** on Central System as well as all Endpoint systems to be managed.
  - ✓ If you do not have this setup correctly you may see the message "**The Management Central endpoint system '<system-name>' cannot be contacted**".

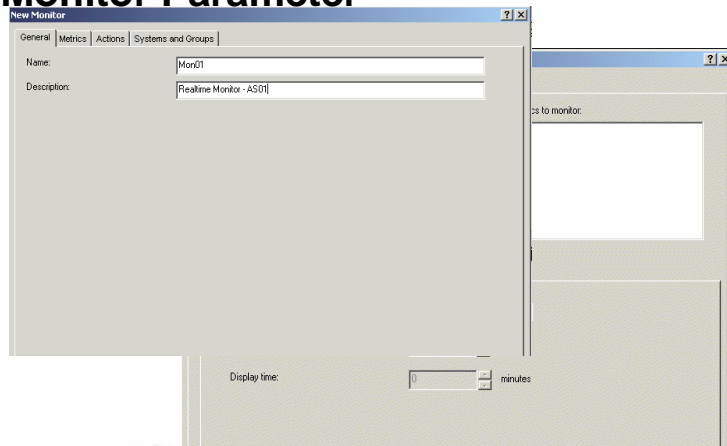
# System Monitoring (Real-time)

Management Central Monitors can display:

- Real time performance data
  - Available since V4R4
- Graph performance data
  - New with V5R1
    - ▶ Interface with PM/400



## Monitor Parameter



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# Notes: System Monitoring (Real-time)

The following multithreaded jobs support Real-time Monitors and the Collection Services functions of Management Central.

Start Management Central

- QYPSSRV job in QSYSWRK subsystem

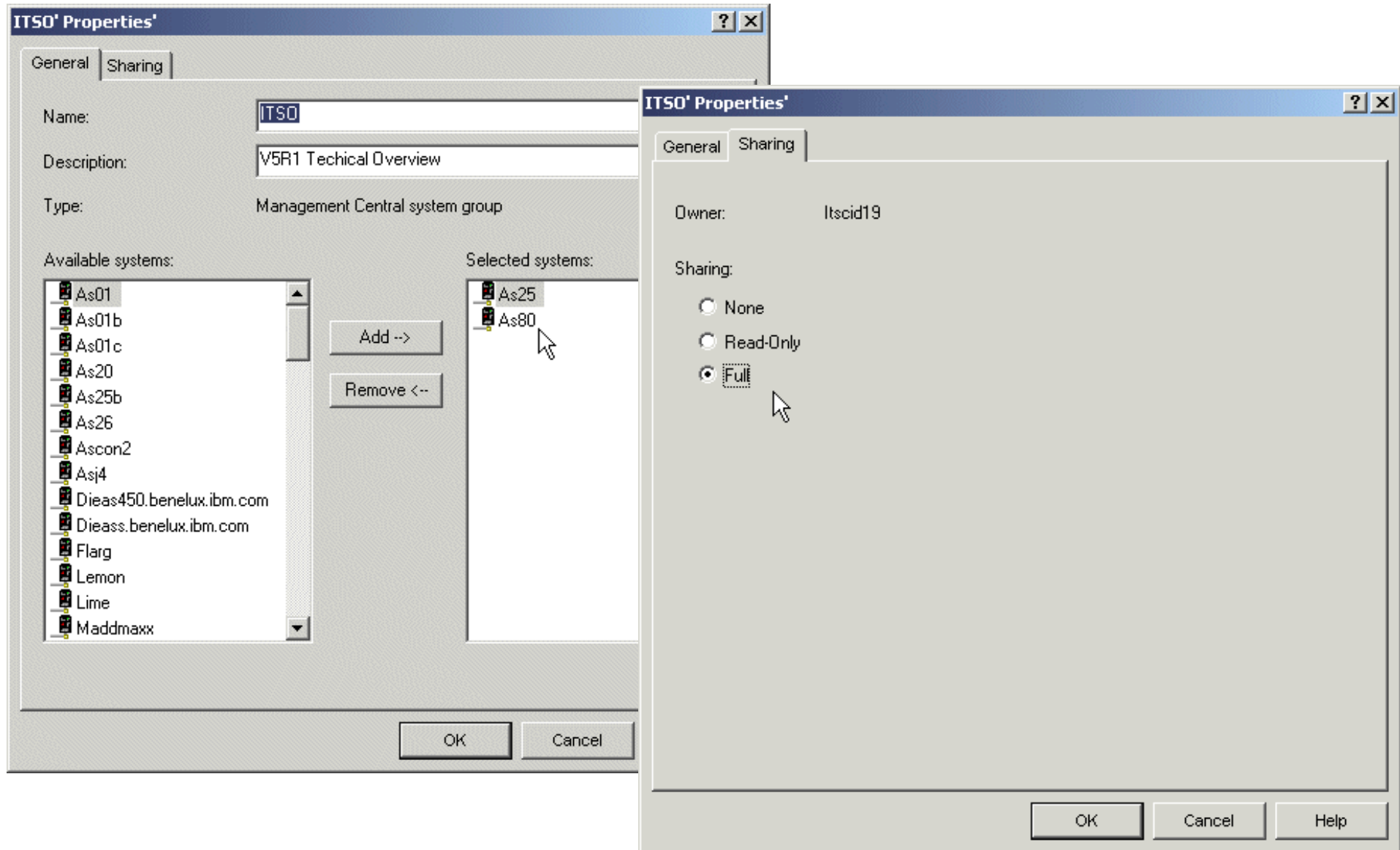
Start Real-time Monitor or Collection Services

- QYPSPFCOL job in QSYSWRK subsystem.

**Note:** Time Zone Considerations - If your systems controlled by Management Central are located in different time zones, you must ensure that not only that your system values controlling system date (QDATE) and time (QTIME) are set correctly, but also that the system value for Coordinated Universal Time Offset (QUTCOFFSET) which reflect the time difference from GMT (Greenwich Mean Time), is set correctly. The impact of changes resulting from transition to and from daylight saving time must also be considered.



# Create System Groups



# Notes: Create System Groups

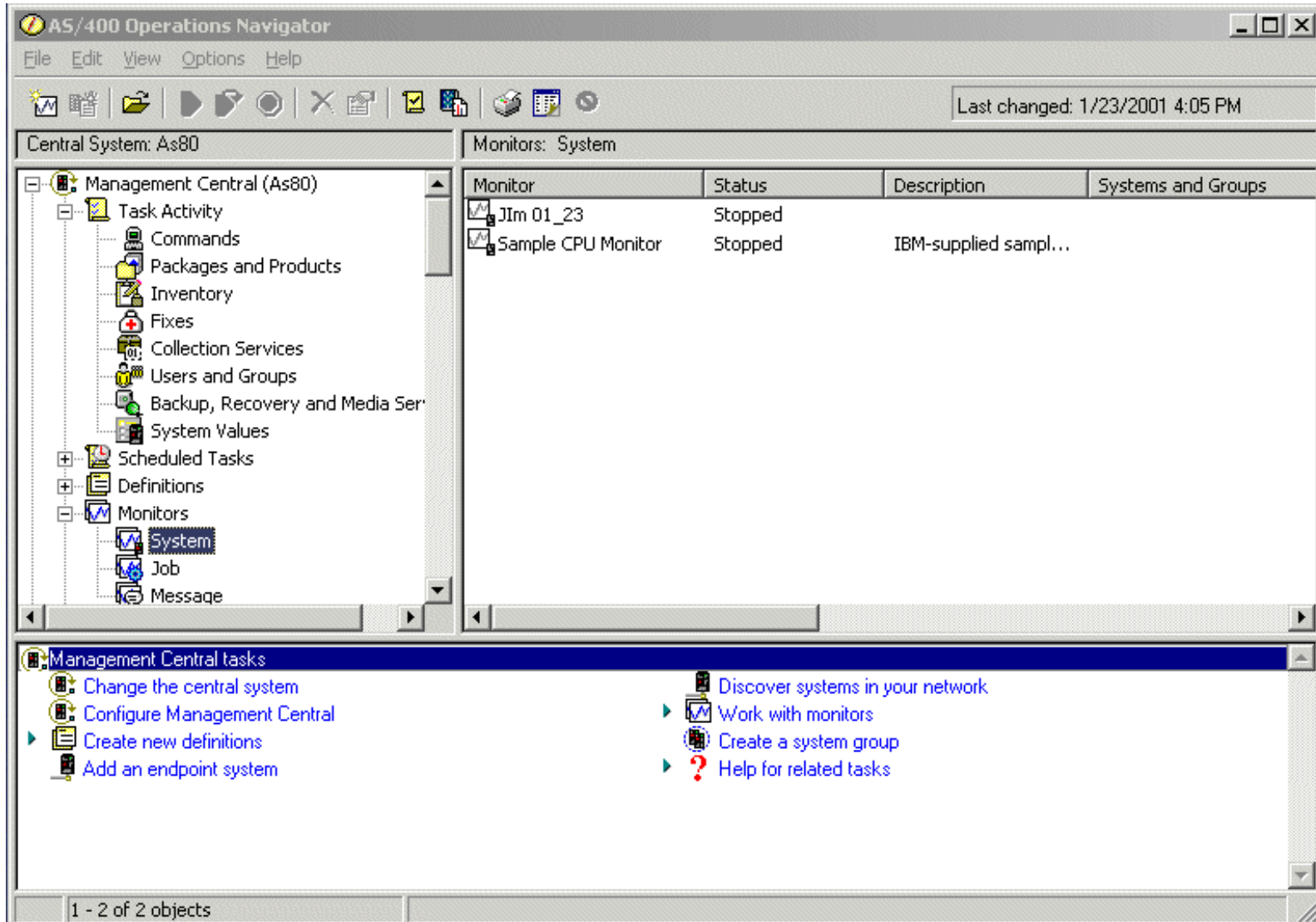
Before using Systems Groups with Management Central, the groups must be created. In the creation of System Groups, you will also specify how data collected in monitoring can be shared with other users.

## Sharing Collection Data

- The following are the sharing options available for each Collection Services Task. The owner has specified one of the following levels of sharing:
  - **None:** Other users cannot view this item.
  - **Read-Only:** Other users can view this item and use it. Other users can create a new task, definition, or system group based on this one and make changes to the new one as needed. However, other users cannot change this task, delete it, or stop it when it is running.
  - **Full:** Other users can change and delete this item. Other users can also view this item and use it to create a new task, definition, or system group.
  - **Controlled:** Other users can start and stop this item. Only the owner can change the level of sharing. Other users can also view this item and use it to create a new item based on this one. (Appears when you select Properties from Management Central > Task Activity > Collection services)

# System Monitoring (Real-time)

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AS/400 Operations Navigator

File Edit View Options Help

Last changed: 1/23/2001 4:05 PM

Central System: As80

Monitors: System

Monitor	Status	Description	Systems and Groups
JIm 01_23	Stopped		
Sample CPU Monitor	Stopped	IBM-supplied sampl...	

Management Central (As80)

- Task Activity
  - Commands
  - Packages and Products
  - Inventory
  - Fixes
  - Collection Services
  - Users and Groups
  - Backup, Recovery and Media Ser
  - System Values
- Scheduled Tasks
- Definitions
- Monitors
  - System
  - Job
  - Message

Management Central tasks

- Change the central system
- Configure Management Central
- Create new definitions
- Add an endpoint system
- Discover systems in your network
- Work with monitors
- Create a system group
- Help for related tasks

1 - 2 of 2 objects

**Management Central > Monitor > System**

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# Notes: System Monitoring (Real-time)

To access the Real-time Monitoring facility

- Open Management Central > Monitors > System

To create a new Monitor

- Right-mouse click on the "System" icon
- Select "New Monitor"

To modify an existing Monitor

- Right-mouse click on the select the Monitor
- Select "Properties"

Properties specification are now defined in 4 tabs (compared to 3 tabs in V4R5):

- General - contains only the Name and Description prompts. V4R5 included the metric selection
- Metrics - allows you to select the performance metrics you want to monitor. A set of "sub-tabs" provides for the specification of additional collection/graphing parameters like collection interval, maximum graphing value and display interval. These secondary parameters were located in the "metrics" tab in V4R5.
- Actions -similar to VR5.
- Systems and Groups - this is a new tab in V5R1 which allow you to select from a list of endpoint systems, or a group(s) of endpoint systems. In V4R5 the option to select the systems were presented when the monitor was started.

# Monitor Parameters (General/Metrics)

**New Monitor** [?] [X]

General | Metrics | Actions | Systems and Groups

Name:

Description:

**New Monitor** [?] [X]

General | Metrics | Actions | Systems and Groups

Available metrics:

- CPU Utilization (Average)
- CPU Utilization (Interactive Jobs)
- CPU Utilization (Interactive Feature)
- CPU Utilization (Database Capability)
- CPU Utilization (Secondary Workloads)
- CPU Utilization Basic (Average)
- Interactive Response Time (Average)
- Interactive Response Time (Maximum)
- Transaction Rate (Average)
- Transaction Rate (Interactive)

Metrics to monitor:

Add -->

Remove <--

General | Threshold 1 | Threshold 2

Collection interval:

Maximum graphing value:  percent

Display time:  minutes

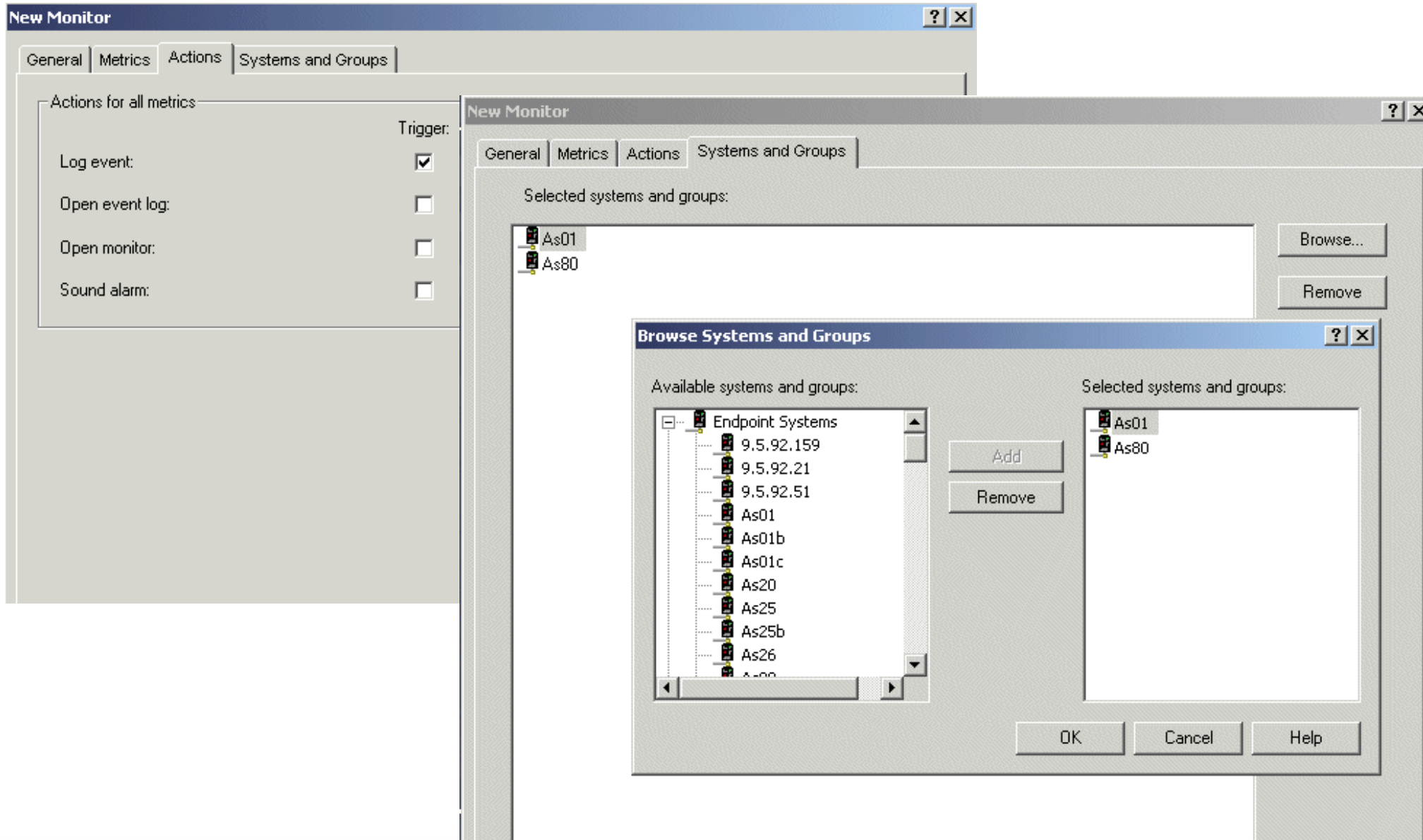
# Notes: Monitor Parameters (General/Metrics)

## Metrics

- CPU Utilization
    - Average - Percentage utilization of total CPU capacity. in a time interval.
    - Interactive
      - ✓ Jobs - Percentage of Total CPU used by interactive (5250-like) jobs
      - ✓ Feature - Percentage of Total Interactive Capacity used by interactive (5250-like) jobs
    - Database Capability- Percentage of CPU used by DB2 UDB for iSeries activity
    - Secondary Workloads - used on dedicated servers like the Domino Dedicated Server, to identify non-Domino workload.
    - Basic - Similar to "average" but detailed job-level information is not collected.
  - Interactive Response Time - for 5250-like interactions.
    - Average
    - Maximum
  - Transaction Rate
    - Average - number of all interactions with system.
    - Interactive - number of 5250-like interactions.
  - Batch Logical Database I/O
    - Average - Logical DB I/Os performed by batch jobs
  - Disk Arm Utilization
    - Average - over all install disk drives.
    - Maximum - utilization of busiest disk drive.
- ## Disk Storage
- Average
  - Maximum
- Disk IOP
  - Average
  - Maximum
- Communications IOP
  - Average
  - Maximum
- Communication Resources
  - Lines
    - ✓ Average
    - ✓ Maximum
  - LANs
    - ✓ Average
    - ✓ Maximum
- (Memory) Pool Faults
  - Machine Pool
  - User Pools
    - ✓ Average
    - ✓ Maximum

# Monitor Parameters (Actions and Systems)

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Actions for all metrics -Indicates which actions are to occur when a threshold is triggered or reset. Choices are:

Log event

- Adds an entry to the Event Log on the central system indicating that the threshold was triggered or reset. The entry also includes the date and time the event occurred, the endpoint system being monitored, the metric being collected, and the monitor that logged the event.

Open event log

- Displays the Event Log, which is a list of threshold trigger and reset events that have occurred.

Open monitor

- Displays a graphical view of the metrics as they are being collected.

Sound alarm

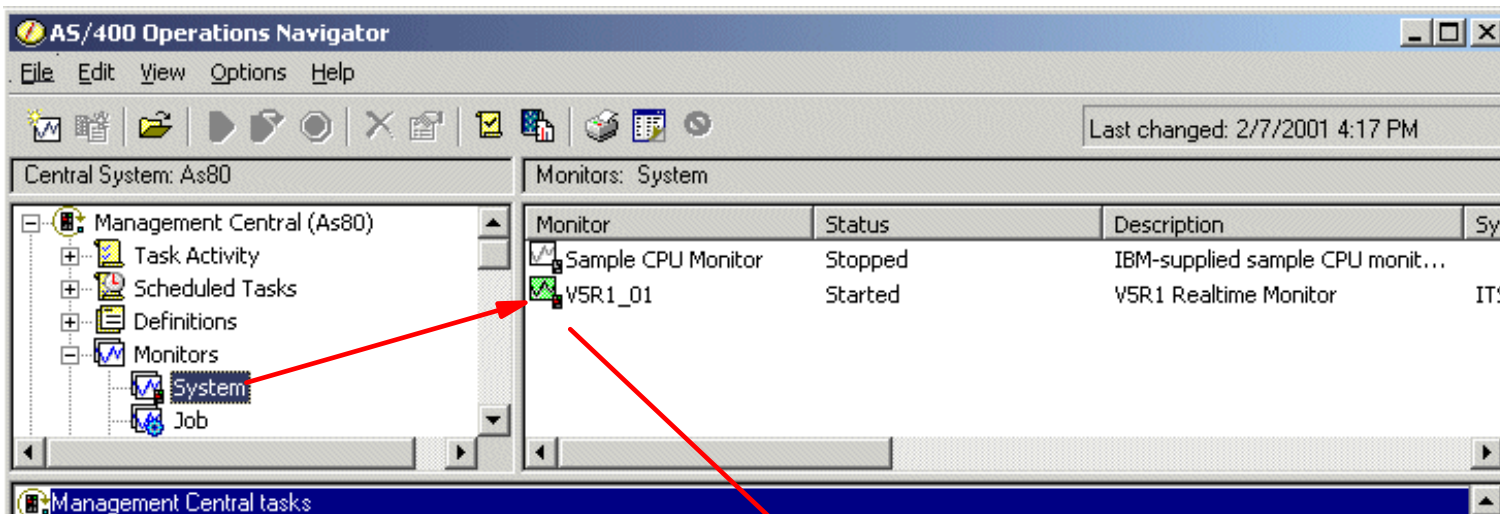
- Sounds an alarm on the PC.

Systems and Groups - allows you to select endpoint systems or previously grouped endpoint systems to be monitored by this Real-time Monitor specification.



# System Monitor (Real-time)

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AS/400 Operations Navigator

File Edit View Options Help

Last changed: 2/7/2001 4:17 PM

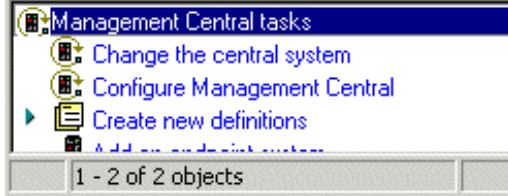
Central System: As80

Monitors: System

Monitor	Status	Description	Sy
Sample CPU Monitor	Stopped	IBM-supplied sample CPU monit...	
V5R1_01	Started	V5R1 Realtime Monitor	ITS

Management Central (As80)

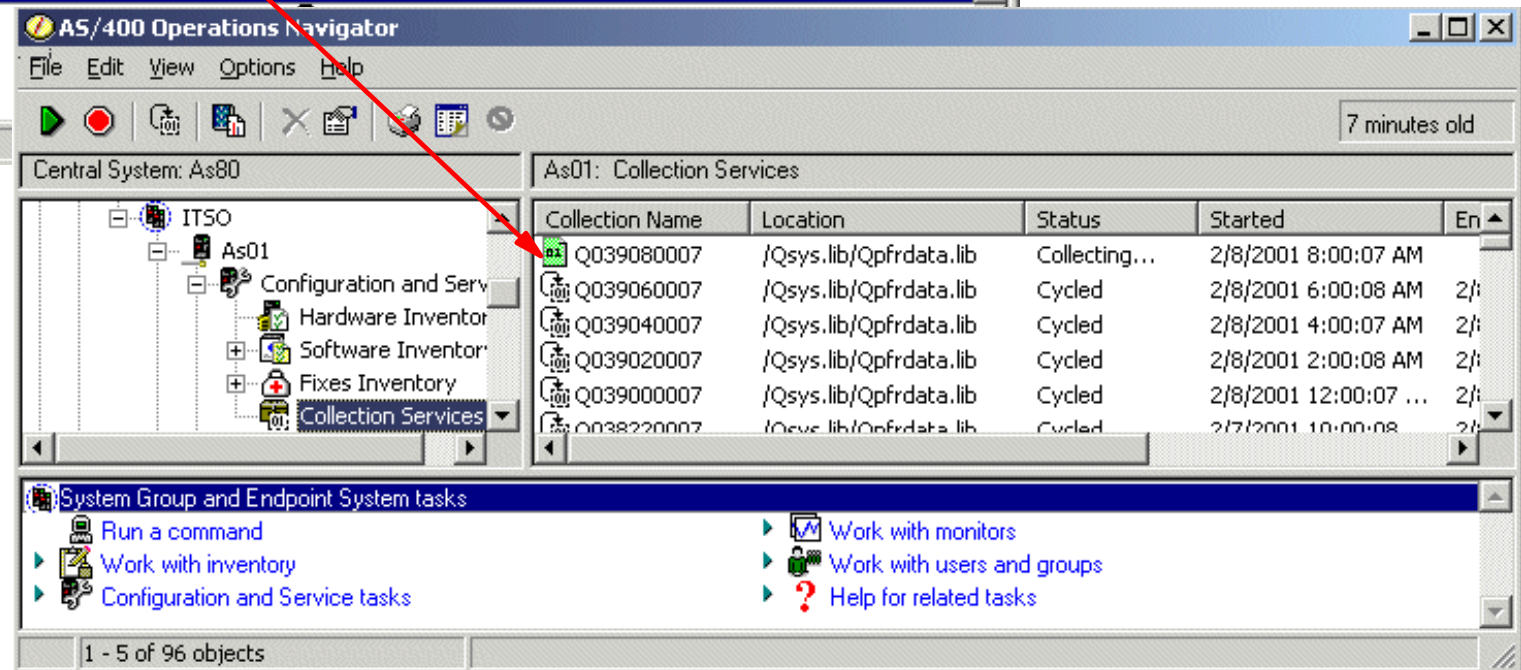
- Task Activity
- Scheduled Tasks
- Definitions
- Monitors
  - System
  - Job



Management Central tasks

- Change the central system
- Configure Management Central
- Create new definitions
- Add an endpoint system

1 - 2 of 2 objects



AS/400 Operations Navigator

File Edit View Options Help

7 minutes old

Central System: As80

As01: Collection Services

Collection Name	Location	Status	Started	En
Q039080007	/Qsys.lib/Qpfrdata.lib	Collecting...	2/8/2001 8:00:07 AM	
Q039060007	/Qsys.lib/Qpfrdata.lib	Cycled	2/8/2001 6:00:08 AM	2/i
Q039040007	/Qsys.lib/Qpfrdata.lib	Cycled	2/8/2001 4:00:07 AM	2/i
Q039020007	/Qsys.lib/Qpfrdata.lib	Cycled	2/8/2001 2:00:08 AM	2/i
Q039000007	/Qsys.lib/Qpfrdata.lib	Cycled	2/8/2001 12:00:07 ...	2/i
Q038220007	/Qsys.lib/Qpfrdata.lib	Cycled	2/7/2001 10:00:08	2/i

ITSO

- As01
  - Configuration and Serv
  - Hardware Inventor
  - Software Inventor
  - Fixes Inventory
  - Collection Services

System Group and Endpoint System tasks

- Run a command
- Work with inventory
- Configuration and Service tasks
- Work with monitors
- Work with users and groups
- Help for related tasks

1 - 5 of 96 objects

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# Notes: System Monitor (Real-time)

To start a Real-time Monitor

- Double click on the selected Monitor or
- select the Monitor and select the Green Arrow

When a Real-time Monitor is started, there are new threads associated with the monitor in the **QYSPFRCOL** and **QYPSSRV** (and in **QYPSJSVR**) jobs in QSYSWRK subsystem..

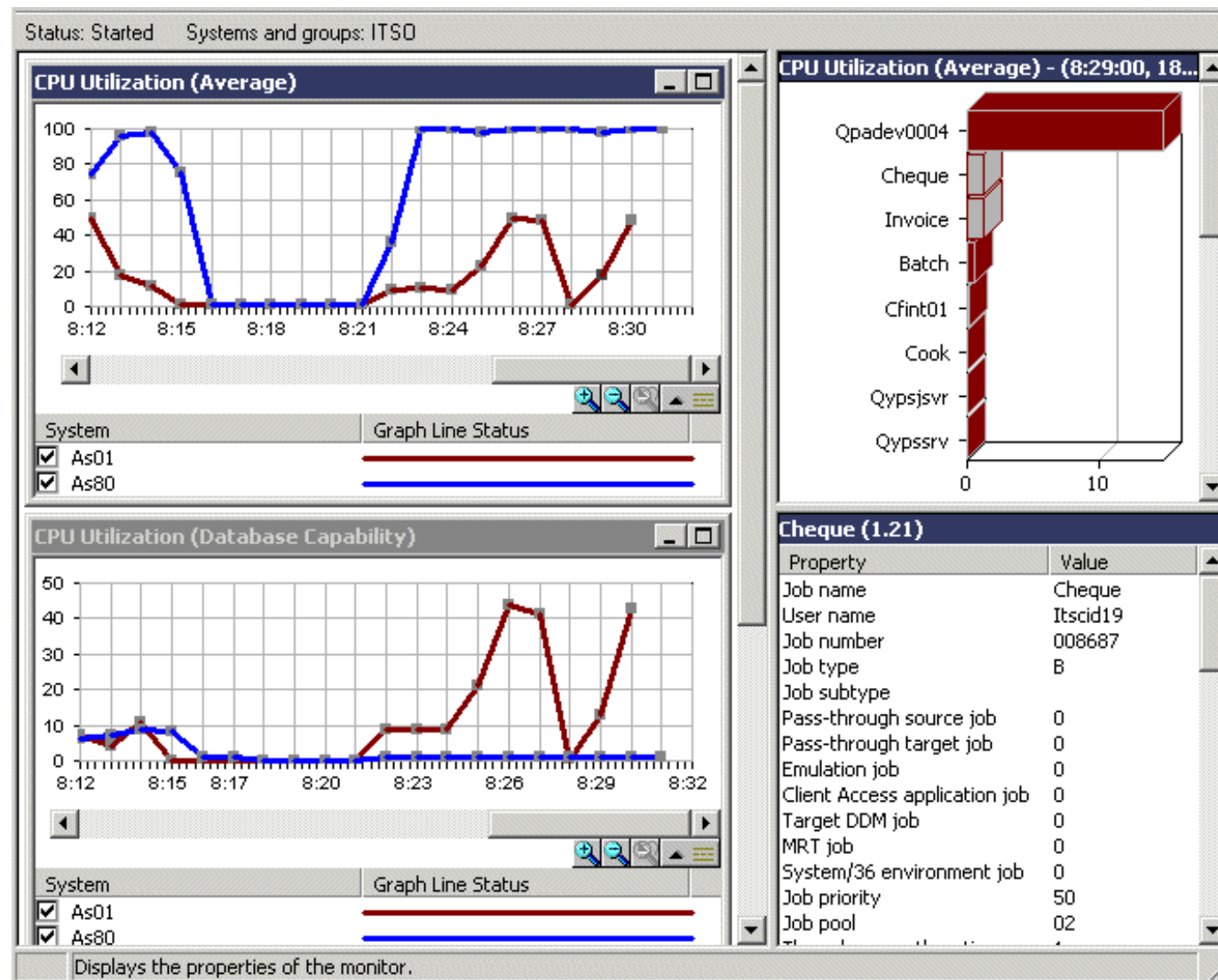
The Monitor Profile can be changed easily through the "Properties" option of the Monitor, even while the Monitor is active.

When a Monitor is defined and started, you would specify the performance metrics that you would like to view in the monitor. However, if you were to change the metrics, the new selection of metrics will be displayed. Depending on the metrics selected for monitoring, information on additional associated metrics, may also be available for monitoring. Metrics are grouped in to "categories". Collecting one metric in a "category" will result in all the other metrics in the group to be collected. Also, the information collected (and therefore available for monitoring) is dependent on all the metrics started by all users of the facility.

If the monitor window is closed, the monitor is not stopped. If you wish to end the monitor, go to the Operations Navigator session, and end the monitor.

# System Monitor-Display

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## Actions on a Job

In V5R1 the context menu for jobs in the second level data panel (and a new Job Menu item) will be enhanced to provide access to all of the functions available on a job. In other words, the context menu on a job in the graph will now include such options as Hold, Release, Open Files, etc. These actions will be the same as those available for the Job monitor.

## Windows Layout

For V5R1 this layout has changed in the following ways:

- Windows can be tiled in 1, 2, 3, or 4 columns
- When a user moves a window, all of the windows remain in a tiled fashion, and the moved window 'pops' into the new location in between the windows that it was placed next to. The windows will move to the right, and then move down to the left to remain in the number of columns specified. This behavior is similar to how the Lotus Notes databases move (with the exception that the Lotus databases don't move down to remain in a set number of columns).
- When a metric is minimized, the window will move down to the end of the first level data, and the other windows will move around, to fill the space of the minimized window. The movement will be from bottom to top, and right to left (in the opposite way that they move when a window is inserted).
- When a minimized window is restored, it moves to the bottom of the open metric windows.

## New Zoom Function

A new zoom function will be added to the system monitors in V5R1. Normal will be considered the value of the Display Time that the user selected for the metric. The user can now zoom using three methods:

- Zoom options in the View pulldown
- Clicking new Zoom buttons
- Dragging the mouse and making a Marquee selection on the graph

# Monitor Enhancements

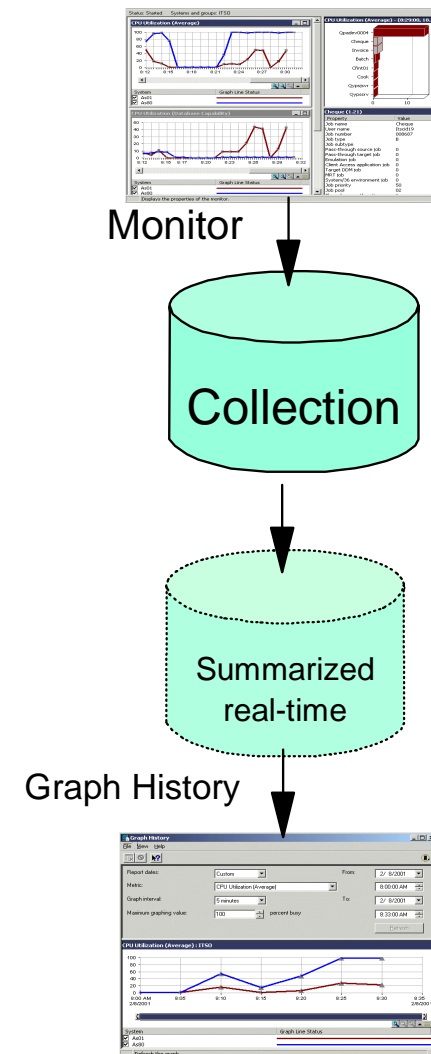
## Actions available on a job

- hold, release, open files, etc.
- window layout
- zoom features

## From File pulldown

- Graph History
  - For this Collection
- Trend Analysis
  - Access PM/400 web site
- Export Data Option
  - Comma Separated Variables (.csv)
  - Lotus 1-2-3 compatible (.csv)
  - ASCII Tab Delimited Text (.txt)
  - Microsoft Excel 97 (.xls)
  - Web Page(.html)

**One hour's data kept after monitor stopped**



## Performance Management/400 Link

A new option will be available from the File pulldown that will launch a web browser to the PM/400 web site. From here a customer can login and obtain PM/400 reports on his system.

## Other Enhancements

An hours worth of data is now kept even after a monitor is stopped. Thus, if a monitor is stopped and then restarted (and no other monitor is collecting those metrics) the monitor will display a line representing the data collected prior to the monitor being started. The line will not be connected to any new data coming in since there was a gap in the actual data collection.

A new status of **'Stopped - collecting for system only'** will be added for the 'Status' field on the Collection Services Property General page. Changes made to collection services in V5R1 make it possible for collection services to be stopped and no longer collecting any information for the user, but the collection service object may still be collecting information for other services such as PM/400. Therefore, if the user selects the 'Stop collecting' option for collection services, but PM/400 is running, they will get this new status. If no other services are running, the status will be **'Stopped'**.

- The Collection Services Status panel for an endpoint system will also show the new 'Stopped - collecting for system only'.
- The Collection Services Status panel for a group will continue to show 'Stopped' status as the aggregated status, but the individual systems will use the 'Stopped - collecting for system only' status.
- Along with the new status, the Collection Profile of 'None' will be removed from the Collection Profile dropdown of the Data to Collect page on Collection Services.
- On the Start Collection Services General page, the first control 'Cycle if already started' was changed to 'Cycle if already collecting'. This change was made to be more consistent with new status of Stopped - collecting for system only.

**Note:** For a Collection to stop, all activations of the collection must be ended, by each user.

# Graph Data

Status: Started Systems and groups: ITSO

**CPU Utilization (Database Capability)**

Graph Line Status

**CPU Utilization (Average) - (8:25:00, 98...**

Cfint01  
Qpadev0003

**Graph History**

File View Help

Report dates: Custom From: 2/ 8/2001  
Metric: CPU Utilization (Average) 8:00:00 AM  
Graph interval: 5 minutes To: 2/ 8/2001  
Maximum graphing value: 100 percent busy 8:33:00 AM

Refresh

**CPU Utilization (Average) : ITSO**

Graph handles allow to expand and reduce x-axis.

System  
 As01  
 As80

Displays the properties of the monitor.




Refresh the graph.

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The amount of data that is available for graphing is determined by the settings chosen in the Collection Services properties. Also, if Performance Management/400 is not started on a system, no more than 7 days of data can be displayed. If PM/400 is started, the user will immediately be able to view a total of 30 days of history.

In many cases the data that is graphed will not be a one to one correspondence with the data that was collected. For example, if data was collected on a 60 second basis, but the user chose to view data for the last month with an interval of day, the graphed data points will represent an average of the data that was actually collected. If the retention period was set such that 'Graph data' was kept for 30 days, the user could still select a data point and second level data would be calculated. The top 20 jobs for a particular day would now be shown in the second level data.

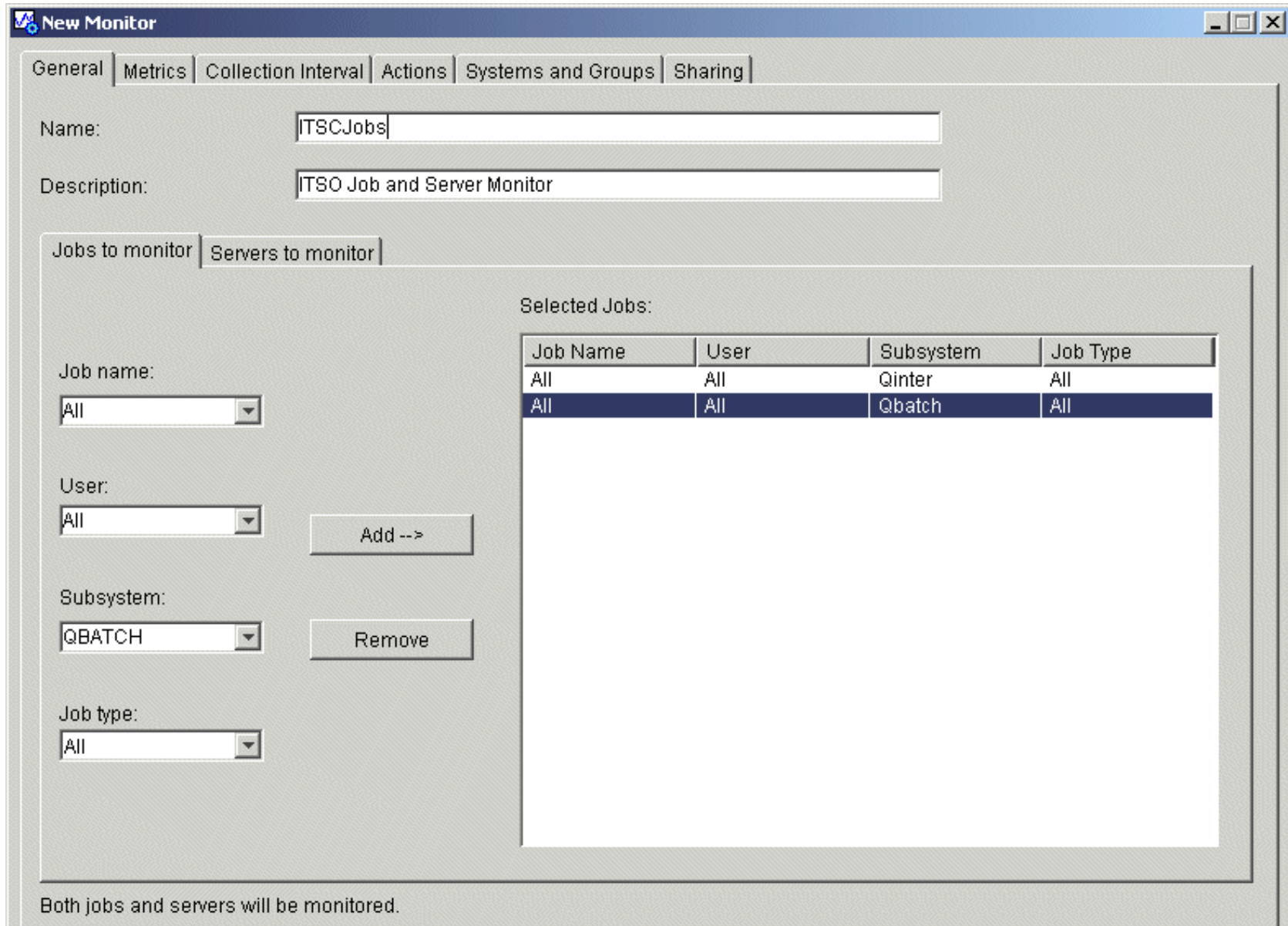
Additional features:

- Drill-down capability. Data points for the graph will be represented by three different graphics representing the three levels of data that are available.
  -  A square will be used when the data includes both second and third level information (in other words it is just like the System Monitors and should use the same graphic)
  -  A triangle will be used to represent summarized data that has second level information (in other words selecting this point will display second level information that is summarized).
  -  A circle will be used to represent data that contains no drill down information.
- Select date/time range
- viewing graphs
  - zooming in/out
  - change viewed metrics
- Exporting data
  - (egg: for printing)
- Prerequisite
  - Data Summarized (real-time)



# Job Monitor - General

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The image shows a 'New Monitor' dialog box with several tabs: General, Metrics, Collection Interval, Actions, Systems and Groups, and Sharing. The 'General' tab is active. It contains fields for 'Name' (ITSCJobs) and 'Description' (ITSO Job and Server Monitor). Below these are two sub-tabs: 'Jobs to monitor' and 'Servers to monitor'. The 'Jobs to monitor' sub-tab is active and contains four dropdown menus: 'Job name' (All), 'User' (All), 'Subsystem' (QBATCH), and 'Job type' (All). There are 'Add -->' and 'Remove' buttons next to the 'User' and 'Subsystem' dropdowns respectively. To the right of these dropdowns is a table titled 'Selected Jobs:'. The table has four columns: 'Job Name', 'User', 'Subsystem', and 'Job Type'. It contains two rows: one with 'All', 'All', 'Qinter', and 'All', and another with 'All', 'All', 'Qbatch', and 'All'. The second row is highlighted. At the bottom of the dialog, it says 'Both jobs and servers will be monitored.'

Name: ITSCJobs

Description: ITSO Job and Server Monitor

Jobs to monitor | Servers to monitor

Job name: All

User: All Add -->

Subsystem: QBATCH Remove

Job type: All

Job Name	User	Subsystem	Job Type
All	All	Qinter	All
All	All	Qbatch	All

Both jobs and servers will be monitored.



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# Notes: Job Monitor - General

You can use a job monitor to monitor a job or list of jobs based on job name, job user, job type, subsystem, or server type. For example, you might want to monitor a job's CPU usage, job status, or job log messages. The job monitor allows you to define commands to run when a specified threshold is met.

You can select the servers from a list provided. A few examples of these servers are:

- AS/400 WebFacing Server
  - The AS/400 WebFacing server gives a Web-based application access to application data from interactive programs running on the AS/400 system.
- Domino Server
  - Domino is a product that runs on a variety of platforms and provides easy to manage inter-operability in a heterogeneous network. The Domino server provides functions that include e-mail, work, flow-based computing, and the integration and management of both structured and unstructured data.
- HTTP Server
  - The AS/400 HTTP server allows you to serve multimedia objects, such as hypertext markup language (HTML) documents, to World Wide Web browser clients with your AS/400 system.
- Wireless Server
  - The Wireless Connection for AS/400 (5798-TBW) server is used to connect wireless mobile 5250 hand held devices (PTCs) to the AS/400. This server job uses a selected TCP interface that must be started prior to this server.
- WebSphere Administration
  - The AS/400 WebSphere Administration server allows a WebSphere user to connect a WebSphere Administrative Console to the AS/400 to administer the WebSphere configuration.
- Extended Dynamic Remote SQL
  - The Process Remote Extended Dynamic SQL (QxdaProcessExtDynEDRS) API is used to perform extended dynamic SQL operations on the database server system. The SQL operations are performed by the Process Extended Dynamic SQL (QSQPRCED API). For more information, see the Process Extended Dynamic SQL (QSQPRCED) API documentation.

# Job Monitor - Metrics



**New Monitor**

General Metrics Collection Interval Actions Systems and Groups Sharing

Available metrics:

- Job Log Message
- Job Status
- Summary Numeric Values
  - CPU Percent Utilization
  - Logical I/O Rate
  - Disk I/O Rate
  - Communications I/O Rate
  - Transaction Rate
  - Transaction Time
  - Thread Count
  - Page Fault Rate

Add -->

Remove <--

Metrics to monitor:

- Selected Metrics
  - Job Numeric Values
    - CPU Percent Utilization
    - Logical I/O Rate
    - Disk I/O Rate
    - Communications I/O Rate
    - Transaction Rate
    - Transaction Time
    - Thread Count
    - Page Fault Rate

Threshold 1 Threshold 2

Enable trigger > 1

Duration: 1 intervals

OS/400 trigger command:  Prompt...

Enable reset > 1

Duration: 1 intervals

OS/400 reset command:  Prompt...

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# Notes: Job Monitor-Metrics

For a job monitor, available metrics include job count, job status, job log messages, CPU utilization, logical I/O rate, disk I/O rate, communications I/O rate, transaction rate, and more. The job monitor allows you to define commands to run when a specified threshold is met.

# Message Monitor

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**New Monitor**

General | Messages | Collection Interval | Actions | Systems and Groups | Sharing

Name: ITSCMsg  
Description: ITSC Mess

Message queue to monitor: Qsysopr  
Library: Qsys

Message Set 1 | Message Set 2

Add a predefined set of messages [Add]

Selected messages:

Message ID	Type	Severity	Reply With:
All	All	>= 30	

Message ID: All  
Type: All [Add -->]  
Severity: >= 30 [Remove]  
Reply with:

Permanently remove monitored messages from message queue  
 Trigger at the following message count: 3 messages  
OS/400 trigger command: sbmjob [Prompt...]  
OS/400 reset command: [Prompt...]

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# Notes: Message Monitor

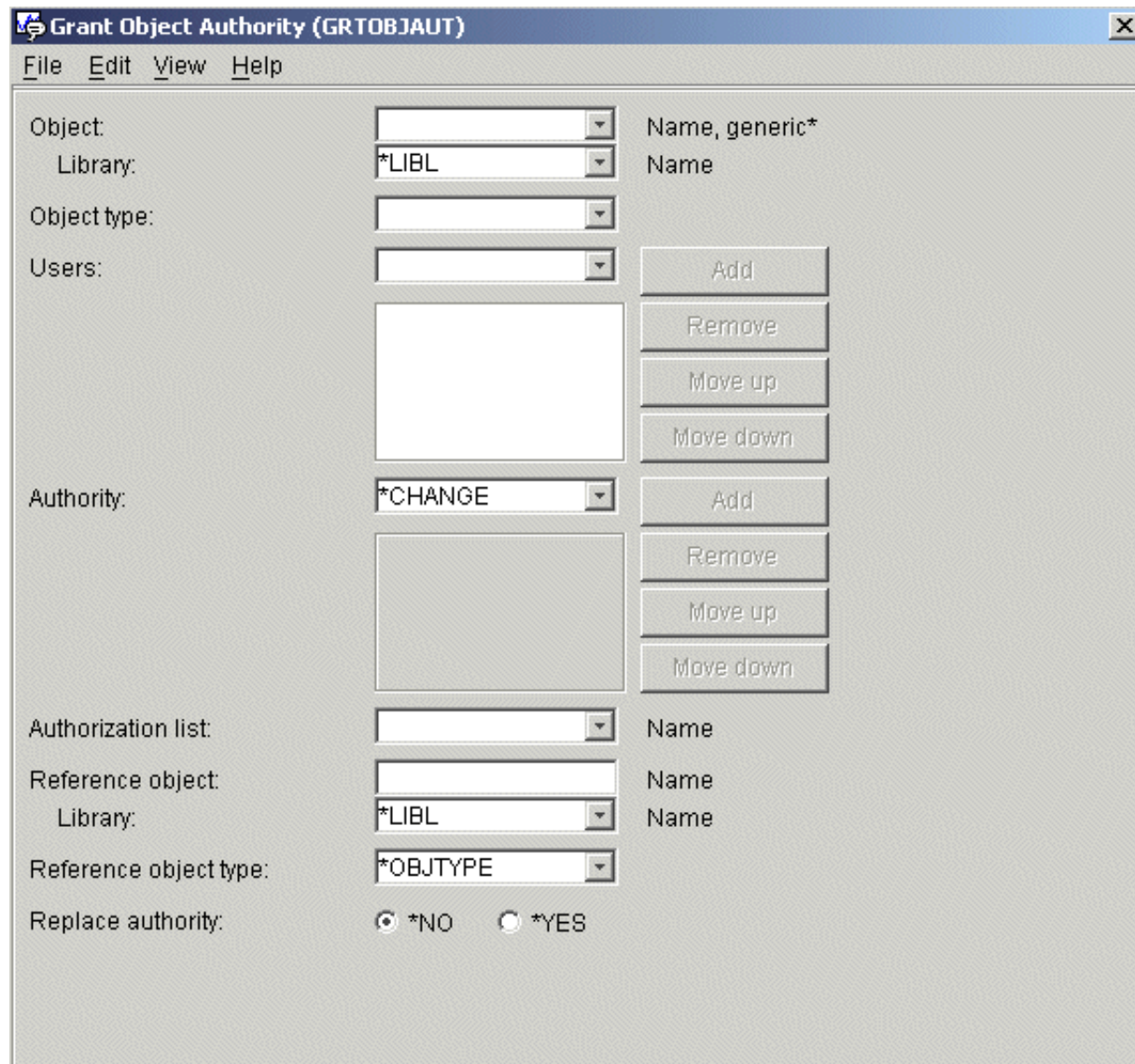
For a message monitor, you can specify one or more message IDs, message types, severity levels. You can also select from a list of predefined sets of messages that would be associated with a specific type of problem, such as a communications link problem, a cabling or hardware problem, or a modem problem.

You can permanently remove monitored messages from message queue, or you can also choose "trigger at the following message count" to specify AS/400 message count trigger and reset commands.

There are two message sets, which are independent of each other and provide a way to monitor for different conditions in one monitor. For example, you may monitor for a less severe condition and send a command to page the system operator or you may monitor for a more severe condition and send a command page to start ending certain jobs.

# Message Monitor-Command Prompt

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**Grant Object Authority (GRTOBJAUT)**

File Edit View Help

Object:  Name, generic\*

Library: \*LIBL Name

Object type:

Users:

Authority: \*CHANGE

Authorization list:  Name

Reference object:  Name

Library: \*LIBL Name

Reference object type: \*OBJTYPE

Replace authority:  \*NO  \*YES

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# Notes: Monitor-Command Prompt

OS/400 commands can be setup to execute when the Trigger or Reset threshold values has been reached. The commands are provided with full prompting capability.

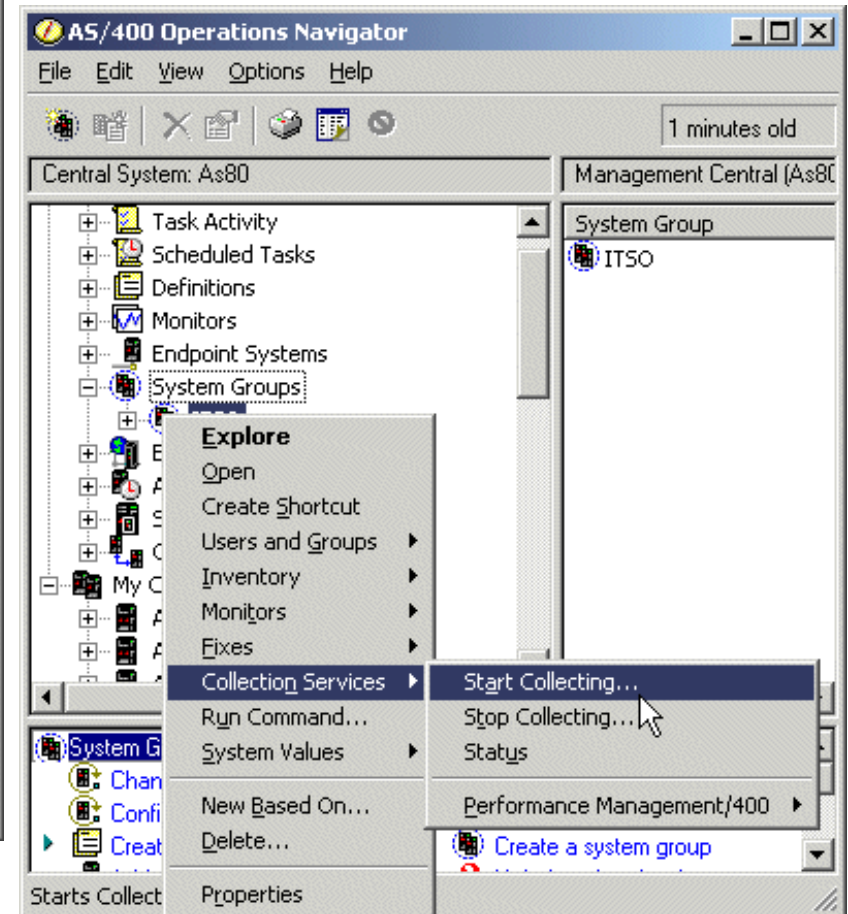
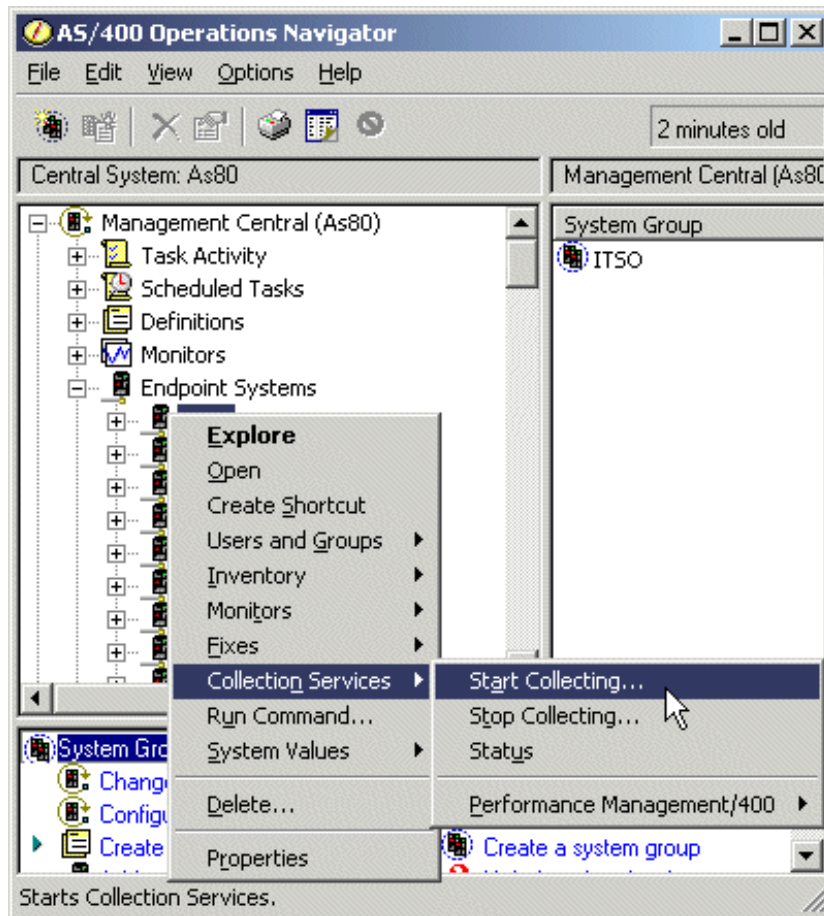


# Collection Services

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# Collection Services (Performance)

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## Start Collection Services

- **Single Endpoint**
  - ✓ Management Central > Endpoint Systems > <system-name> > Configuration and Services > Collection Services
- **System Group**
  - ✓ Management Central > Systems Group > <group\_name> > Configuration and Services > Collection Services

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# Notes: Collection Services (Performance )

To Start Collection Services on a single Endpoint System:

- **Management Central > Endpoint Systems> <system-name> > Configuration and Services > Collection Services**

To Start Collection Services on a Group of Systems:

- **Management Central > Systems Group> <group\_name> > Configuration and Services > Collection Services**
  - Ensure that you have defined the Endpoint Systems in the System Group

Use of Collection Services requires the installation of Management Central support of Operations Navigator.

You must have the same **user-id** and **password** on Central System as well as all Endpoint systems to be managed.

# Collection Services (General)

V4R5

**Start Collection Services - As25b**

General | Data to Collect

Cycle collection if already started

Location to store collections:  
/QSYS.LIB/PFRV45CS.LIB

Cycling

Time to synchronize cycle: 12:00:00 A

Frequency to cycle collections: 24 hours

Default collection interval

15 seconds  
 5 minutes

Collection retention period

1 hours  
 1 days  
 Permanent


Create database files during collection

V5R1

**Start Collection Services - As80**

General | Data to Collect

Cycle if already collecting

Location to store collections: /Qsys.lib/Qpfrdata.lib 

Cycling


Cycle everyday at 12:00:00 AM

Cycle every: 2 hours

Default collection interval for detailed data

30 seconds  
 5 minutes

Collection retention period

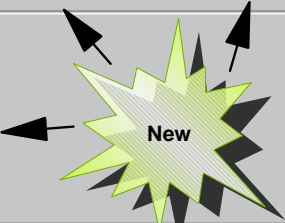
Performance Management/400 status:  stopped

Start Performance Management/400 if needed

Detailed data:  1 hours  1 days  Permanent

Graph data:  1 hours  6 days

Summary data:  1 months  1 years

Create database files during collection  
 Create graph data when collection is cycled  
 Create summary data when collection is cycled 

# Notes: Collection Services (General)

## General:

- Collection Services does not provide an option to change the library name for the data.
  - If PM/400 is active, the data is stored in Library QMPGDATA.
  - If PM/400 is not active, , the default library is QPFRDATA.
  - However, it is possible to change the library name through the Change System Collector Attribute API (QYPSCSCA). Starting Collection Services through a 5250-session also allows you to change the collection library.

## Collection retention period:

The length of time that collection objects remain in the file system before they are deleted. You can get maximum use from the collection retention period if you enable Performance Management/400.

The status field for Performance Management/400 indicates whether PM/400 is started (Started), is not started (Stopped), or if there was a problem (Failed). To start PM/400, select Start Performance Management/400.

- Detailed data
  - The length of time that collection objects remain in the file system before they are deleted. You can select a specific time period in hours or days, or you can select Permanent. If you select Permanent, the collection objects will not be automatically deleted.
- Graph data
  - The length of time that the data for the details and properties data that are shown in the Graph History window remain in the system before they are deleted. If you do not start Performance Management/400 (PM/400), you can specify one to seven days. If you do start PM/400, you can specify one to thirty days. The default is one hour.
  - **Note:** The Graph data field is not available to central systems or endpoint systems that do not have Version 5 Release 1 Modification 0 or later (V5R1M0) installed.
- Summary data
  - The length of time that the data points of a graph can be displayed in the Graph History window or remain in the system before they are deleted. No details or properties data is available. **You must start PM/400 to enable the summary data fields.** The default is one month.
  - **Note:** The Summary data field is not available to central systems or endpoint systems that do not have Version 5 Release 1 Modification 0 or later (V5R1M0) installed.

# Collection Services (Data to Collect)

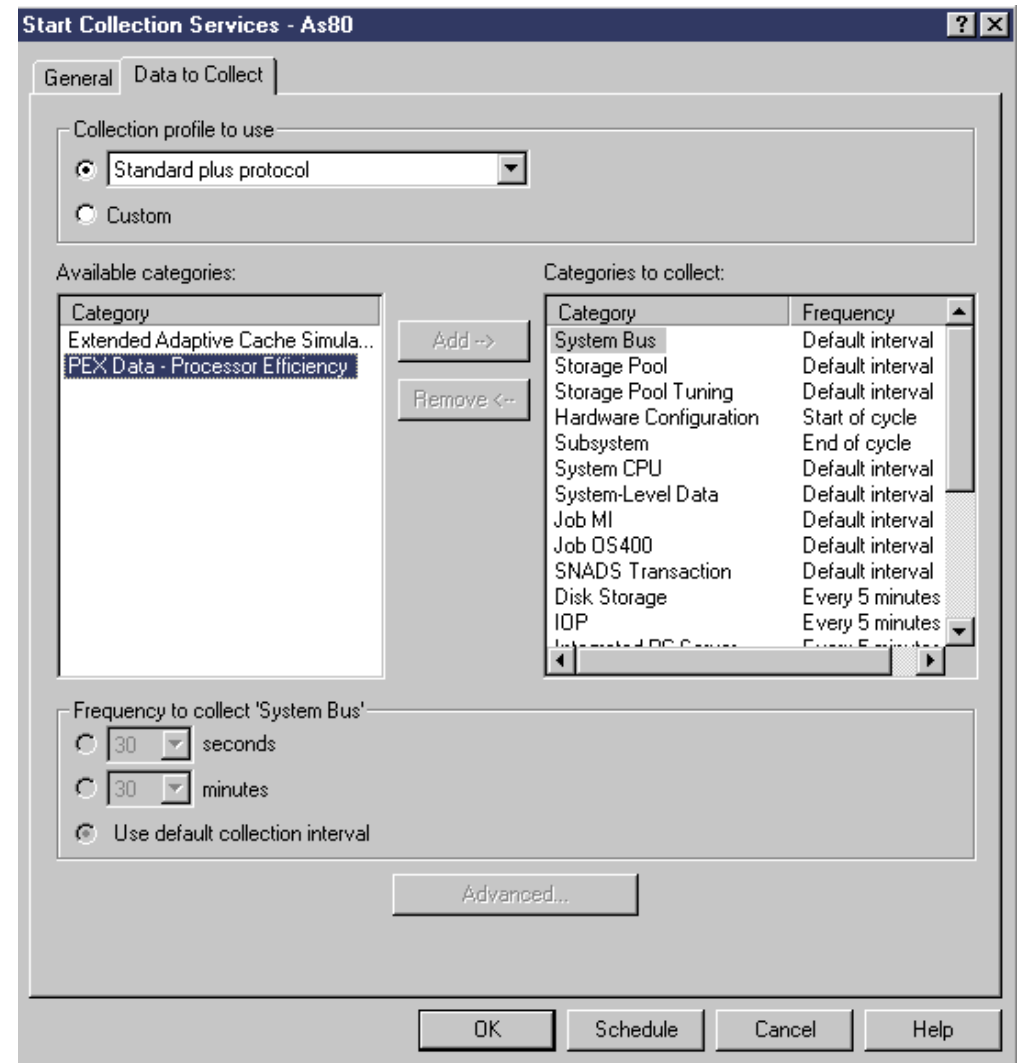
## Collection Profiles

- Minimum
- Standard
- Standard plus Protocol
- Enhanced Capacity Planning



## Additional Categories:

- Extended Adaptive Cache Simulation
- PEX Data - Processor Efficiency
  - Included with Enhanced Capacity Planning



# Notes: Collection Services (Data to Collect)

The following options are available for performance data to collect under Collection Services:

- Since V4R4
  - Standard
  - Standard plus Protocol and
  - Custom (user selected metrics)
- New with V5R1
  - Enhanced Capacity Planning
  - ✓ **Includes PEX Trace - Processor Efficiency.** Statistics for this were collected new during V4R5 using the OS/400 command STRPFRMON INTDTA(\*YES) parameter. Since STRPFRMON is no longer supported in V5R1, this option has been added to Collection Services. If collected, BEST/1 uses this data in its workload modeling, varying its algorithms for growth analysis based upon the efficiency statistics.

New TCP/IP metrics are included in any communications protocol metrics.

**Extended Adaptive Cache Simulation** has been available since V4R4, but require the appropriate Disk Unit Controller to be installed as its microcode actually does the simulation. The simulation projects reduction in Disk I/Os and Disk Response time if the Disk Unit Controller has the actual 1.6 GB Read Cache device feature was installed on the Disk Unit Controller and running the same workload recorded under Collection Services.

Based upon the projected percent improve a decision to order and attach the Read Cache Device would be made.

Disk Unit Controllers supporting Extended Adaptive Cache Simulation include:

- 7xx, 170, 250: 2748 PCI RAID Disk Unit Controller
- 270, 8xx: 4748/9748 PCI RAID Disk Unit Controller

The 1.6 GB Read Cache device features are:

- 7xx, 8xx: #4331
- 170, 250, 270: #6831

# Collection Services-Scheduled Task

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The screenshot displays the AS/400 Operations Navigator interface. The main window shows a tree view on the left with 'Management Central (As80)' expanded to 'Scheduled Tasks'. The main pane shows a table of scheduled tasks. A 'Management Central Scheduler' dialog box is open, showing configuration for a task.

Task	When to R...	Next Run	Systems and Groups	Description	Scheduled By
Start Collection Services	Once	12/11/00 3:00:00 ...	As80	Start Collection Services ...	Jcook

**Management Central Scheduler**

When to run:

- Once
- Daily
- Weekly: Monday
- Monthly: First day

Date to start: 12/11/00

Time to start: 3:00:00 PM

Summary:  
Run once starting on 12/11/00 at 3:00:00 PM.

Buttons: OK, Cancel, Help

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# Notes: Collection Services-Scheduled Task

If you click on the "Schedule" button, the Management Central Scheduler panel will display. This allow you to specify a schedule against which the Collection Services task will run.

If your system has Advanced Job Scheduler (5722-JS1) installed, then a screen associated with this product will be displayed, which gives you greater flexibility to schedule the collection services task.

**New Scheduled Job - As80**

General | **Schedule** | Batch Information | Notification | Problem Recovery | Communications

February 2001

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	1	2	3
4	5	6	7	8	9	10

2/21/2001 ---

Additional Calendars...

**Times to run**

On specific times:

- 12:27 PM [Add]
- 12:27 PM [Remove]

Periodically:

Frequency: 1 [hours] [minutes]

Start time: 12:00 AM

End time: 11:59 PM

**Dates to run**

Frequency:

- On selected dates
- Weekly
- Monthly
- Yearly

Select as working days

Details:

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

OK Cancel Help

# Collection Services - Task Activity

AS/400 Operations Navigator

File Edit View Options Help

Central System: As80

Task Activity: Collection Services Started by: All

Task	Status	Systems ...	Description	Started	Starte...	Last Changed
Start Collection Se...	Completed	As80	Start Collection Services on A...	12/14/00 2:30:0...	Cook	12/14/00 2:30:02 PM
Stop Collection Se...	Completed	As80	Stop Collection Services on A...	12/14/00 2:21:4...	Cook	12/14/00 2:21:52 PM
Start Collection Se...	Completed	As80	Start Collection Services on A...	12/13/00 4:00:0...	Cook	12/13/00 4:00:10 PM
Start Collection Se...	Completed	As80	Start Collection Services on A...	12/12/00 4:00:1...	Cook	12/12/00 4:00:24 PM
Start Collection Se...	Completed	As80	Start Collection Services on A...	12/11/00 4:00:0...	Cook	12/11/00 4:00:10 PM

Management Central (As80)

- Task Activity
- Commands
- Packages and Produc
- Inventory
- Fixes
- Collection Services
- Users and Groups
- System Values
- Scheduled Tasks
- Commands
- Packages and Produc
- Inventory
- Fixes
- Collection Services
- Users and Groups
- System Values
- Definitions
- Monitors
- Endpoint Systems
- System Groups
- Extreme Support

Management Central (As80)

Task Activity: Collection Services Started by: All

Task	Status	Systems an...	Descri
Start Collection Services	Failed on 1 of 2 systems	ITSO	Start

'Start Collection Services' Status

Status: Failed on 1 of 2 systems

Target Systems and Groups	Status
ITSO	Failed on 1 of 2 systems
As25	Failed - user is not authorized to this system
As80	Completed - Collection Services started

Ready

For Help, press F1

# Notes: Collection Services - Task Activity

Selecting Collection Services within the Task Activities container will show the scheduled tasks for this function.

Select any task that you need more information on. For example, if the task has failed, the "Status" option in the pulldown menu will give you more information on the cause of the failure.

# Collection Services - 5250

Collect Performance Data M01  
02/16/01 09:59:10

Collection Services status:

Status . . . . . : Stopped

Select one of the following:

1. Start collecting data
2. Stop collecting data

Selection or command

====>

F3=Exit F4=Prompt F5=Refresh F9=Retrieve F12=Cancel

## Start Collecting Data

Type choices, press Enter.



Library . . . . .	PFRV5R1CS	Name
Collection interval (minutes) . . .	5.00	0.25, 0.5, 1, 5, 15, 30, 60
Retention period:		
Days . . . . .	*PERM	*PERM, 0-30
Hours . . . . .	0	0-23
Cycling:		
Time to synchronize cycle . . . .	02:00:00	HH:MM:SS
Frequency to cycle collections . .	24	1-24
Create database files . . . . .	*YES	*YES, *NO
Collection profile . . . . .	*STANDARDP	*MINIMUM, *STANDARD, *STANDARDP, *ENHCPCPLN

F3=Exit F12=Cancel

Collection Services can be started and stopped from a 5250-session.

- From the main Performance Tools Menu (GO PERFORM or STRPFRT) select option-2.
- The Start option allows you to specify a Library to locate the performance collection object.
- The collection object has the following characteristics:
  - Name: Q<Julian-date-time>
  - Type: \*MGTCOL
  - Attribute: \*PFR

Note: The library to contain the collection object can be specified here and it would override the default values of QPFRDATA or QMPGDATA.

If PM/400 is active, QMPGDATA is the default library. Also, if PM/400 is active, and collection services is not started, it will restart collection services, based on the time indicated in Q1PPMSUB , which time is incremented every hour.

# Graph Data - Collection Services

The screenshot shows the IBM iSeries Collection Services interface. On the left is a tree view of system components. The main area displays a table of collection services. A context menu is open over the table, with 'Create Summary Data Now...' selected. A red callout bubble with a starburst icon says 'Data Summarized' and points to the table. A green arrow points to the 'Create Summary Data Now...' menu item.

Collection N...	Location	Status	Started	Ended	Expiration	Size	Summ...
Q039020029	/Qsys.lib/Qmpgda...	Collecting...	2/8/2001 2:00:...			79 MB	No
Q038160746	/Qsys.lib/Qmpgda...	Cycled	2/7/2001 4:07:...	2/8/2001 2:00:...	None	94 MB	Yes
Q038142317	/Qsys.lib/Qmpgda...	Cycled	2/7/2001 2:23:...	2/7/2001 4:04:...	None	22 MB	Yes
Q038133007	/Qsys.lib/Qpfrdat...	Cycled	2/7/2001 1:30:...	2/7/2001 2:13:...	None	17 MB	Yes
Q038083043	/Qsys.lib/Qmpgda...	Cycled	2/7/2001 8:30:...	2/7/2001 1:23:...	None	33 MB	Yes
Q037105935	/Qsys.lib/Qpfrdat...	Cycled	2/6/2001 10:5...	2/6/2001 6:14:...	None	28 MB	Yes
Q037104736	/Qsys.lib/Qmpgda...	Cycled	2/6/2001 10:4...	2/6/2001 10:5...	3/8/200...	11 MB	Yes
Q037020029	/Qsys.lib/Qmpgda...	Cycled	2/6/2001 2:00:...	2/6/2001 10:4...	3/8/200...	37 MB	Yes
Q036110055	/Qsys.lib/Qmpgda...	Cycled	2/5/2001 11:0...	2/6/2001 2:00:...	None	49 MB	Yes
Q036100053	/Qsys.lib/Qmpgda...	Cycled	2/5/2001 10:0...	2/5/2001 10:1...	None	12 MB	Yes
Q036020...			2/5/2001 2:00:...	2/5/2001 9:31:...	None	24 MB	No
Q035020...			2/4/2001 2:00:...	2/5/2001 2:00:...	None	46 MB	Yes
Q034020...			2/3/2001 2:00:...	2/4/2001 2:00:...	None	132...	Yes
Q033020...			2/2/2001 2:00:...	2/3/2001 2:00:...	None	235...	Yes
Q032020...			2/1/2001 2:00:...	2/2/2001 2:00:...	None	217...	Yes
Q031123...			1/31/2001 12:...	2/1/2001 2:00:...	None	116...	Yes

System Group and Endpoint System tasks

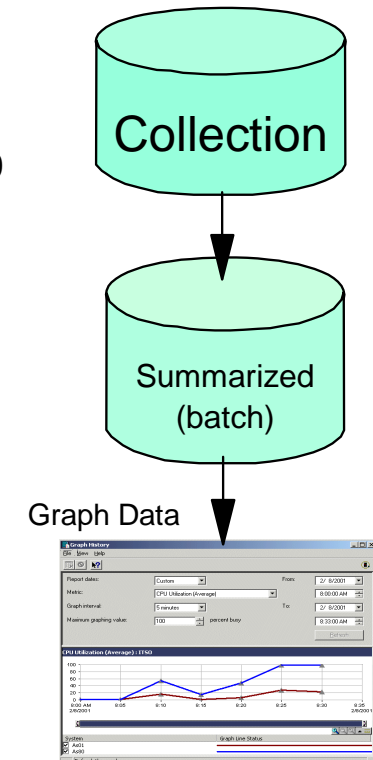
- Run a command
- Work with inventory
- Configuration and Service tasks
- Work with monitors
- Work with users and groups
- Help for related tasks

Creates summary data for the selected collections.

# Notes: Graph Data - Collection Services

Past Collection Services output can be also used to generate Graphs ("Graph History").

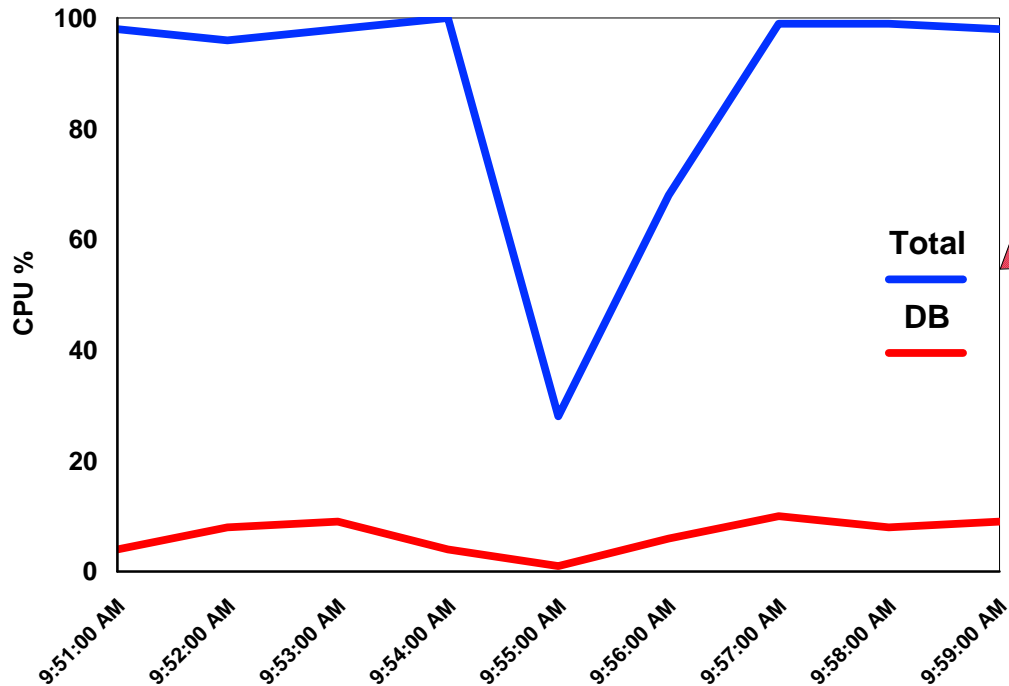
- Prerequisite - The collection must be Summarized. The summarization process generates a Data Queue (\*DTAQ) in the same library as the collection.
- The graph produced is for each collection only.
- If a Trend Analysis is required over multiple collection periods, facilities offered by PM/400 must be used.



# Export Data

## Supported File Types

- Comma Separated Variables (.csv)
- Lotus 1-2-3 compatible (.csv)
- ASCII Tab Delimited Text (.txt)
- Microsoft Excel 97 (.xls)
- Web Page(.html)



A	B	C	D
CPU Utilization (Database Capability)			
Date	Time	System	Value
2/8/2001	9:50:00 AM	As80	1.00
2/8/2001	9:51:00 AM	As80	4.00
2/8/2001	9:52:00 AM	As80	8.00
2/8/2001	9:53:00 AM	As80	9.00
2/8/2001	9:54:00 AM	As80	4.00
2/8/2001	9:55:00 AM	As80	1.00
2/8/2001	9:56:00 AM	As80	6.00
2/8/2001	9:57:00 AM	As80	10.00
2/8/2001	9:58:00 AM	As80	8.00
2/8/2001	9:59:00 AM	As80	9.00

A	B	C	D
CPU Utilization (Average)			
Date	Time	System	Value
2/8/2001	9:50:00 AM	As80	19.00
2/8/2001	9:51:00 AM	As80	98.00
2/8/2001	9:52:00 AM	As80	96.00
2/8/2001	9:53:00 AM	As80	98.00
2/8/2001	9:54:00 AM	As80	100.00
2/8/2001	9:55:00 AM	As80	28.00
2/8/2001	9:56:00 AM	As80	68.00
2/8/2001	9:57:00 AM	As80	99.00
2/8/2001	9:58:00 AM	As80	99.00
2/8/2001	9:59:00 AM	As80	98.00



# Notes: Export Data

The current monitor does not support printing. However, with the new capabilities to view historical data, it is important to allow the customer to obtain a printed version of the graph. We would like to support a print option. However, because of resource constraints, an Export function for the Graph History function would be sufficient in the short term.

The export function would only export what was shown in the graph, it would not export all of the data for time periods outside of what is displayed.

You could manage the retention of output from collection services, using the retention period as "permanent". The Graphing/Export capability can then be used to transfer data in to Lotus or Excel spreadsheet. The data then can be manipulated to build your own Trend Analyses over multiple collection period too.

# Create Database Files (Performance Tools)

IBM  server iSeries

As80: Collection Services

Collection Name	Location	Status	Started	Ended	Expiration	Size	Summarized
Q037105935	/Qsys.lib/Qpfrdata.lib	Collect...	2/6/2001 10:59:37...			27 MB	No
Q037104736	/Qsys.lib/Qmpgdata.lib	Cycled	2/6/2001 10:47:38...	2/6/2001 10:59...	3/8/2001 ...	11 MB	Yes
Q037020029	/Qsys.lib/Qmpgdata.lib	Cycled	2/6/2001 2:00:30 AM	2/6/2001 10:47...	3/8/2001 ...	37 MB	Yes
Q03		Cycled	2/5/2001 11:00:55...	2/6/2001 2:00:...	None	49 MB	Yes
Q03		Cycled	2/5/2001 10:00:53...	2/5/2001 10:19...			
Q03		Cycled	2/5/2001 2:00:02 AM	2/5/2001 9:31:...			
Q03		Cycled	2/4/2001 2:00:03 AM	2/5/2001 2:00:...			
Q03		Cycled	2/3/2001 2:00:11 AM	2/4/2001 2:00:...			
Q03		Cycled	2/2/2001 2:00:09 AM	2/3/2001 2:00:...			
Q03		Cycled	2/1/2001 2:00:07 AM	2/2/2001 2:00:...			
Q03		Cycled	1/31/2001 12:36:5...	2/1/2001 2:00:...			

Context menu for Q03:

- Create Database Files Now...
- Cycle Collection Now...
- Create Summary Data Now...
- Graph History
- Delete...
- Properties

Dialog Box: Create Database Files

Member to create: Feb05\_11am

Path: /Qsys.lib/Qpfrv51.cs.lib Browse...

Data to include:

- Category
- Communication Base
- Communication Station
- Communication SAP
- Local Response Time
- APPN
- SNA

Range of data

From: 2/ 5/2001 11:00:55 AM

To: 2/ 5/2001 12:00:55 PM

Sampling interval

30 seconds

5 minutes

OK Cancel Help

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# Notes: Create DB Files (Performance Tools)

Use the Create DB Files option to generate tables for use with Performance Tools (5722-PT1).

Regardless of which library (QPFRDATA, QMPGDATA mainly) contains the performance data collections from V5R1 Collection Services, the Performance Consultant can determine which library is to contain the Database Files (for use with Performance Tools) are to be created.

When creating the Database Files, the user can specify the start/end times and dataset names of the data to be placed in the library.

# Management Central - Pervasive

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# Notes:MC - Pervasive (Introduction)

Starting in V4R5, administrators have even more flexibility in how they access and interact with their iSeries using Management Central - Pervasive. New capabilities have been added in V5R1 so the suite of Pervasive functions now include System Availability, Monitors (system, job and message) and Commands using an Internet phone, a personal data assistant (PDA) with a wireless modem, or a traditional web browser on a workstation.

The Central System and the associated Endpoints are managed by the standard Management Central Support of Operation Navigator. For the functional extensions of MC-Pervasive, the additional requirements are at the Central System and "upstream" of the Central System.

The web application server on the central system will have to be configured or setup to provide the necessary level of security. Set up the web application server to implement the protection plan developed to provide proper authentication security based upon your client devices, browsers and network. IBM recommends implementing HTTP with SSL (HTTPs) whenever possible.

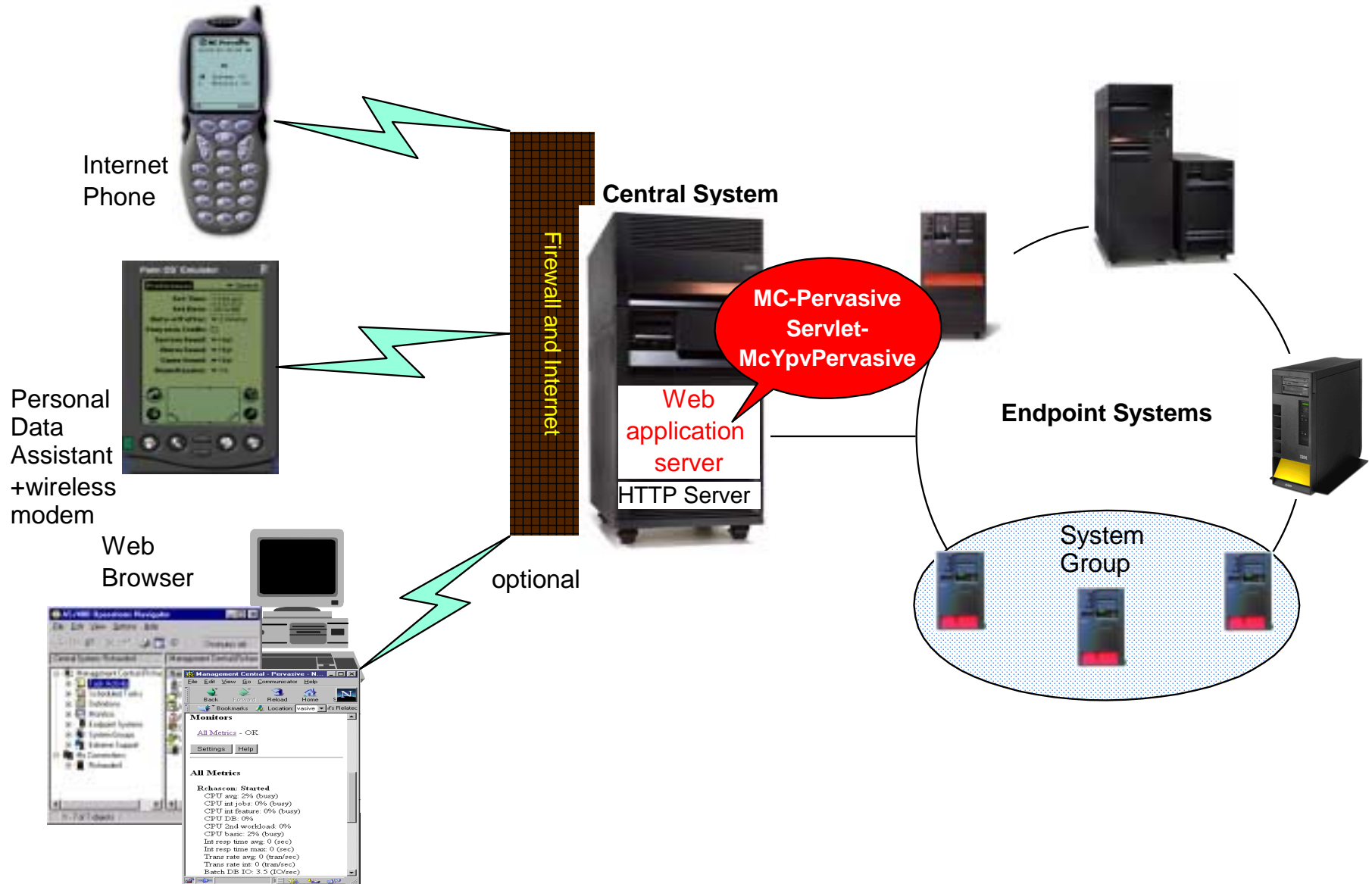
In order for the servlet to be able to send back the bitmap, the HTTP server must know where it is located, and it must know how to handle bitmap files. In order to access the HTTP configuration, go to the 2001 port on the system running HTTP. Under the HTTP configuration you will need:

## Request processing -> Request routing

- Action: Pass
  - V4R5
    - ✓ URL Template: /McYpvPervasive/\*
    - ✓ Replacement file path: /QIBM/ProdData/OS400/\*
  - V5R1-NLS
    - ✓ URL Template: /McYpvPerv/\*
    - ✓ Replacement file path: /QIBM/ProdData/OS400/MGTC/Pervasive/\*
  - V5R1
    - ✓ URL Template: /McYpvPervasive/\*
    - ✓ Replacement file path: /QIBM/ProdData/OS400/MGTC/Pervasive/\*

# Management Central - Pervasive (Overview)

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# Notes: MC - Pervasive (Overview)

## OS/400 Requirements

To take advantage of the MC-Pervasive enhancements of V5R1, the Central System requires V5R1 OS/400 with Management Central - Pervasive PTFs. This provides the code which enables the existing Management Central performance monitors to interact with other application servlets (e.g.. those which will feed the information back to a phone or browser).

## Web Application Server on Central System

Because Management Central-Pervasive requires the services of a Servlet engine, you must install and configure a web application server which has the capability to host servlets (McYpvPervasive servlet for MC-Pervasive) for serving Internet information. The following servers have been tested by IBM:

- WebSphere Application Server 3.02 Standard Edition
- WebSphere Application Server 3.5 Standard and Advanced Edition
- Domino Application Server

## Pervasive User Devices

- Internet-enabled Phone
- PDA (personal data assistant) with a web-browser, wireless modem
- Traditional web-browser on a PC workstation

A wireless Internet service is required in all cases (this is what transports the data to/from your "pervasive device" and the Central system - it may not be the same as your voice service!).

## Firewall

When you use Management Central - Pervasive, you will be accessing at least one of your systems from the Internet. If you access any of your systems from the Internet today, you probably have a firewall set up to prevent unauthorized access. Depending on your firewall configuration, you may have to modify your firewall setup to run MC - Pervasive.

If you have never accessed your systems from the Internet and do not have a firewall setup, the following IBM Redbook provides strategies for doing so in Chapters 8 and 9. See AS/400 Internet Security Scenarios: A Practical Approach, SG24-5954-00. IBM Redbooks can be found online at [www.redbooks.ibm.com](http://www.redbooks.ibm.com).

# MC-Pervasive Setup (Prerequisites)

## MC Pervasive PTFs

- For V4R5:
  - SF62901
  - SF64097
- For V5R1
  - To Be Determined

## Authorize User Profile

- (QEJBSVR for WebSphere: QNOTES for Domino)
- Use Authority
  - QSYS/QYPVJNI \*SRVPGM
- Read authority to the directory
  - V4R5: /QIBM/ProdData/OS400
  - V5R1: /QIBM/ProdData/OS400/MGTC/Pervasive
- Read/write authority to the directory
- V4R5: /QIBM/UserData/OS400
- V5R1: /QIBM/UserData/OS400/MGTC/Pervasive



# Notes: MC-Pervasive Setup (Prerequisites)

## MC Pervasive PTFs

- For V4R5:
  - SF62901 and SF64097
- For V5R1
  - o Be Determined

After installing the PTFs, you will need to move the MC - Pervasive Java programs to the appropriate location.

Typically this would be done by using the command, **RST DEV('/QSYS.LIB/QYPVPERVSF.FILE')**

**OBJ('/QIBM/PRODDATA/OS400/\*'))**. However, the OBJ value shown can be changed depending on your web application server setup.

## User Connection Profile

Ensure that you give the necessary authority (\*use) to the object QSYS/QYPVJNI \*SRVPGM to the user profile running the McYpvPervasive servlet (for WebSphere QEJBSVR: for Domino=QNOTES), and:

- Read authority to the directory
  - V4R5: /QIBM/ProdData/OS400
  - V5R1: /QIBM/ProdData/OS400/MGTC/Pervasive
- Read/write authority to the directory
  - V4R5: /QIBM/UserData/OS400
  - V5R1; /QIBM/UserData/OS400/MGTC/Pervasive

Also, users of MC-Pervasive require Read/write authority to **/QIBM/UserData/OS400/MGTC/Pervasive**.

The servlet accesses text files (**QYPVxxxxxxxx.txt** where xxxxxxxx is the user id) in this directory. This text file has a list of endpoint systems the user requires to view. A default list of endpoints can be included in **QYPV\_SYSTEMS.txt**. When a user connects to the central system via the web applications server, the MC - Pervasive servlet will attempt to locate a user specific or custom list of endpoint systems. If the file does not exist, it will look for the default connection profile. If neither is found, a custom connection profile will be created for the user to update using phone, PDA or browser.

**Note: Refer to the Management Central - Pervasive User's Guide for more information.**

# WebSphere - Classpath information

The screenshot displays the WebSphere Standard Administrative Console interface. The main window title is "WebSphere Standard Administrative Console". The menu bar includes "Console", "Administrative Server", "Command", "View", "Troubleshooting", and "Help". The toolbar contains icons for refresh, start/stop, and help. The left pane shows a tree view of the administrative domain, with "Default Server" selected. The right pane shows the configuration for the "Default Server", including the "Command line arguments" field which contains the classpath information: `-ms32m -classpath /QIBM/ProdData/OS400/QIBM/ProdData/OS4`. The "Environment" field is also visible. The bottom pane shows console messages.

1 - Points to the console title bar.

2 - Points to the Start/Stop buttons in the toolbar.

3 - Points to the "Default Server" entry in the tree view.

4 - Points to the "Command line arguments" field.

5 - Points to the "Apply" button.

# Notes: WebSphere - Classpath information

## WebSphere Application Server:

You must add the two jar files used by the MC - Pervasive servlet to the web application server. For example, when using WebSphere,

- Open the WebSphere Administrative Console
- Select the Topology tab
- Select the application server that will be running the MC - Pervasive servlet
  - Add the following classpath information to the command line arguments parameter:
    - ✓ (V4R5) -classpath
      - /QIBM/ProdData/OS400:
      - /QIBM/ProdData/OS400/mcypvperv.jar:
      - /QIBM/ProdData/Http/Public/jt400/lib/jt400.jar
    - ✓ (V5R1) -classpath
      - /QIBM/ProdData/OS400/MGTC/Pervasive:
      - /QIBM/ProdData/OS400/MGTC/Pervasive/mcypvperv.jar:
      - /QIBM/ProdData/OS400/MGTC/McClient.jar:
      - /QIBM/ProdData/OS400/MGTC/McOSClient.jar:
      - /QIBM/ProdData/OS400/MGTC/McPrivServer.jar:
      - /QIBM/ProdData/OS400/MGTC/mcyrcom.jar:
      - /QIBM/ProdData/OS400/jt400/lib/jt400Native.jar:

Then press apply.

**Note: After changes to the classpath, you must stop and start the server instance for the change to take effect.**

JVM uses the following values to determine time of day

- QUTCOFFSET
  - Set OS/400 system value QUTCOFFSET
- LOCALE
  - Ensure that the associated Locale information is revised
    - ▶ Change the source file
    - ▶ Create the Locale object (CRTLOCALE)
- Set the following values:
  - Set the Language environment variable to the locale:
    - ▶ ADDENVVAR LANG '/qsys.lib/qgpl.lib/en\_us.locale'
    - ▶ (or QSH, export -s LANG=/qsys.lib/qgpl.lib/en\_us.locale)
  - Set the user profile to be used to the desired locale.
    - ▶ CHGUSRPRF USRPRF(QEJBSVR) LOCALE('/qsys.lib/qgpl.lib/en\_us.locale')
  - Set system value QLOCALE
    - ▶ CHGSYSVAL SYSVAL(QLOCALE) VALUE('/qsys.lib/qgpl.lib/en\_us.locale')

# Notes: MC-Locale for JVM

## Time Considerations:

If time is not shown correctly on a PDA or browser, PTF SF63718 will correct the problem where WebSphere does not pick up the correct locale setting from the Java Virtual Machine (JVM).

The JVM uses both the QUTCOFFSET and the current LOCALE to determine local time. If both are set to zero, things work fine. By default, the time zone and time offset information in each locale is, by default, set to 0. This means that as soon as the QUTCOFFSET gets set on the system, java time returned becomes incorrect.

Default \*LOCALE objects are shipped in QSYS. These objects all have default time zone information of 0. i.e. GMT. Use " WRKOBJ OBJ(QSYS/\*ALL) OBJTYPE(\*LOCALE)" to view all the shipped locales. The Locale source files are shipped in QSYSLOCALE/QLOCALESRC. To set time zone and other information, copy and edit the local source for the particular time zone you're supporting.

Example LC\_TOD section for an EN\_US locale.

- tzdiff -300 (number of minutes difference from GMT)
- tname "<C><S><T>" (Time zone name)
- dstname "<C><D><T>" (daylight savings time name).
- dststart 4,1,1,7200 (DST Start in this part of the US is the first Sunday in April at 2am)
- dstend 10,-1,1,7200 (DST End in this area of US is Last Sunday in October)
- dstshift 3600 (shift in seconds)

```
0555.00 LC_TOD
0556.00
0557.00 tzdiff -360
0558.00 tname "<C><S><T>"
0559.00 dstname "<C><D><T>"
0560.00 dststart 4,1,1,7200
0561.00 dstend 10,-1,1,7200
0562.00 dstshift 3600
0563.00
0564.00 END LC_TOD
```

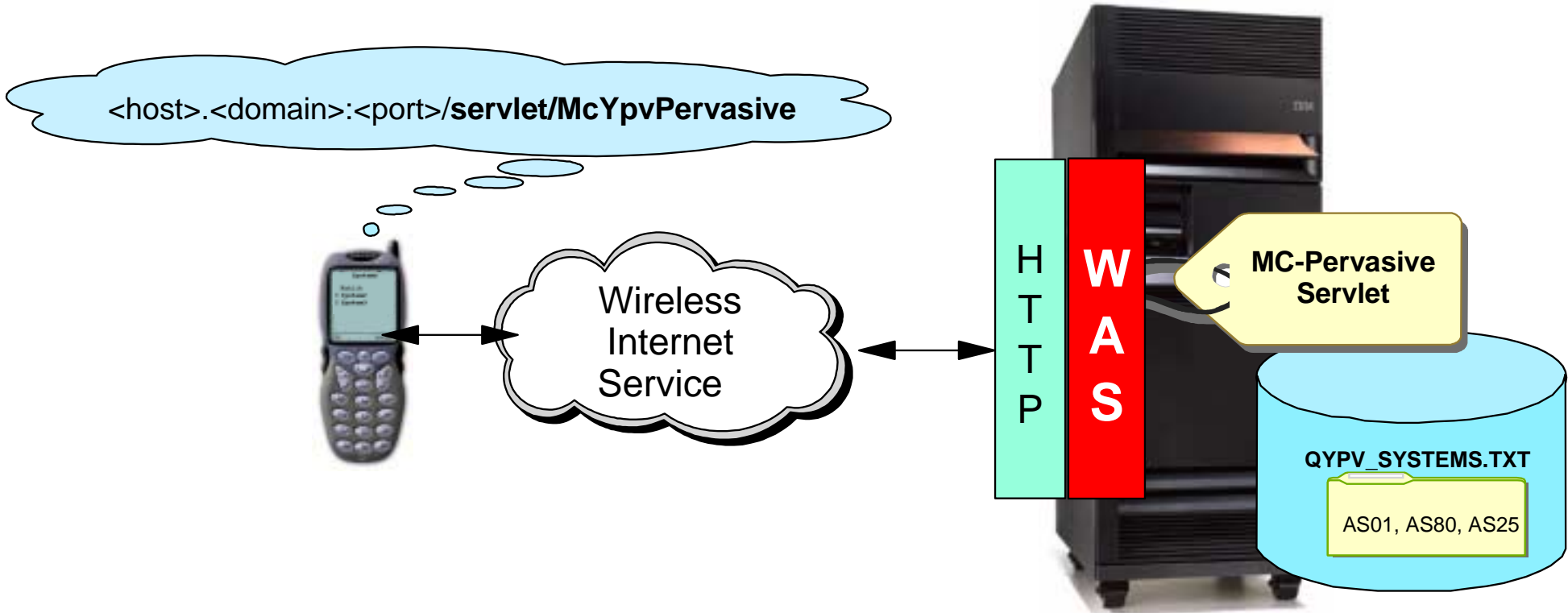
Create the new locale object for that time zone using the following. Use a CCSID that matches the same shipped OS/400 local as the one you're creating. (DSPLOCALE QSYS/EN\_US)

- CRTLOCALE LOCALE('/qsys.lib/qgpl.lib/en\_us.locale') SRCFILE('/qsys.lib/qgpl.lib/qlocalesrc.file/en\_us.mbr') CCSID(37)

For help on internationalization, see the locales section at:

<http://publib.boulder.ibm.com/cgi-bin/bookmgr/BOOKS/QB3AQ501/CCONTENTS>

# How It Works!



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# Notes: How It Works!

## Central System URL

Enter the URL of your central system on your wireless device.

Use the following format, and make sure that the end of the URL (/servlet/McYpvPervasive) is entered exactly as shown:

- <host>.<domain>:<port>/servlet/McYpvPervasive
  - host: The host name of the central system
  - domain: The domain the central system is located
  - port: The port that the MC - Pervasive servlet is listening to

## User Connection Profile

When the user connects to the central system via the web applications server, the MC - Pervasive servlet will attempt to locate a user specific or custom list of endpoint systems. If the file does not exist, it will look for the default connection profile. At the point which neither is found, a custom connection profile will be created for the user to update using phone, PDA or browser.

## V4R5

- Monitor
  - iSeries System Status
  - Performance

## V5R1

- Monitor/Control Specific Jobs or Servers
- Monitor Message Queues
- Execute Commands
- Manage Integrated xSeries Servers
- Support for Additional Phone Devices
- Read only mode for selected users



# Notes: Functions Overview

## Monitor Performance

- View real-time performance metrics (V4R5)
- Check against thresholds (V4R5)
- View top 20 jobs contributing to each metric, and review related details
- Start/Stop monitors

## Monitor Specific Jobs

- View job-level and summary-level metrics in real-time
- Check for jobs with triggered events

## Monitor Message Queues

- View message details, reply to message, delete message
- Start/Stop monitors
- Hold, Release or End a Job on any Endpoint System

## Run Commands on any Group of Systems

- Choose from your predefined list of MC commands
- Enter the command from the device
- View distributed task status

## Manage Integrated xSeries Servers

- View status of IxS servers
- Startup/Shutdown servers
- Run NT commands
- Monitor IxS events (routed to an iSeries message queue)

## Read Only mode for selected Users

## NLS Enabled



- Required PTFs for OS/400 (5722-SS1)
  - TBD - ????
- Functions
  - System availability
  - Monitors
    - ▶ System
- Language support
  - Set the Language\_Country and character set for a PC Browser
  - <http://sysname:port/servlet/McYpvPerv?LNG=lang>
    - ▶ where 'sysname' is your central system name
    - ▶ where 'port' is the port your servlet is configured
    - ▶ where 'lang' is the language (Lang\_Country)

# Notes: NLS Support

In V5R1, the servlet McYpvPerv provides NLS enablement support for the Pervasive function delivered in V4R5.

The Supported Languages with their browser settings for Language\_Country and charset are:

<u>Language</u>	<u>Lang_Country</u>	<u>Characterset</u>	<u>Language</u>	<u>Lang_Country</u>	<u>Characterset</u>
Chinese Simplified	zh	gb2312	Hungarian	hu	iso-8859-2
Chinese Traditional	zh_TW	big5	Italian	it	iso-8859-1
Croatian	hr	iso-8859-2	Italian Swiss	it_CH	iso-8859-1
Czech	cs	iso-8859-2	Japanese	ja	shift-jis
Dutch	nl	iso-8859-1	Korean	ko	euc-kr
Dutch Belgian	nl_BE	iso-8859-1	Polish	pl	iso-8859-2
English	en	iso-8859-1	Portuguese	pt	iso-8859-1
French	fr	iso-8859-1	Portuguese Brazilian	pt_BR	iso-8859-1
French Belgian	fr_BE	iso-8859-1	Romanian	ro	iso-8859-2
French Canadian	fr_CA	iso-8859-1	Russian	ru	indows-1251
French Swiss	fr_CH	iso-8859-1	Slovakian	sk	iso-8859-2
German	de	iso-8859-1	Slovenian	sl	iso-8859-2
German Swiss	de_CH	iso-8859-1	Spanish	es	iso-8859-1
Greek	el	iso-8859-7			

To set the Language\_Country and charset for a PC Browser

## ■ Netscape

- To set Language from tool bar select Edit-> Preferences -> click on Languages (click on add button to see list of browser possibilities) First one in list will be the one used.
- To set Characterset from tool bar select: View -> Characterset

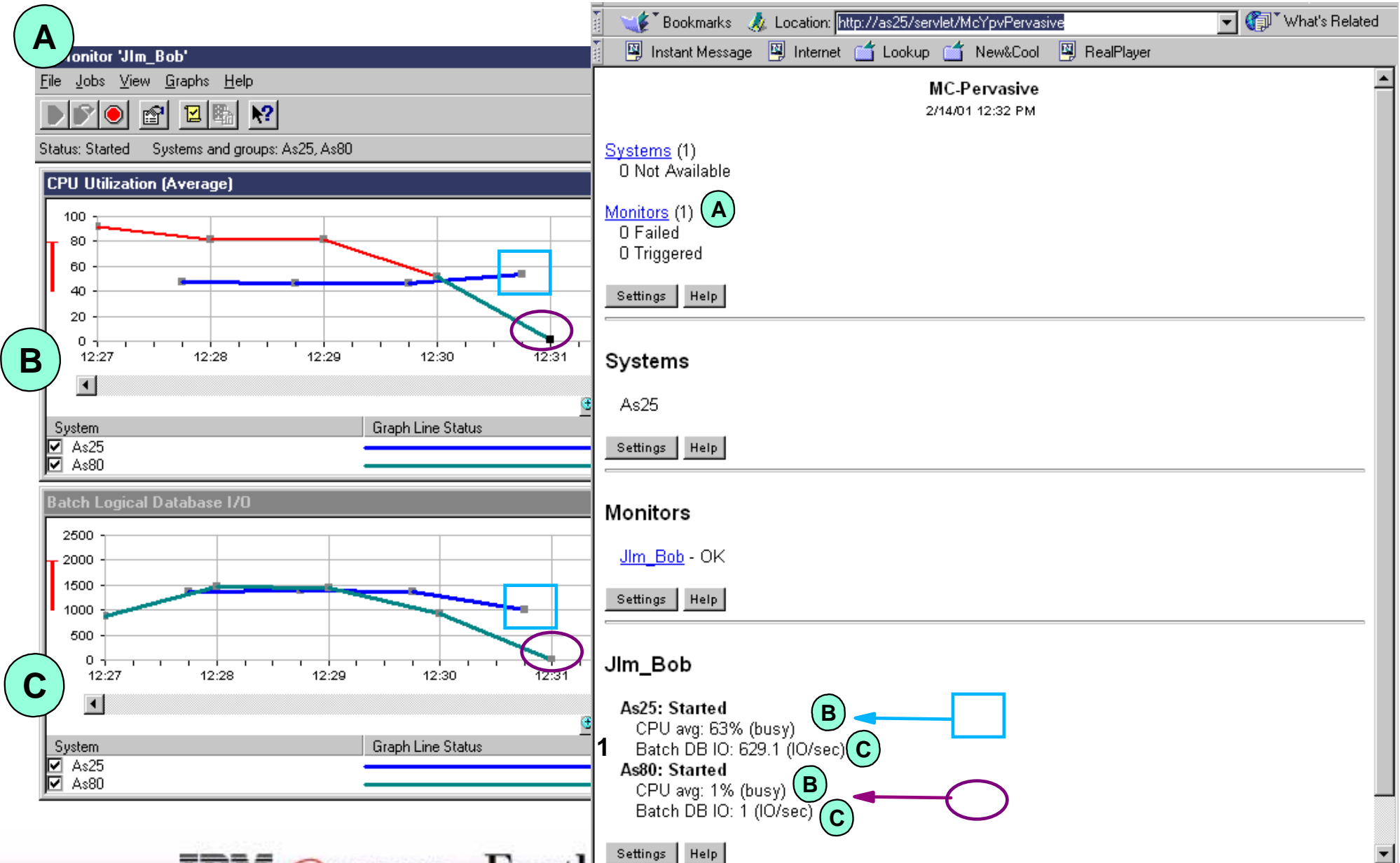
## ■ Explorer

- To set Language from tool bar select Tools -> Internet Options -> click on Languages button (click on add button to see list of browser possibilities) First one in list will be the one used.
- To set Characterset from tool bar select: View -> Encoding (may have to select more to see entire list)

## ■ Force language setting via URL

- Add language parameter ?lng= after url (i.e. ?lng=zz ) where zz is Language\_Country to be used.

# Monitoring - with MC-Pervasive (1)





**A** Monitor 'Jlm\_Bob'

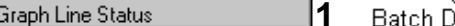

File Jobs View Graphs Help

Status: Started Systems and groups: As25, As80

**B** CPU Utilization (Average)

System	Graph Line Status
As25	
As80	

**C** Batch Logical Database I/O

System	Graph Line Status
As25	
As80	

**MC-Pervasive**  
2/14/01 12:32 PM

Systems (1)  
0 Not Available

Monitors (1) **A**  
0 Failed  
0 Triggered

Settings Help

**Systems**

As25


Settings Help


**Monitors**

Jlm\_Bob - OK

Settings Help

**Jlm\_Bob**

As25: Started **B**   
CPU avg: 63% (busy) **C**  
Batch DB IO: 629.1 (IO/sec)

As80: Started **B**   
CPU avg: 1% (busy) **C**  
Batch DB IO: 1 (IO/sec)

Settings Help

# Notes: Monitoring-with MC Pervasive (1)

In this example, the Management Central System (AS25) is monitoring two systems

- As25 and
- As80

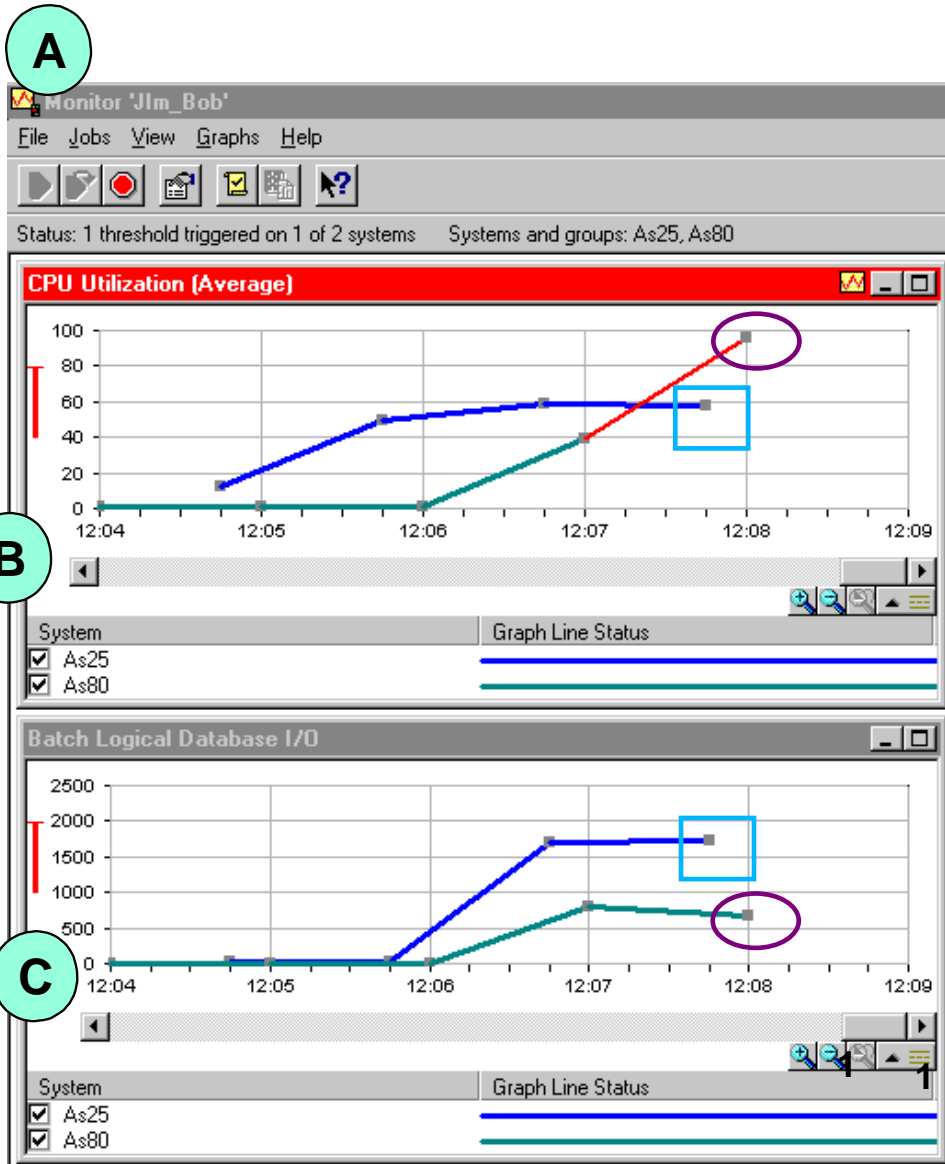
using two metrics,

- Average CPU Utilization - with a threshold of 80%
- Batch Logical I/O - with a threshold of 2000 I/Os.

The panel on the left shows the Management Central Monitor and the panel on the right is the view through MC-Pervasive on a browser.

The information shown on the browser represent a time-stamp of 12:32pm at which time there was almost no activity on As80 and the activity on As25 was below threshold levels.

# Monitoring-with MC Pervasive (2)



MC-Pervasive  
2/14/01 12:08 PM

Systems (1)  
0 Not Available

\* Monitors (1) **A**  
0 Failed  
1 Triggered

Settings Help

Systems

As25

Settings Help

Monitors

\* Jlm\_Bob - Triggered

Settings Help

Jlm\_Bob

As25: Started **B**  
CPU avg: 58% (busy)  
Batch DB IO: 1,706.9 (IO/sec) **C**

As80: Triggered **B**  
CPU avg: 96% (busy) **C**  
Batch DB IO: 664.6 (IO/sec) **C**

Settings Help

CPU % exceeds threshold

# Notes: Monitoring-with MC Pervasive (2)

In this example, the Management Central System (AS25) is monitoring two systems

- As25 and
- As80

using two metrics,

- Average CPU Utilization - with a threshold of 80%
- Batch Logical I/O - with a threshold of 2000 I/Os.

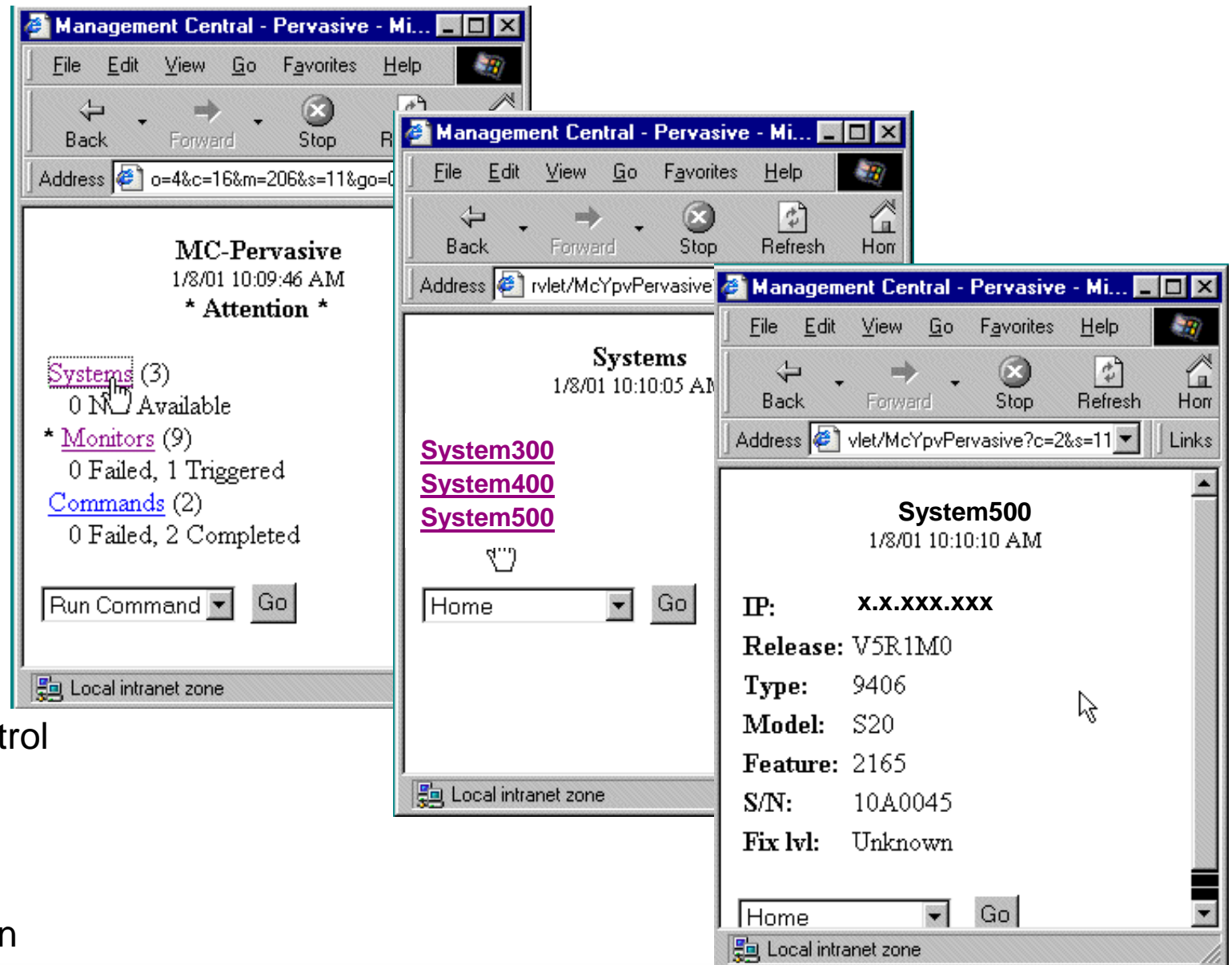
The panel on the left shows the Management Central Monitor and the panel on the right is the view through MC-Pervasive on a browser.

The information shown on the browser represent a time-stamp of 12:08pm at which time there was very high CPU activity on As80 causing it to exceed the threshold value set in the monitor. Accordingly, the browser indicates that 1 of the thresholds have been triggered (A). There is also a flag on As80 showing "Triggered" corresponding to the 96% CPU usage on this system.

The activity on As25 is below threshold levels.

# V5R1 MC-Pervasive (System)

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## V5R1:

- Monitors
  - System
  - Job
  - Message
- Job details and control
- Command
  - Results
  - Enter command
- Improved Navigation

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# Notes: V5R1 MC-Pervasive (System)

In V5R1, Management Central Monitoring support includes Job Monitoring and Message Monitoring in addition to System Monitoring which was available in V4R5.

V5R1 includes support for Job and Message monitoring through MC-Pervasive.

The left-most panel shows that there are 3 systems in the Group. When you select "Systems", it will show you the names of the systems (center panel). Selecting a particular system will display information about that system, including IP address, Release level of OS/400 and other system details.

# V5R1 MC-Pervasive (Messages)

IBM  server iSeries



1

2

3

4

5

6

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# Notes: V5R1 MC-Pervasive (Messages)

The sequence of panels are some of the screens that you will see on a browser running MC-Pervasive, as you review system operator messages based on triggers setup on Management Central.

System500 shows that a trigger has been set for message monitoring ( panel-3). The next panel (4) shows that message CPI1126 has been encountered. Panels 5 and 6 on the right show how you can drill-down to review the message details.

# V5R1 MC-Pervasive (Job Details/Control)



The screenshot displays the Management Central interface for System500. It features several overlapping browser windows. The main window shows a table of jobs with the following data:

Job ID	Job Name	CPU %	Status
1	Entsvr	31.8%	
2	Ordprc	28.8%	
3	Catalog	21.6%	
4	Qypssrv	0.7%	
5	Qypsjsvr	0.6%	
6	Qdirsvr	0.5%	
7	Rmtmsafetask	0.2% (busy)	
8	Cfint01	0.2% (busy)	
9	Qypspfrcol	0.1% (busy)	
10	Cfint02	0.1% (busy)	
11	Cfint03	0.1% (busy)	

Below the table, a control menu is open, showing options: Home, Hold, Release, End, and Help. A red arrow points to the 'End' option. Another red arrow points to the 'CPU avg: 31.06% (busy)' value in the top right window. The bottom right window shows 'System500' details and control links: 'End Controlled' and 'End Immediate'. A 'New' star icon is visible in the top right corner.

# Notes: V5R1 MC-Pervasive (Job Details/Control)

IBM @server iSeries

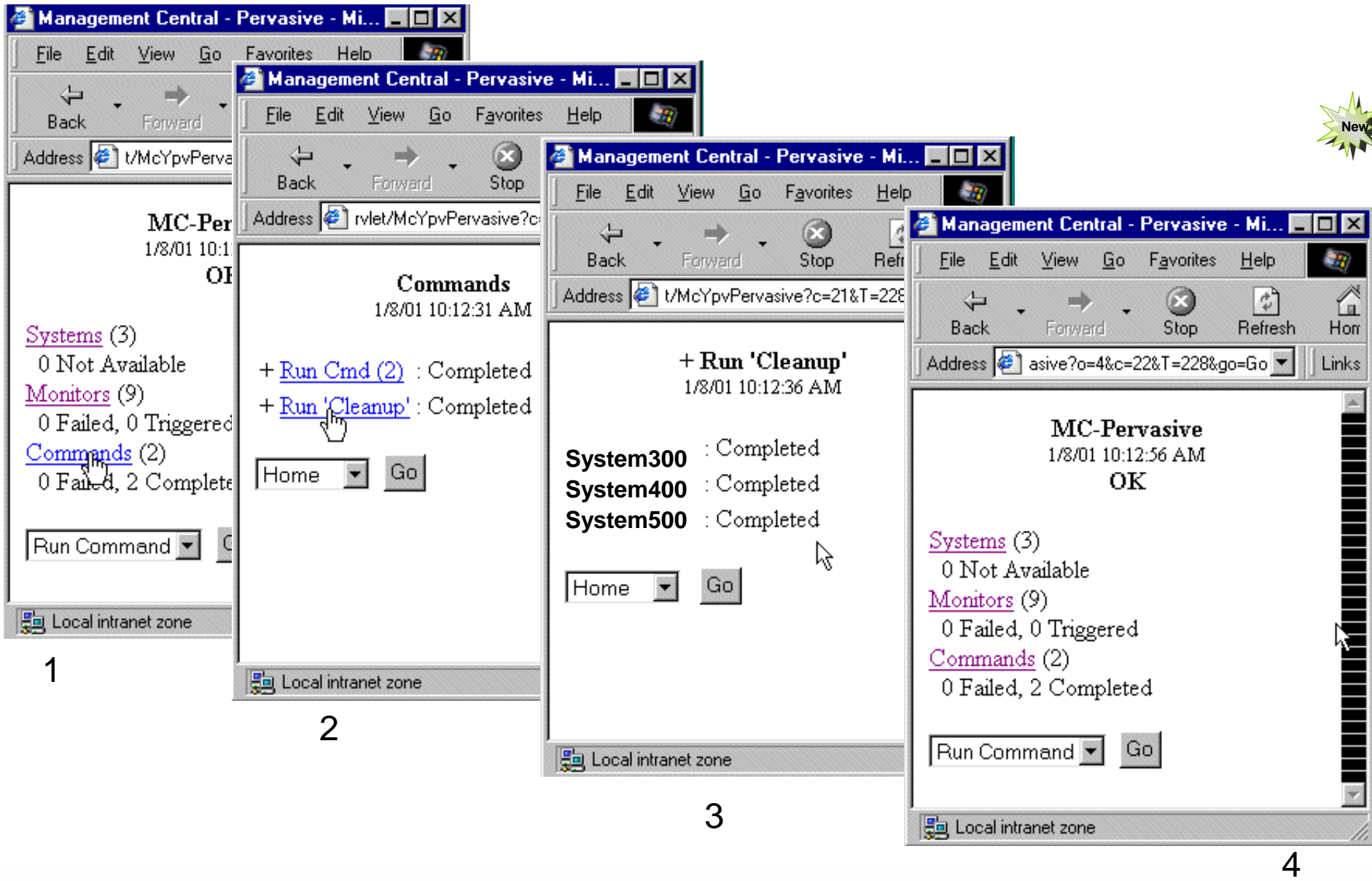
The sequence of panels shows some of the key screens you would navigate through in monitoring a system over MC-Pervasive on an Internet browser.

Panel 1 shows the user opting to monitor CPU Utilization, followed by the selection of System500. Panel 3 shows that there is high CPU usage. Drilling down in to this usage reveals that one particular job is using a significant portion of that CPU (panel 4)

Panel 6 and 7 shows details of the job in question. The user opts to terminate this job immediately (panel 7).

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# V5R1 MC-Pervasive (Command)



The image displays four overlapping screenshots of the Management Central web interface, illustrating the process of running a command. A green starburst with the word "New" is located in the upper right area.

- 1**: The main interface shows a sidebar with links for [Systems \(3\)](#), [Monitors \(9\)](#), and [Commands \(2\)](#). A "Run Command" button is visible at the bottom.
- 2**: A "Commands" window is open, showing a list of executed commands: "+ Run Cmd (2) : Completed" and "+ Run 'Cleanup' : Completed". A mouse cursor is pointing at the "Run 'Cleanup'" link.
- 3**: A detailed view of the "Run 'Cleanup'" command execution. It shows the command name and timestamp, followed by a list of systems: "System300 : Completed", "System400 : Completed", and "System500 : Completed".
- 4**: A summary view of the "MC-Pervasive" status, showing "OK" and a summary of systems, monitors, and commands.

# Notes: V5R1 MC-Pervasive (Command)

The chart shows some of the screens encountered while accessing MC-Pervasive through an Internet browser, run OS/400 commands.

In panel 1, the user opts to execute a command. In the following panel (2), selects the command to run ("cleanup"). Panel 3 identifies the systems against which the commands are to be run are identified. Panel 4 shows the successful completion of the execution of the command.

# Integrated xSeries Server Support

IBM  server iSeries

1

2

3

4

5

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# Notes: Integrated xSeries Server Support

MC-Pervasive also provides support for managing the Integrated xSeries Server on iSeries.

The main Pervasive summary display on a browser, will display all the attached Integrated xSeries Servers on the particular iSeries, indicating the total number configured, including the number active and inactive (panel-1).

Selection of "Server Link" will display details of the Integrated xSeries Servers (panel-2). The pulldown menu will permit the following functions on any server:

- Restart
- Shut down
- Run Command

For example, if the Run Command option is selected, you will be required to confirm that you want to run the command on all active servers (panel-3). If the command is to run only on a specific server, you need to select the server before selecting the option to run a command.

Panel-4 shows the prompt provided to key in the command to run on the Integrated xSeries Server.

**Note:** To run commands on INS server, user must have same userid and password on INS as on iSeries.

- V5R1:pervasive customer will need to visit the Pervasive web site, print/view the user guide to obtain the PTFs for current install/config instructions, expanded device support. (PTFs in V5R1 will put the code in the appropriate location.)
- V4R5:In addition to above, you have to move the java programs to the appropriate location with a RST command.

- Management Central
  - [www.ibm.com/eserver/series/sftsol/MgmtCentral.htm](http://www.ibm.com/eserver/series/sftsol/MgmtCentral.htm)
- Management Central - Pervasive: Users Guide & FAQ
  - [www.ibm.com/eserver/series/sftsol/pervasive.htm](http://www.ibm.com/eserver/series/sftsol/pervasive.htm)
- AS/400 WebSphere
  - [www.ibm.com/eserver/series/websphere](http://www.ibm.com/eserver/series/websphere)
- AS/400 HTTP
  - [www.ibm.com/eserver/series/http](http://www.ibm.com/eserver/series/http)
- Redbook:
  - AS/400 Internet Security Scenarios: A Practical Approach SG24-5954

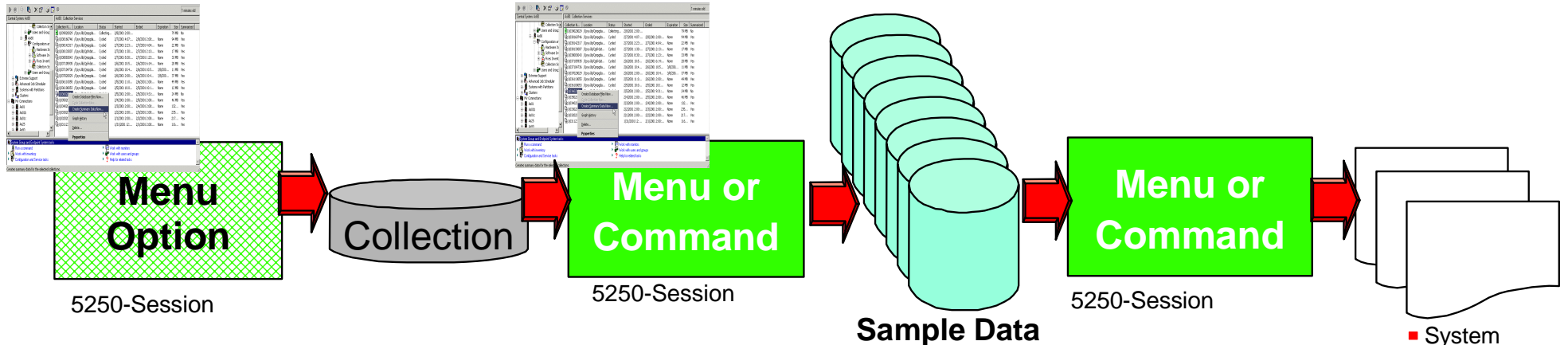
# Performance Tools

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# Overview - V5R1 Sample Reports

Operations Navigator

Operations Navigator



- System
- Component
- Job
- Pool
- Resource

## Collection Services

- Management Central
- 5250-Session
  - Performance Main Menu
    - ▶ Option-2: Collect performance data

## Create Performance Data

- Management Central
- 5250-Session
  - Performance Main Menu
    - ▶ Option-6: Configure and manage tools
      - Option-5: Create performance data
  - CRTPFRTA command

## Print Sample Reports

- 5250-Session
  - Performance Main Menu
    - ▶ Option-3: Print performance report

# Notes: Overview - V5R1 Sample Reports

Collection Services is used to gather Sample Performance Data. You can either use

- Collection Services function of Management Central (Operations Navigator) or
- Option-2 of the Performance Main Menu (GO PERFORM or STRPFRT).

The Collection data is converted to Performance Tools tables using

- Create DB Files function of Management Central (Operations Navigator) or
- 5250-Session
  - Option-6 (Configure and Manage Tools) of the Performance Tools Main Menu <sup>or</sup>
  - CRTPFRTA command.

The CVTPFRDTA command continues to be supported to convert performance datasets from lower version/release levels to higher levels.

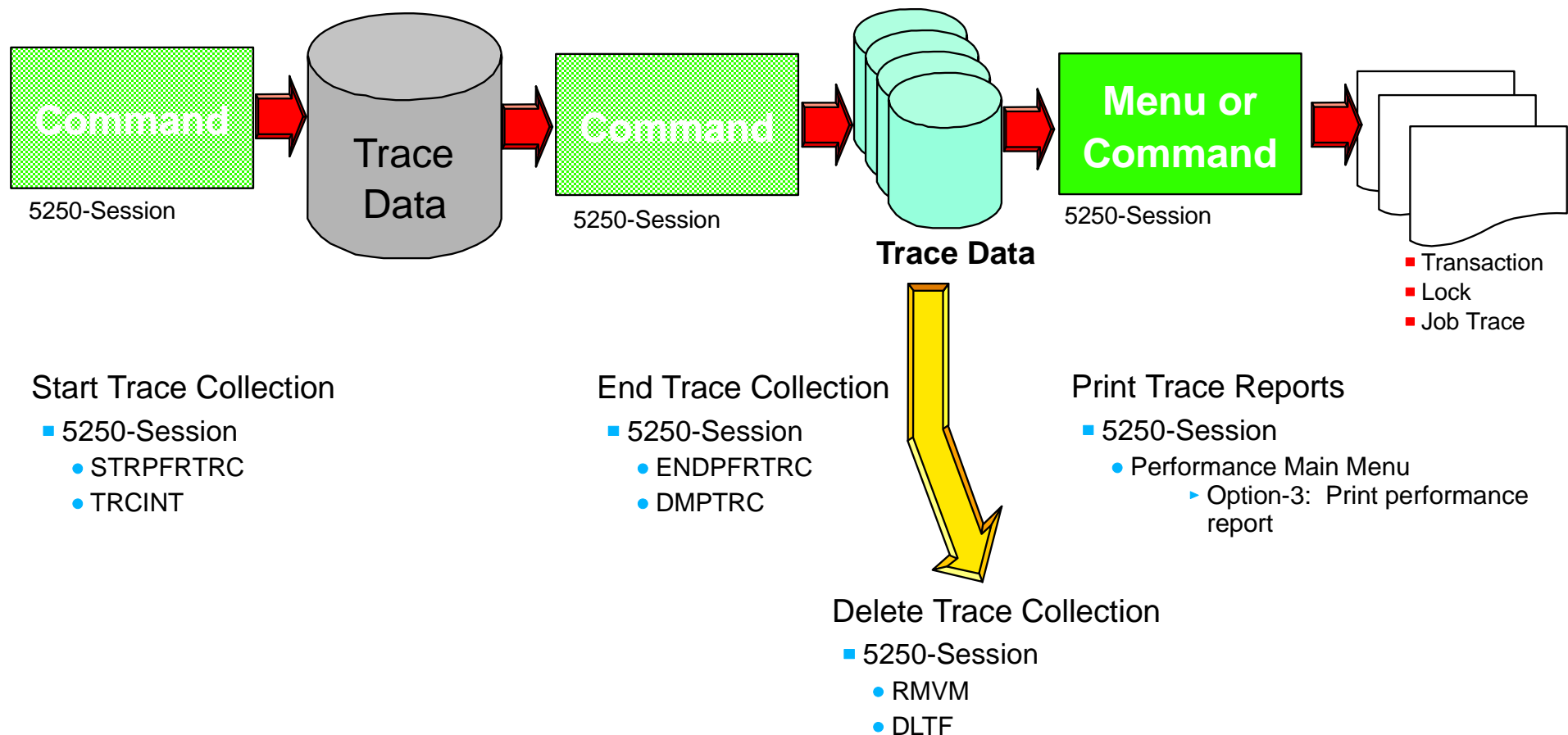
The Print Performance Report option has two sub-menus which are supported by a Toggle Function Key (PF20) if both types of data are present in the same library.

- Sample Reports
  - Print System Report (PRTSYSRPT)
  - Print Component Report (PRTCPTRPT)
  - Print Job Interval Report (PRTJOBTRPT)
  - Print Pool Report (PRTPOLRPT)
  - Print Resource Report (PRTRSCRPT)

Trace Reports

- Print Transaction Report (PRTTNSRPT)
- Print Lock Report (PRTLCKRPT)
- Print Job Trace Report (PRTTRCRPT)

# Overview - V5R1 Trace Reports



# Notes: Overview - V5R1 Trace Reports

There is currently no GUI interface through Operations Navigator to collect Performance Trace Data. It can only be collected through **STRPFRTTC** command. The collection is stopped through the **ENDPFRTTC**, which also creates the Trace Database files.

- Additional commands:
  - **TRCINT** - similar to STRPFRTTC
  - **DMPTRC** - similar to ENDPFRTTC

**Note:** When ENDPFRTTC or DMPTRC is run after trace data is collected a file member is added to QAPMDMPT. You will have to use the RMVM command to remove these members, or DLTF command to delete the entire file.

The CVTPFRDTA command continues to be supported to convert performance datasets from lower version/release levels to higher levels.

The Print Performance Report option has two sub-menus which are supported by a Toggle Function Key (PF20) if both types of data are present in the same library.

- Sample Reports
  - Print System Report (PRTSYSRPT)
  - Print Component Report (PRTCPTRPT)
  - Print Job Interval Report (PRTJOBTRPT)
  - Print Pool Report (PRTPOLRPT)
  - Print Resource Report (PRTRSCRPT)

## Trace Reports

- Print Transaction Report (PRTTNSRPT)
- Print Lock Report (PRTLCKRPT)
- Print Job Trace Report (PRTTRCRPT)

## Changes to System Report (PRTSYSRPT)


- DB Capability (since V4R5)
- Interactive Feature (since V4R5)
- TCP/IP Summary



```
                                Select Sections for Report

Member . . . . . : ITSCV51_01

Type options, press Enter. Press F6 to print entire report.
  1=Select

Option      Section
           Workload
           Resource Utilization
           Resource Utilization Expansion
           Storage Pool Utilization
           Disk Utilization
           Communication Summary
           TCP/IP Summary
           

F3=Exit    F6=Print entire report  F12=Cancel

Bottom
```



## CPU Utilization

### ■ Interactive Feature

- Shows the CPU utilization for all jobs doing 5250 workstation I/O operations as a percentage of the interactive capacity of the system. Depending on the hardware features installed, the interactive capacity is equal to or less than the total capacity of the system.

### ■ Database Capability

- Indicates the DB2 UDB for iSeries activity of the system as a percentage of the installed total capacity of the system. This represents all DB activity including
  - ✓ SQL
  - ✓ Data I/O operations

## TCP/IP information

- Unicast - a piece of information is sent from a single source to a specific destination. This is the predominant form of transmission on LANs and the Internet. Typical unicast applications are HTTP, smtp, ftp and telnet). TCP (Transmission Control Protocol) supports only unicast mode.
- Non-unicast - includes broadcast and multicast communications:
  - Broadcast - a piece of information is sent from one source. This could be used to send the same message to all computers on a LAN.(e.g.: the address resolution protocol (arp) uses this to send an address resolution query to all computers on the LAN).
  - Multicast - a piece of information is sent from one or more sources to a set of destinations. There may be one or more senders, and none, one or more receivers. (e.g.: a video-server sending networked TV channels. The same packet of information is delivered simultaneously to many clients.) Multicast applications must use UDP (User Datagram Protocol) transport protocol.

The values indicate packets delivered or received by the specific interface from a higher-layer protocol.

Note: Some TCP/IP information maybe lost if TCP/IP support is started/stopped during data collection.

# Component Report

## Changes to Component Report (PRTCPTTRPT)

- TCP/IP Activity
- Terraspace EAO



Select Sections for Report

Member . . . . . : ITSCV5R1A

Type options, press Enter. Press F6 to print entire report.

1=Select

Option	Section
	Component Interval Activity
	Job Workload Activity
	Storage Pool Activity
	Disk Activity
	IOP Utilizations
	Local Work Stations
	Remote Work Stations
	Exception Occurrence
	Data Base Journaling Summary
	<b>TCP/IP Activity</b>

F3=Exit F6=Print entire report F2=Cancel

Bottom



# Notes: Component Report

Information for each time interval:

- Datagrams Received
- Datagrams Requested for transmission
  - Total - total supplied by local IP-user protocols
  - Discarded - because either no route was found or due to lack of buffer space
- TCP Segments per second
  - Received
  - Sent
  - % Retransmitted
- UDP Segments per second
  - Received - UDP datagrams delivered to UDP users.
  - Sent - UDP datagrams sent by UDP users.
  - % Retransmitted
- ICMP Messages
  - Received - by the specific interface.
  - Sent - by the specific interface.
  - % Retransmitted

Terraspace - Effective Address Overflow

- Listed in the Exception Occurrence Summary and Interval Counts. A Terraspace EAO occurs when computing a terraspace address that crosses a 16-MB boundary. Allow for an approximately 1% performance degradation if there are 2,300 EAOs per second.

# BEST/1

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## V5R1 support for

- 2001 Processor Models, Processor on Demand
  - V4R4 PTF: SF65568
  - V4R5 PTF: SF65561
  - **V5R1 PTF: SI01485**
- More than 2 "supported releases" copy from one CPU to another using when Work with CPUs - Copy function
  - V4R5 PTF: SF65725
  - **V5R1 PTF: SI01489**
- More flexible LPAR modeling for interactive to processor performance rating ratios (cover letter documentation)
  - V4R5 PTF: SF65725
  - **V5R1 PTF: SI01489**

## For each BEST/1 Workload

- Supports "Processor Efficiency"
  - V4R5 STRPFRMON INTDTA(\*YES)
- V5R1 Collection Services - Enhanced Capacity Planning
  - PEX Data - Processor Efficiency

V5R1 is expected to be the last release to support BEST/1. The recommendation is to become familiar with the Workload Estimator. Also, we recommend investigating some other capacity planning tool, such as BMC's Patrol. Note BMC plans to add iSeries support to Patrol, but as of April 2001, there is no formal announcement by BMC of this capability.

## Processor Efficiency

### ■ V4R5 STRPFRMON INTDTA(\*YES)

- Specifies whether internal data is to be collected. Internal data is collected. Do not specify \*YES for this value unless instructed to do so by an IBM representative. Data may be collected to enhance capacity planning capabilities or for other purposes. It should not be turned on unless you are doing so for a specific purpose. This option requires performance monitor to start a Performance Explorer (PEX) collection (session-id QPFRMON). Performance monitor will create a performance explorer definition named QPFRINTDTA. This collection may conflict with other PEX collections.

### ■ V5R1 Collection Services - Enhanced Capacity Planning

- PEX Data - Processor Efficiency
- This category contains the cycles per instruction for performance explorer (PEX) data. Data may be collected to enhance capacity planning capabilities or for other purposes. Special considerations apply when using this category A performance explorer definition, QPMIPEXPEI, is created. If a performance explorer definition already exists, it is deleted and re-created. This category requires Collection Services to start a performance explorer (PEX) collection (session-ID QPMINTPEXD). This collection can conflict with other performance explorer collections. You should not end or start the QPMINTPEXD session manually because this will affect the validity of the data collected. When collection of this category stops, it also ends the performance explorer collection for session QPMINTPEXD.

# BEST/1 Processor Efficiency

## Workload

- Application Type attribute for each BEST/1 workload
  - Based on Functions
    - ▶ Based iSeries Jobs included in workload

```
Change Workload

Workload . . . . . : INTCPU
CPU architecture . . . : *RISC
Application type . . . : *MIXED

Type changes, press Enter. Press F13 to specify a single application type for
all transactions.
Workload text . . . . . Measured from PFR45PFRM (DBCPUID820)
Workload type . . . . . *NORMAL      F4 for list
Usage mode . . . . . 2              1=Casual, 2=Interrupted, 3=Steady,
                                   4=N/A

Function Text          Functions  Avg K/T  -----Tns per Function-----
Function of INTCPU    per User  (secs)   Inter    Non-inter
                    1.00     58.7    45.77    138.94
                                           Bottom
F3=Exit   F4=Prompt   F6=Work with functions  F9=Specify chars to comm lines
F10=Specify I/Os to ASPs  F12=Cancel             F24=More keys
```

## \*MIXED

Indicates that there is no single application type for the transactions in this workload.

## Application type

The application type which is common to all the transactions in this workload. Descriptions of individual application types are found either in Help for the Select Application Type display accessed by pressing F4 on this field, or in Help for transaction application type fields.



# BEST/1 Application Types

## Workload Function

### ■ Application Type - Example

#### Display Transaction

Workload . . . . . : INTCPU            Measured from PFR45PFRM (DBCPUID820)  
 Function . . . . . : INTCPU            Function of INTCPU

Transaction Type . . . . . : 1                    1=Inter, 2=Non  
 Pool ID . . . . . : 4  
 CPU priority . . . . . : 20  
 CPU time . . . . . : 1466.674            Secs (on B10)  
 Database time . . . . . : .000            Secs (on B10)  
 Permanent writes . . . . . : 63.4            Percent  
 Chars transferred in . . . . . : 7670  
 Chars transferred out . . . . . : 224124  
 Exceptional wait . . . . . : .0                    Msec  
 Application type . . . . . : \*COMPUTE

	DB Reads	DB Writes	NDB Reads	NDB Wr
Sync I/Os . . . . . :	.1	.0	17.6	.3
Async I/Os . . . . . :	19.0	.0	.1	.8

Opt	Application Type	CPU Time Adjustment Factor
—	*DEFAULT	1.00
—	*OLTP	.89
—	*GEN_DB	.86
—	*EOD_DB	.91
—	*GEN_CA	.96
—	*COLLABRTV	.06
—	*APPSERVER	.96
—	*COMPUTE	.96
—	*APPLTYPE1	1.00
—	*APPLTYPE2	1.00

# Notes: Application Types

The name of the application type for this transaction. Every CPU model type has a performance adjustment factor for both CPU time and I/O counts for each application type. These factors are applied when the BEST/1 model is analyzed.

## \*DEFAULT

This application type is used if no type is specified or if measurement data does not include application type information. CPU service time and I/O counts are not adjusted for transactions with this application type. This application type has an adjustment factor of 1.0 so that there is no change to the CPU times or I/O counts.

## \*OLTP

On Line Transaction Processing. This application is highly interactive, with many transactions of short duration. It is primarily comprised of interactions with the database and interactions with the end-users' display. This category includes green-screen interactive applications, simple ODBC and other simple Client/Access applications, and DDM environments that serve this kind of application.

## \*GEN\_DB

Generic Database application. This is similar to \*OLTP, except that it may also include complex transactions and background work. At least some part of this workload does not contain interactive transactions. This is the most common application type on the AS/400. It combines transaction processing with batch data base processing and other aspects of the AS/400.

## \*EOD\_DB

End of Day Database application. This application type covers the situation where a relatively small number of jobs process a large amount of data. It does not have to run at the end of the day. It just has to use system resources in a way similar to "end of day" or "end of week" applications. Some query applications fit this category, as well as background batch jobs and overnight jobs that process data from an AS/400 database.

## \*GEN\_CA

Generic Client Access application. This is similar to \*OLTP and \*GEN\_DB, except that more of the application requirements are satisfied by client requests to a database server. Applications that might fit this type are transaction processing using Java, Client/Access using small to medium queries, and Web-based environments.

## \*COLLABRTV

Collaborative processing. This is typical of but not limited to Domino applications. The application type can be characterized as having a large number of end-user jobs that interact with the system often, but that do not require significant use of an AS/400 database.

## \*APPSERVER

Application Server. This type of application is similar to \*COLLABRTV, except that a significant amount of processing is required for each interaction with the user. There is no significant database processing. This is similar to many middle-tier applications of three-tier environments, where the system spends significant time processing and formatting information on behalf of end-user client systems and primary database servers.

## \*COMPUTE

Compute Intensive application. This is an environment where substantial CPU is required for each unit of work. The processor light should be running at or near 100% while processing a request for this kind of workload. Some Java-based applications fit this application type, although that is not a prerequisite.

## \*APPLTYPE1 and \*APPLTYPE2

Additional application types

# Patrol® for AS/400 from BMC

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# BMC's Patrol® for AS/400

## Performance monitoring and reporting

- Additional cost

## Monitoring support

- Similar to V5R1 Operations Navigator
  - -Management Central performance, job, and message monitoring

Can combine AS/400 performance monitoring with performance monitoring of other operating systems

Performance reporting similar to combination of V5R1 Collection Services Graph History, PM/400 reports and graphics, and Performance Tools for iSeries licensed program

*Understand: OS/400 no charge Performance Monitors, Graph History, PM/400 - additional cost for Performance Tools for iSeries licensed program and PM/400 services. Then consider Patrol for AS/400.*

# Patrol for AS/400 - Performance Monitoring

IBM  server iSeries

Complements OS/400 Management Central Performance Monitor support

Reports and monitors availability and performance across critical areas of iSeries and AS/400 operation

Issues visual warnings and alarms when thresholds are exceeded

Enables the event-based triggering of automatic user-supplied recovery or intervention actions

Allows remote, concurrent monitoring of multiple AS/400 systems from a single PATROL Console

Provides a native autonomous agent delivering comprehensive PATROL Agent platform support for AS/400

Allows execution of AS/400 commands and building of sophisticated automatic recovery actions

Provides consistent management across all platforms (iSeries, Unix, Microsoft Windows 2000, etc.)

Requirements:

- OS/400 V4R3 and above, with TCP/IP configured and running
- PATROL Console on Unix, Microsoft Windows NT or Microsoft Windows 2000 platform

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## Monitoring and Operational Capabilities

- System – Overall system-wide metrics, including total and interactive CPU utilization, average interactive response time, and transaction rate.
- Message queues – Ability to trap, view, and take action (such as e-mail notification, pager dial, etc.) for messages of interest arriving on QSYSOPR or other specified message queues. An auto-reply feature also enables automatic answering of inquiry message arriving on the queue. The number of new messages, as well as the number currently waiting for a reply, is also shown for each monitored message queue.
- Active jobs – Overall information on the number of active jobs in the system, as well as the ability to monitor specific jobs of interest. For each job, the CPU utilization, I/O rate, response time and transaction rate (for interactive jobs), job status, and job type are reported. You can configure alarms and specific actions to occur when too many jobs exceed a CPU threshold, or a particular job changes from active to inactive status. Reports listing jobs utilizing the CPU above a specified threshold or with a status matching a user-specified status list are also available.
- ASPs – Information for each configured ASP, including space utilization, I/O rates, I/O sizes, and reports showing busy, failed, and all disk arms in the ASP. You can also configure alarms and recovery actions to warn of high space utilization or the failure of disk arms in the ASP.
- Libraries – Information on the number of objects in a library and the total size of the library. You can monitor individual libraries and configure alarms and actions to be triggered on changes in size or number of objects. You can also request reports that show current size and object counts for all, all users, or all IBM® libraries.
- Subsystems – Number of active jobs and subsystem description information for all active subsystems. Subsystems can be started or ended.
- Main storage pools – Fault, page, and transition information for each pool.
- Batch jobs – Information on the number of batch jobs running, waiting to run, ending, and held.
- Users – Information on the number of users signed on, temporarily signed off, suspended, and signed off.

## PATROL for Performance Management:

- Collects Performance data similar to Collection Services.
- Download summary performance data to client workstation running Patrol Visualizer
- Visualizer graphically displays various performance metrics per system per day
- User can view multiple time periods and can make use of Visualizer Thresholds to detect exceptions



# Patrol Performance Monitor Example

IBM @server iSeries


PATROL V3.3.01 (Dev) - "List Libraries..." on "s400h.OS400\_LIBRARY",global for "OS400\_LIBRARY" class

File Edit View Hosts Tools Options Window Help

PatrolMainMap

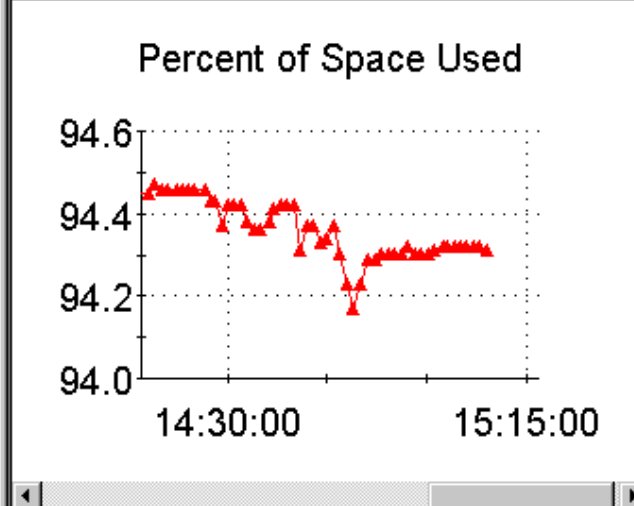
- s400h
  - OS400\_ACTJOBS
    - \_Nbr\_Above\_CPU
    - \_Nbr\_Act\_Jobs
    - \_Nbr\_Matching\_Status
  - LIBCOLLECT-MABAG
  - PATROLAGEN-MABAG
  - PATROLAGEN-PATQA1
  - PATROLAGEN-PATQA2
  - PATROLAGEN-PATQA2
  - PATROLAGEN-PATQA3
  - PATROL-QSYS
  - OS400\_ACTJOBS[List Jobs]
  - OS400\_ASP
  - OS400\_BATCH
  - OS400\_DCM
  - OS400\_LIBRARY
  - OS400\_LIBRARY[List Libraries]
  - OS400\_MSG
  - OS400\_POOL
  - OS400\_SUBSYS
  - OS400\_SYSTEM
  - OS400\_USER
- s400i
  - OS400\_ACTJOBS
  - OS400\_ASP
  - OS400\_BATCH
  - OS400\_DCM
  - OS400\_LIBRARY
  - OS400\_MSG
  - QSYSOPR
  - OS400\_POOL

"PatrolMainMap"



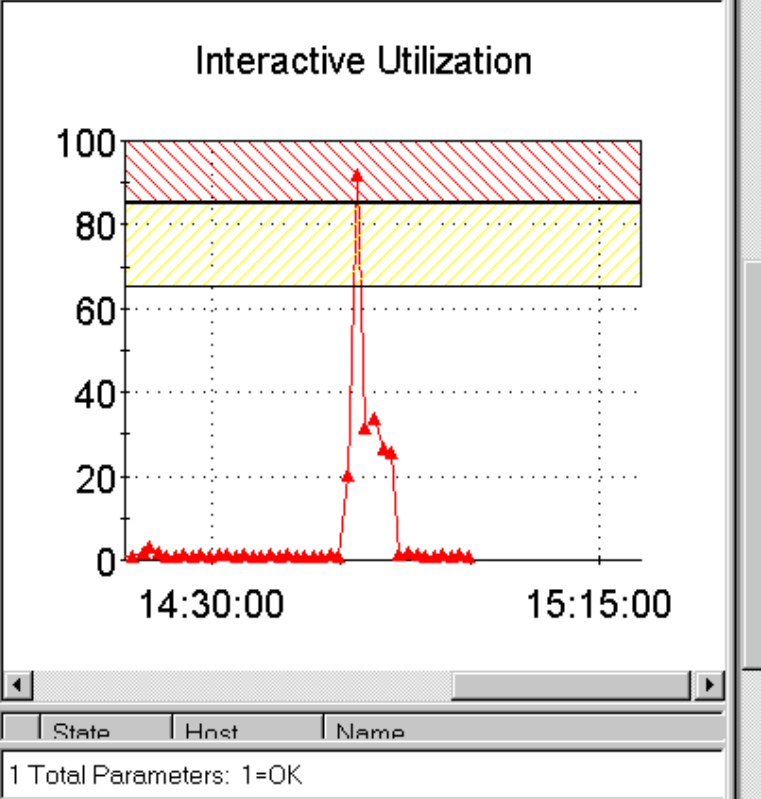
/s400h:/OS400\_ASP/1/Space\_Used

Percent of Space Used



/s400i:/OS400\_SYSTEM/OS400\_SYSTEM/...

Interactive Utilization



State	Host	Name
1 Total Parameters: 1=OK		

"List Libraries..." on "s400h.OS400\_LIBRARY",global for "OS400\_LIBRARY" class

NAME	SIZE	STATUS	OBJECTS	DESCRIPTION
QUSRSYS	2106.93	1	1429	
QPFRDATA	1910.29	1	40	Performance Data Library
QSYS	1396.00	1	14055	System Library

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# Notes: Patrol for AS/400 - Performance Reporting

For additional information on Patrol for AS/400 by BMC Software, refer to:

- <http://www.bmc.com>
  - Search for "Patrol for AS/400"
- [http://www.bmc.com/rs-bin/RightSite/getcontent/bmcdoc.html?dmw\\_objectid=09003201803d6267&dmw\\_format=html](http://www.bmc.com/rs-bin/RightSite/getcontent/bmcdoc.html?dmw_objectid=09003201803d6267&dmw_format=html)

# PM/400

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# Trend Analysis (PM/400)

IBM @server iSeries

The image displays a screenshot of the IBM Performance Management/400e (PM/400e) interface. On the left, there are two line graphs: 'CPU Utilization' and 'Disk Arm Utilization (Maximum)'. The CPU graph shows a peak around 8:27. The Disk Arm graph shows several smaller peaks. A context menu is open over the CPU graph, with 'View Trend Analysis...' selected. A pink arrow points from this menu to the browser window. The browser window shows the IBM website for PM/400e, with a search bar and navigation links. A green arrow points from the 'View Trend Analysis...' menu item to the 'Advanced search' link in the browser. The browser address bar shows 'http://www.as400.ibm.com/pm400/'.

Status: Started Systems and groups: ITSD

CPU Utilization

50  
40  
30  
20  
10  
0  
8:13 8:16 8:18 8:21 8:24 8:27 8:30

System  
As01  
As80

Graph Line Status

Start...  
Stop  
Restart on Failed Systems  
Export...  
Properties  
Close

Disk Arm Utilization (Maximum)

30  
25  
20  
15  
10  
5  
0  
8:13 8:16 8:18 8:21 8:24 8:27 8:30

System  
As01  
As80

Graph Line Status

Displays the properties of the monitor.

Bookmarks Location: http://www.as400.ibm.com/pm400/ What's Related

Instant Message IBM WebMail Radio People Yellow Pages Download Calendar

ShopIBM Support Downloads

Home Products Consulting Industries News About IBM

Search

in iSeries Go

Advanced search

Integrated business servers

PM/400e Home

Guided Tour

Activate PM/400 Now

Existing Customers

PM/400 in the Press

Upcoming Events

PM/400e News

Related links:

My iSeries

As a systems management tool, Performance Management/400e (PM/400e) ensures that you get the most from your IBM @server iSeries 400 or AS/400 by measuring performance. PM/400e helps you identify potential resource constraints, plan more easily for future growth and make decisions that affect your budget. All this and more- and you may qualify to receive this service for free. Take a tour and find out how PM/400e works and how the benefits add up... and how they can affect your IT resources.

Existing PM/400e Customers:  
Click here to view your Management Summary Graph

PM/400e News

Related Performance Monitoring

- Select Site -

Take our Guided Tour  
What is PM/400e?

Existing Customers  
Existing Customers FAQs

Document: Done

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# Notes: Trend Analysis (PM/400)

Selecting Trend Analysis from the Real-time Monitor provides a link to the IBM PM/400 website.

If the user chooses to view a graph of data that was not in the range allowed, messages will appear suggesting the user activate PM/400.

From the PM/400 webpage, click on the button to "View Management Summary Graph".

When PM/400e is activated, the performance monitor samples this statistical data and these values are used to calculate an average hourly utilization of system resources. These hourly utilizations are then used to calculate the monthly (first-)shift average.

'Peak' utilization which is defined as the worst contiguous 2 hour period is also computed. These values from each day of the reporting period are in turn used to calculate the peak average for the reporting month. While many systems experience a similar performance profile each day it is also quite common for the heaviest two hour period to be different from day to day.

# Trend Analysis

Instant Message IBM WebMail Radio People Yellow Pages Download

Show Second Shift Hide Buttons for Printing Switch User/Machine

### PM/400e Management Summary

**ABC Corporation**  
May 2000  
First Shift  
SWEDEN 940410-ABCDE 620-2180  
Number of months used for statistics: 12

#### Processor - Interactive Capacity

Category	Value
Avg.	13.11
Peak	17.69

#### Processor - System + Interactive

Category	Value
Avg.	8.64
Peak	12.75

#### Processor - Total

Category	Value
Avg.	10.89
Peak	18.25

#### Disk Space

Category	Value
Avg.	53.56
Peak	53.56

Home PM/400e report Change Password

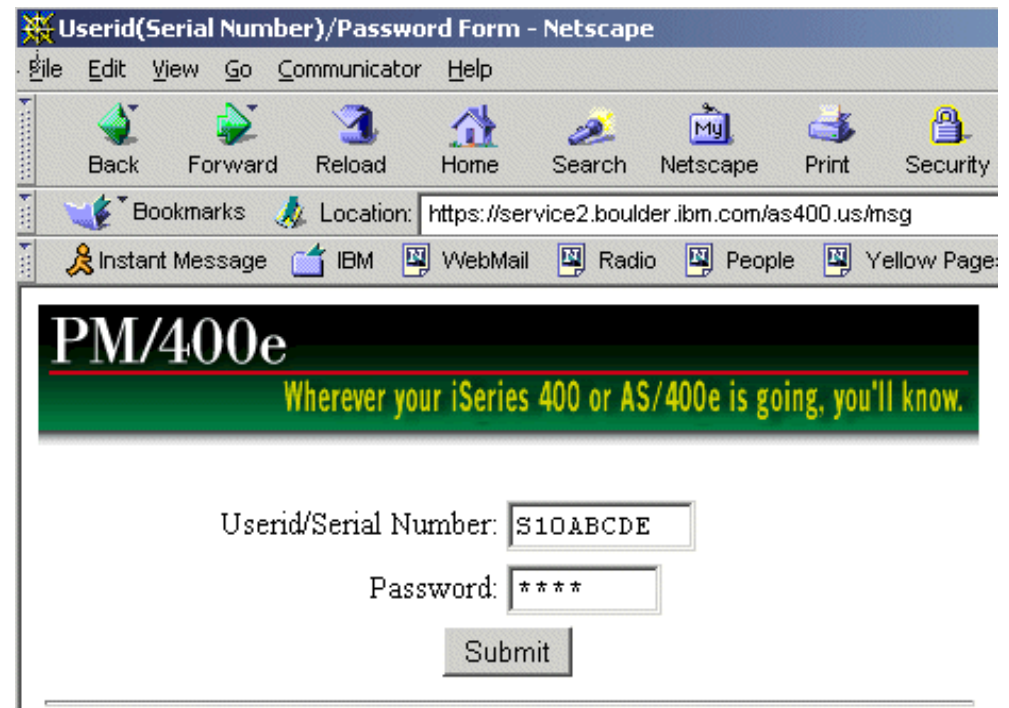
Authorize a Business Partner to see your PM/400e data

Size my next upgrade

# Notes: Trend Analysis

When you sign-on specifying your iSeries Serial Number and assigned password, you will see the trend in usage of your system resources

- CPU Utilization
  - Interactive Workload
  - Interactive and System Workload
  - Total
  - Disk Space



## Activation

- At IPL:
  - MPH8001 message to QSYSOPR
  - Respond "G" to activate PM/400e
- At anytime:
  - Sign on as QSECOFR
  - Enter command CFGPM400.
    - ▶ Typical system setup

## After successful activation

- (Confirmed by Screen)
- Setup items
  - Type "GO PM400"
    - ▶ Displays PM/400e menu
- Verify option 4 "Work with Contact Information"
- Check option 6 "Work with PM/400 Customization"

<http://www.as400.ibm.com/pm400>

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PM/400 Data Integration -- For those users of PM/400e, there is now a direct link from the web based PM/400e data collection to the Estimator. See <http://www.as400.ibm.com/pm400> for more details. Also, you can check out our help text regarding the capabilities and limitations of this feature. PM/400 output should be available by YE' 00.

- Multiple existing Systems -- The estimator has been enhanced to include the ability for multiple existing systems to be present in an estimation. This will aid you in considering consolidating multiple AS/400 systems into one new iSeries 400. One of the new tutorials, "Consolidating Existing Systems", deals with this feature.
- Tutorials -- Check out the help drop down. There are now 5 tutorials available in "PDF" format. The titles of these tutorials are "General Product Walkthrough", "Detailed Walkthrough and Features", "Consolidating Existing Systems", "Using Save and Restore" and "PM/400 Integration".

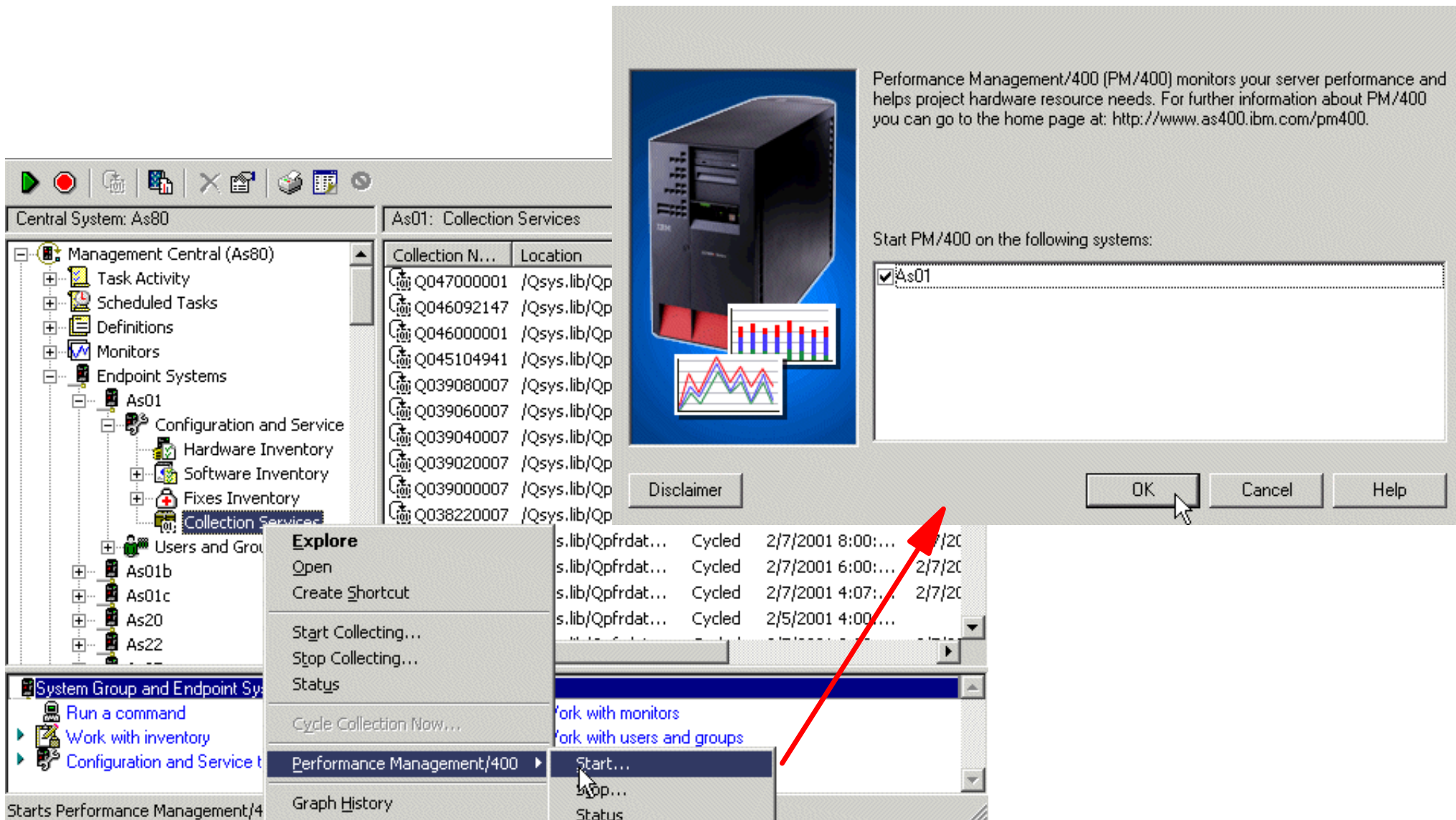
With V51, PM/400 is shipped as part of OS/400.

See the What's New section of the Help text for complete description of the new functions:

- <http://as400service.ibm.com/estimator>

# Start PM/400 via Management Central

IBM  server iSeries



The screenshot shows the Management Central interface for system As80. The left pane shows a tree view with 'As01' selected under 'Endpoint Systems'. A context menu is open over 'As01', with 'Performance Management/400' selected and its sub-menu 'Start...' highlighted. A red arrow points from this sub-menu to the 'Start PM/400' dialog box on the right.

The 'Start PM/400' dialog box contains the following text:

Performance Management/400 (PM/400) monitors your server performance and helps project hardware resource needs. For further information about PM/400 you can go to the home page at: <http://www.as400.ibm.com/pm400>.

Start PM/400 on the following systems:

- As01

Buttons: Disclaimer, OK, Cancel, Help

Collection N...	Location
Q047000001	/Qsys.lib/Qp
Q046092147	/Qsys.lib/Qp
Q046000001	/Qsys.lib/Qp
Q045104941	/Qsys.lib/Qp
Q039080007	/Qsys.lib/Qp
Q039060007	/Qsys.lib/Qp
Q039040007	/Qsys.lib/Qp
Q039020007	/Qsys.lib/Qp
Q039000007	/Qsys.lib/Qp
Q038220007	/Qsys.lib/Qp

File Name	State	Start Time	End Time
s.lib/Qpfrdat...	Cycled	2/7/2001 8:00:...	2/7/2001 8:00:...
s.lib/Qpfrdat...	Cycled	2/7/2001 6:00:...	2/7/2001 6:00:...
s.lib/Qpfrdat...	Cycled	2/7/2001 4:07:...	2/7/2001 4:07:...
s.lib/Qpfrdat...	Cycled	2/5/2001 4:00:...	2/5/2001 4:00:...

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# Notes: Start PM/400 via Management Central

You can start and stop PM/400 through Operations Navigator, based on the customization of PM/400. However, customization of PM/400 requires interaction with the main PM/400 menu (GO PM400) through a 5250 session. This will allow you to specify:

- Limit of your High priority workload
- Days to include in PM/400 Trend Analysis
- First shift/Second shift times - these maybe used to specify your period of peak activity and need not necessarily coincide with work "shifts".
- Location of Performance Collections - defaults to QMPGDATA
- Frequency of Purging collections - The performance data that is collected by the Collection Services monitor requires 15 to 35 MB per day.

```
Work with PM/400 Customization

Type changes, press Enter.                               System:      M01
  High priority limit . . . . .                20
                                           S M T W T F S
Trending days . . . . .                1 1 1 1 1

First shift . . . . .                13:00    - 14:00
Second shift . . . . .                15:00    - 16:00

Performance data library . . . . .        PFRV51CS
Performance data purge days . . . . .        10
For second shift reports, contact your IBM Support Team.

More...

F3=Exit   F12=Cancel
(C) COPYRIGHT IBM CORP. 1996, 2000
```

PM/400 jobs are controlled by automatically scheduled jobs

- Q1PPMSUB (hourly)
  - Ensures Collection Services is collecting data
- Q1PPMCHK (4-hourly)
  - Verifies that data collection is active
- Q1PDR (Daily)
  - Performs Data Reduction
  - Purges Collection Data
- Q1PCM1 (Weekly)
  - Transmits reduced data to IBM
- Q1PPG (Monthly)
  - Purges reduced datasets from system

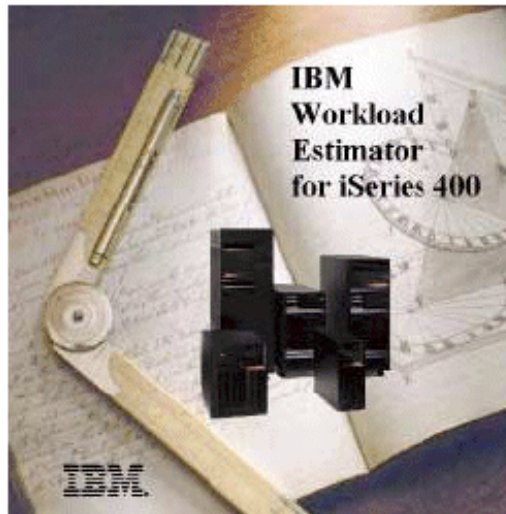
# Notes: PM/400 Scheduled Jobs

Take option- 2. Work with automatically scheduled jobs to specify the schedules of the jobs that control PM/400 activity.

- Q1PPMSUB runs hourly based on the next run time/date, and starts Collection Services if it is not running. Thus, even if you started PM/400 from the Collection Services pulldown menu, at 12:00 noon (PM/400 is started) but Collection Services will not start until the time shown in this parameter is reached.
- Q1PPMCHK processes every 4 hours to determine if collection services is running, and issues a message if PM/400 is not active.
- Q1PDR run daily and performs the following:
  - Performs Data Reduction
  - Purges Collection Data
- Q1PCM1 runs weekly and transmits summarized data to IBM
- Q1PPG runs monthly and purges old reduced data.

```
Work with Automatically Scheduled Jobs
Type options, press Enter.
  2=Change
Opt  Name                Status   Next Run Date   Next Run Time   Runs to Date
-----
Q1PTEST          I        02/16/01        12:35           4
Q1PPMSUB         A        02/16/01        16:00           5
Q1PPMCHK         A        02/16/01        17:45           1
Q1PCM2           I        02/17/01        6:00            0
Q1PDR            A        02/17/01        6:00            0
Q1PCM1           I        02/23/01        0:30            0
Q1PMONTH         I        03/01/01        0:00            0
Q1PPG            I        03/01/01        7:00            0
F3=Exit  F5=Refresh  F12=Cancel
(C) COPYRIGHT IBM CORP. 1996, 2000
```

# Workload Estimator



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# Notes: Workload Estimator

The Workload Estimator is an existing tool that currently helps you size system needs based on estimated workloads for specific workload types. We have enhanced the Workload Estimator and PM/400e to work with one another. Through a web based application, the enhancements will help you size upgrades to your existing system based on PM/400e reported utilization, performance and growth data. This assists you in planning for your future system requirements based on existing utilization data coming from your system. Sizing for additional workload types supported by the Workload Estimator (e.g. Domino, WebSphere, Java , and others) can also be included in the sizing. With the flexibility to adjust growth rates and time horizons, the output will include an iSeries 400 and AS/400 (170, 7xx, 250, 270, 8xx only) summary level recommendation for your consideration. It will include a suggested upgrade for your processor, processor features, memory, disk arms and disk capacity. This function will be accessible while viewing your PM/400e Management Summary Graph. The application does not support an LPAR or the processor on demand environment.

# 2000.3 version (released Oct 2000)

## New in 2000.3 version

- Inclusion of the Processor On Demand Models
- Updated Workloads
  - HTTP Workload
  - Domino Workload
  - Java Workload
  - WebSphere Workload
- Enhanced Save/Restore of Work in Progress
- Portable Document Format Generation



# Notes: 2000.3 version (released Oct 2000)

Inclusion of the Processor On Demand Models -- With the announcement of the new Model 840 'Processor on Demand' models, support for these new systems is included in the Workload Estimator. There are three new POD (processor on demand) processors:

- 8/12 (eight base processors with four on-demand)
- 12/18 (12 base processors with six on-demand)
- 18/24 (eighteen processors with six on-demand)

Updated Workloads:

- HTTP Workload -- The HTTP workload has been enhanced to improve the positioning of the "smaller" systems.
- Domino Workload -- The Domino workload has been enhanced to include the new performance improvement that can be realized when running Domino.Doc version 3.0. This update reflects the performance enhancements from both specific Domino.Doc improvements as well as an R5 Domino enhancement known to improve Domino.Doc Performance. It should be noted that the measurements used for sizing information were taken using Domino 5.04a. To take full advantage of the performance enhancements represented in the Estimator we recommend using 5.04a or later. The Domino Workload help text contains more specific information regarding the Domino.Doc application update.
- Java Workload -- The Java workload has also been enhanced for improved positioning of the "smaller" systems.
- WebSphere Workload -- This workload has been updated to include support for version 3.5 of the WebSphere Application Server.

Enhanced Save/Restore of Work in Progress -- The Workload Estimator now saves individual workloads, in addition to the existing ability of saving all the workloads within the estimation. It also allows the ability to include a single saved workload definition into an existing estimation. The ability to save and restore individual workloads enables you to use this as a "copy" function from one estimation to another. For more details, See the Restore Help.

Portable Document Format Generation -- It is now possible to have the Workload Estimator generate output of the recommended system in the Portable Document Format (".pdf"). This can either be printed immediately, or saved to the hard file for later inclusion into e-mails, proposals, etc.

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# 2000.4 version (released Dec 2000)

## New in 2000.4 version

- PM/400 Data Integration
  - Customer workload imported directly into Workload Estimator
- Multiple Existing Systems
  - Allows multiple current systems to be considered for upgrade
  - Assists in Server Consolidation
- Direct link from the web based PM/400e data collection to the Estimator
- Workload Estimator Tutorials
  - General Product Walkthrough
  - Detailed Walkthrough and Features
  - Consolidating Existing Systems
  - Using Save and Restore
  - PM/400 Integration.

# Notes: 2000.4 version (released Dec 2000)

With our new connectivity into Workload Estimator, your PM/400 data can be imported directly into Workload Estimator and used to analyze your company growth and AS/400 needs. Using monthly statistics recorded from your system, the Workload Estimator can show system performance trends over time and allow you to more accurately determine the growth trends of your company.

IBM provides a new version of the Workload Estimator for iSeries 400 3 to 4 times a year. In the 2000.4 version (released Dec 2000), we have responded to your requests for various improvements, including the following new improvements and features:

- PM/400 Data Integration -- For those users of PM/400e, there is now a direct link from the web based PM/400e data collection to the Estimator. See <http://www.as400.ibm.com/pm400> for more details. Also, you can check out our help text regarding the capabilities and limitations of this feature.
- Multiple existing Systems -- The estimator has been enhanced to include the ability for multiple existing systems to be present in an estimation. This will aid you in considering consolidating multiple AS/400 systems into one new iSeries 400. One of the new tutorials, "Consolidating Existing Systems", deals with this feature.
- Tutorials -- Check out the help drop down. There are now 5 tutorials available in "PDF" format. The titles of these tutorials are
  - General Product Walkthrough
  - Detailed Walkthrough and Features
  - Consolidating Existing Systems
  - Using Save and Restore
  - PM/400 Integration.
- Domino Workload -- The Domino workload has had the questions regarding clustering restructured.
- Internal Improvements -- The Estimator development team is continuously going through the code trying to squeeze out internal performance bottlenecks.

**Workload Estimator Servlet URL:** <http://as400service.ibm.com/servlet/EstimatorServlet>

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# 2001.1 version (released Apr 2001)

## New in 2001.1 version

- OS/400 v5r1 and New iSeries models
- MultiSlider Applet
- NewWeb Commerce Workload
  - ▶ WebSphere Commerce Suite version 4.1
  - ▶ WebSphere Payment Manager version 2.2
- Removal of WebSphere 2.0x Support
- Domino Enhancements
- New DSD Workload Calculations
- Removal of Domino 4.6 Support

# Notes: 2001.1 version (released Apr 2001)

## Support for

- OS/400 v5r1 and New iSeries models
- MultiSlider Applet
  - A new applet has been added to the Domino Workload, Traditional Workload, and Operational Assumptions pages to enhance usability. The applet allows users to answer percentage questions using sliding bars that always add up to 100% instead of using individual drop down lists.
- NewWeb Commerce Workload
  - Replaces the Net.Commerce workload. Previous Net.Commerce workloads that are restored will automatically be converted to Web Commerce workloads. This now provides support for:
    - ✓ WebSphere Commerce Suite version 4.1
    - ✓ WebSphere Payment Manager version 2.2 - Estimates can be sized in conjunction with buy transactions from the WebSphere Commerce Suite workload or as a standalone workload.
- Removal of WebSphere 2.0x Support
  - All WebSphere version 2.0x workloads restored will be automatically converted to WebSphere version 3.02.
- Domino Enhancements
  - New defaults and assumptions based on feedback on how typical customers are using Domino as well as how they are using the Workload Estimator to project Domino workloads. A few of user interface adjustments have been made to minimize ambiguity in (a) Domino planned usage and (b) classifying the complexity of a Domino user written application. Read the Domino workload help text for a complete explanation of the Domino workload enhancements.
- New DSD Workload Calculations
  - With V5R1 refresh after **September 28, 2001**, all DSD models will support Domino Complementary workloads such as Java Servlets and WebSphere Application Server. The V5R1 Estimator will allow inclusion of non-Domino workloads on a DSD as long as the following requirements are met: Domino is the major workload, and the DB2 Universal Database utilization is less than the rated DB2 capacity for that model (15% of the CPU).
- Removal of Domino 4.6 Support
  - All Domino version 4.6 workloads restored will be automatically converted to Domino version 5.

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# Size your Upgrade

IBM @server iSeries

Bookmarks Location: <http://www.as400.ibm.com/pm400/> What's Related

Instant Message IBM WebMail Radio People Yellow Pages Download Calendar

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Home Products Consulting Industries News About IBM

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in iSeries Go

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Integrated business servers

## PM/400e Home

- Guided Tour
- Activate PM/400 Now
- Existing Customers
- PM/400 in the Press
- Upcoming Events
- PM/400e News

Related links:  
My iSeries site

### PM/400e News

- [Size your next upgrade with PM/400e and IBM Workload Estimator](#) **NEW**

### Take our Guided Tour

- [What is PM/400e?](#)

### Existing PM/400e Customers:

Click here to view your Management Summary Graph

### Related Performance Monitoring

- Select Site -

### Existing Customers

- [Existing Customers FAQs](#)

Document: Done

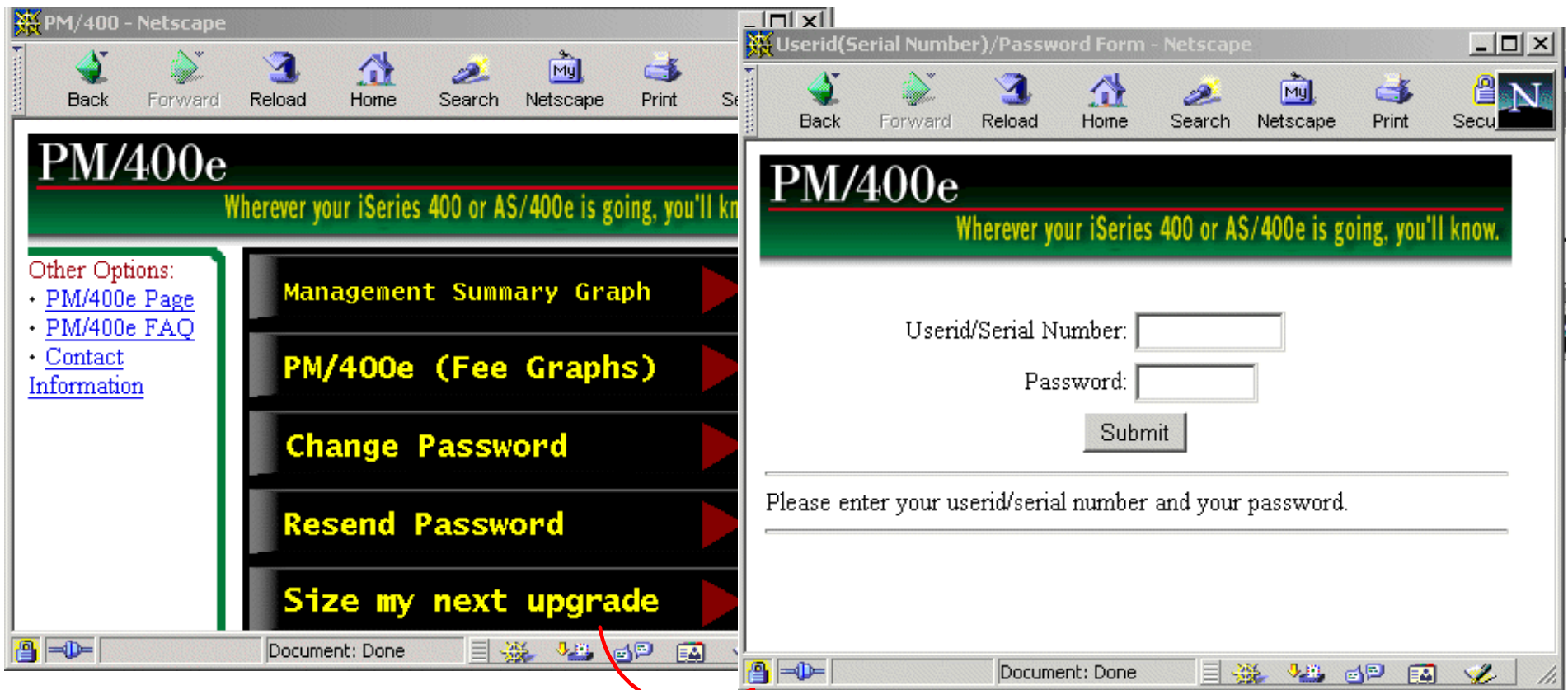
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# Notes: Size your Upgrade

When you go to the PM/400 webpage at <http://www.as400.ibm.com/pm400/> you will see the "hotspot" which offers you the opportunity to "Size your next upgrade with PM/400e and IBM Workload Estimator". This is one of the New features of integration of PM/400 data with the Workload Estimator.

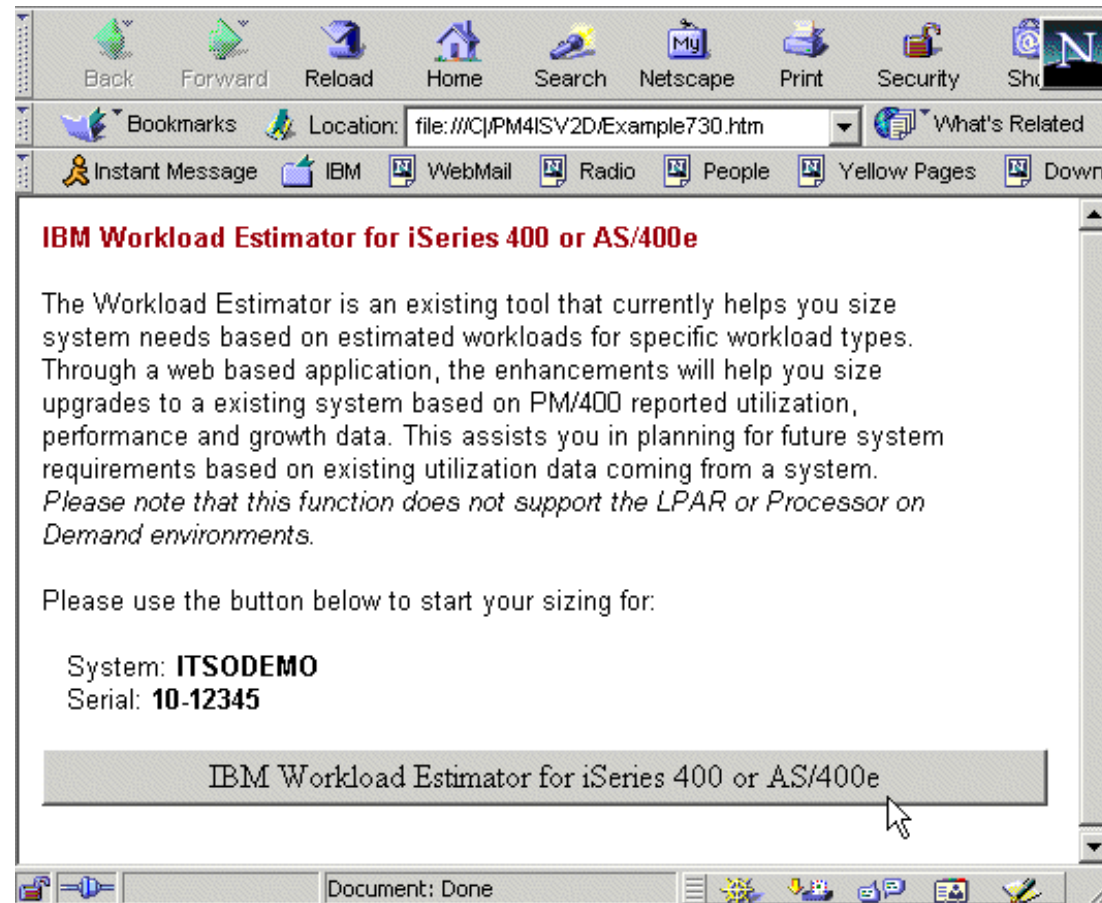
How do you get to the size?

View my Management Summary Graph



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# PM/400 Integration





# Notes: PM/400 Integration

Selecting this option from PM/400 takes you directly to the web-based Workload Estimator for iSeries. Your PM/400 workload information is automatically associated with the Workload Estimator.

The screen shows your System Name and your Serial Number.

To begin your sizing exercise, click on the button.



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### Workload Selection

Type of Workload	Name of Workload
Workload Type	Workload #1
Workload Type	Workload #2
Workload Type	Workload #3
Existing	
PM400	
Domino	
Java	
Web_Commerce	owns to select
Traditional	. Then press
WebSphere	
HTTP	
Generic	another Workload

Next

[Options: OS/400 Version = V5R1, RAID Support = None, DBCS Support = No](#)  
[Developed by the Rochester iSeries 400 System Performance Team](#)

# Notes: Workload Identification

You will be shown an informational screen and a disclaimer, which requires you to accept the conditions prior to proceeding with the sizing. This takes you to the initial screen of the Workload Estimator.

In addition to the PM/400 measured workload included in the Workload Estimator, you can include additional workload to be consolidated on a single system. These workloads include:

- Existing Workloads - allows for entry of measured workloads
- PM400- workload provides a linkage to the PM/400 data that can be automatically collected on your system and sent to IBM. You can include multiple PM/400 data collections in a single WLE model to review the impact of Server Consolidation. There are two ways to get PM/400 data into the Estimator.
  - 1.Start at the PM/400 website. Please see <http://www.as400.ibm.com/pm400/> for more information.
  - 2.Go back to the Workload Selection screen and "Restore" a set of PM/400 data that you previously saved.
- Domino
- Java
- Web\_Commerce
- Traditional
- WebSphere
- HTTP
- Generic

The initial window allows up to three workloads to be defined. If additional workloads are required, select the "Allow Another Workload" button.

Use the Options tab from the Edit pulldown menu to specify the Basic calculation defaults (RAID/Mirrored, DBCS etc) as well as system selection criteria ( resource utilization limits using "slide bars" for Total and Interactive CPU, disk etc).



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The period over which performance data was used to determine growth estimates.



### 1. System Information:

5 months of PM/400 data available.

sn: 10-12345

PM400 Workload Definition

Serial:	10-12345
Model:	720-2061
Feature:	1502
System CPU:	91.3 % of 240 CPW
Interactive CPU:	86.0 % of 120 CPW
# of Processors:	1
Memory:	1024 MB
Disk Arms:	8.8 % utilization of 21 Arms installed
Disk Arms Distribution:	7,200 RPM Arms: <input type="text" value="21.0"/>
	10k RPM Arms: <input type="text" value="0.0"/>
Disk Storage:	53.8 GB (71.3 %) of 75 GB installed
Data Protection:	No Protection

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# Notes: PM/400 - System Information

As you navigate in to the PM/400 workload, you will see the information carried in by PM/400, shown as defaults. This includes:

- Machine Serial Number
- Model/Feature
- System CPU Utilization and the total CPW rating of the system
- Interactive CPU Utilization and the interactive CPW capacity of the system.
- Number of Processors
- Installed Memory
- Number of Disk Arms and the measured arm utilization
- Disk Storage (space) installed, and space utilized in GB and as a percentage
- Disk protection (if any)

If you wish to consolidate PM/400 data from multiple iSeries or AS/400 systems, you can include multiple PM400 datasets.

# PM/400 Growth Information

---

2. [Growth Information: Months to Grow:](#)  [Memory Growth Matches:](#)

<a href="#">Interactive CPU:</a>	<input type="text" value="6.092"/>	CPW/Month	<input type="radio"/>
<a href="#">NonInteractive CPU:</a>	<input type="text" value="7.957"/>	CPW/Month	<input type="radio"/>
<a href="#">Total System CPU:</a>	<input type="text" value="14.049"/>	CPW/Month	<input checked="" type="radio"/>
<a href="#">Disk Arms:</a>	<input type="text" value="1.191"/>	Arms/Month	<input type="radio"/>
<a href="#">Disk Storage:</a>	<input type="text" value="1.408"/>	GB/Month	<input type="radio"/>
<a href="#">Memory:</a>	<input type="text" value="59.942"/>	MB/Month	<input type="radio"/> (Grow Independently)

# Notes: PM/400 Growth Information

The lower portion of the panel indicates the growth rates determined by examining PM/400 data collected over a period of time. You can manually override these estimates. These are the growth rates that will be used to establish the growth in hardware resource requirements.

Months to Grow - represents the planning horizon for this sizing exercise. You can plan up to 36 months with the Workload Estimator.

The growth estimates for the following hardware resources are included:

- CPU - measured as CPW per month
  - Interactive
  - Non-interactive
- Disk Arms - measured as Arms per month
- Disk Storage (space) - measured as GB per month
- Memory - MB per month, if you choose to grow memory independently. However, you can choose to grow memory in line with any of the other resources. In this case, you should select the appropriate radio button.

# PM/400 Growth Information (advanced)

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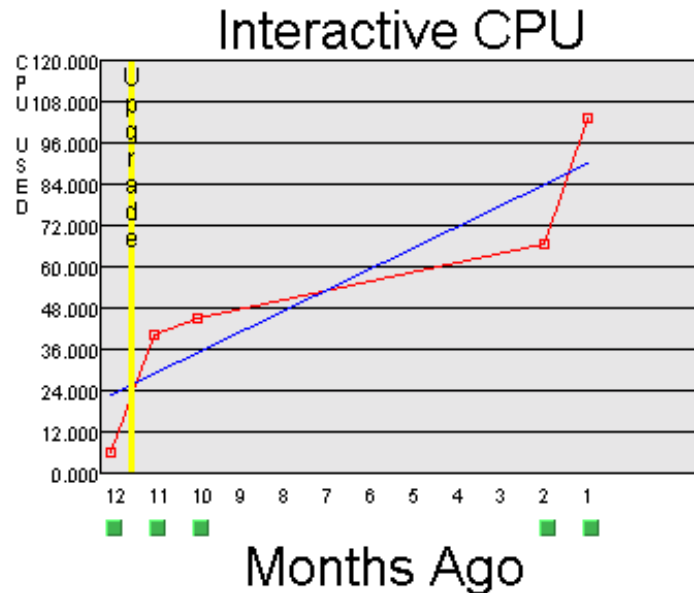
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sn: 10-12345

PM400 Advanced Growth Options



	Current			Future		Memory Matches
	Total	Trend		Growth	Total	
<b>Interactive CPU</b>	103.200	6.091	->	6.091	176.300	<input type="radio"/>
Non-Interactive CPU	115.872	7.956	->	7.956	211.356	<input type="radio"/>
Total System CPU	219.072	14.04		14.04	387.656	<input checked="" type="radio"/>
Disk Arms	21.000	1.190	->	1.191	35.291	<input type="radio"/>
Disk Storage	53.814	1.407	->	1.407	70.710	<input type="radio"/>
Memory	1,024.0	59.93		59.94	1,743.2	<input type="radio"/>

Grows Independently

Months To Grow:

Deselect All Months



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# Notes: PM/400 Growth Information (advanced)

---

Selecting the "Advanced Growth Options" will allow you to better identify growth rate projections.

For each of the growth parameters, a graph can be displayed showing the points measured in the PM/400 data collections. You can use this to choose which particular measurement points are to be used in determining a trend. For example, in the chart, the Workload Estimator has included all points of the data collected (10 months) and determined a negative growth rate (-0.12) based on "least-square fit".

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# PM/400 Growth Information (advanced-2)

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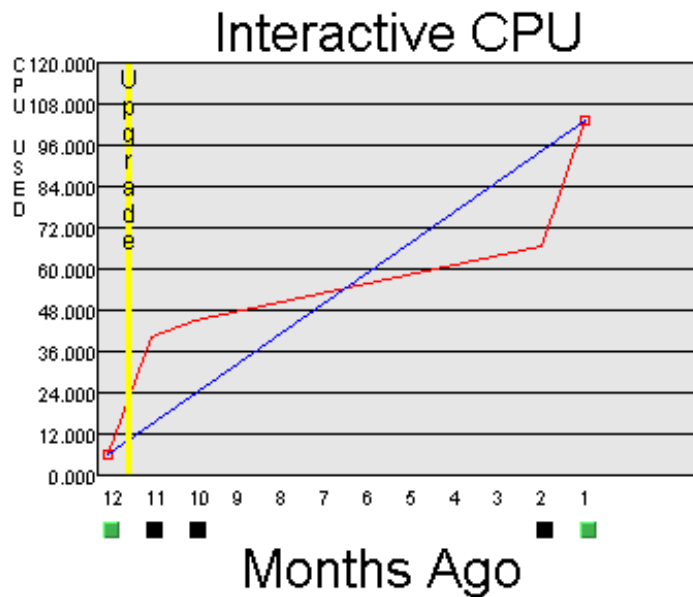
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sn: 10-12345

PM400 Advanced Growth Options



	Current		Future		Memory Matches
	Total	Trend	Growth	Total	
Interactive CPU	103.200	8.787	8.787	208.656	<input type="radio"/>
Non-Interactive CPU	115.872	7.956	7.956	211.356	<input type="radio"/>
Total System CPU	219.072	16.74	16.74	420.012	<input checked="" type="radio"/>
Disk Arms	21.000	1.190	1.191	35.291	<input type="radio"/>
Disk Storage	53.814	1.407	1.407	70.710	<input type="radio"/>
Memory	1,024.0	71.44	71.44	1,881.3	<input type="radio"/>

Grows Independently

Months To Grow:

Select All Months



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# Notes: PM/400 Growth Information

## (advanced-2)

The applicable growth rate can be modified. For example:

- if you deselect all the periods, except month 6 and month 3
- it would modify the rate of growth to +4.199.

Similar changes can be made for all resource metrics.



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### Java # 1

Workload Definition

1. What will be the maximum number of [active Java users](#)?
2. How many Java users generate [constant work](#) (transmit work every 1 to 2 minutes)?
3. Rate the complexity of work of the Java users generating [constant work](#).
4. In addition to applications which serve interactive clients, Java can be used for [batch applications](#). How would you classify the Java batch workload on the iSeries 400?
5. What portion of the Java work (server and batch) will make [substantial](#) use of database? *Do not count remote database access.*
6. [DBCS support](#) for this workload:
7. [RAID support](#) for this workload:



# Notes: Workload (Java)

This display shows an example of how to define an additional Java workload to be implemented at the beginning of the time period under review. The specification include:

- Maximum number of Java users
- Users generating constant work
- Estimating of the complexity of workload
- Additional Java batch workload
- etc.



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## Production Planning

Existing Workload Definition

**Please note:** The information requested for an Existing System is information about the workload on an existing iSeries 400 or AS/400e that you would like to have added to a new iSeries 400.

	Model	Interactive Feature	Processor Code	Processor CPW	Interactive CPW
<b>Processor</b>					
1. <a href="#">Processor Model</a>	730-2067	1508	2B6E	2000	240
2. <a href="#">Total CPU Utilization</a>	<input type="text" value="60"/>				
3. <a href="#">Interactive Utilization</a>	<input type="text" value="47"/>				
<b>Memory</b>					
4. <a href="#">Memory (MB)</a>	<input type="text" value="1024"/>				
<b>Disk</b>					
	<b>UnProtected</b>	<b>Mirrored</b>	<b>RAID-5</b>		
5. <a href="#">Number of Disk Drives</a>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="20"/>		
6. <a href="#">Storage Used (GB)</a>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="120"/>		
7. <a href="#">Additional Characteristics:</a>	<input type="text" value="Domino Work"/>				

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# Notes: Workload (Existing-manual input)

This display is an example of how you can define an additional "Existing Workload" based on performance measurements of another system. You will be required to specify:

- the system model and feature (select from the pulldown menu)
- the measured total CPU utilization
- the measured interactive feature utilization
- memory installed
- disk installed - number of arms
- disk storage (space) installed - GB



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### Domino #1 Workload Definition

1. [Domino Version](#)
2. What is your [planned usage](#) for this Domino instance?
3. Will you be [clustering](#) this Domino instance?
4. [DBCS support](#) for this workload:
5. [RAID support](#) for this workload:

- R5
- Mail
- Written Applications
- Domino Doc

Yes

Default (No)

RAID-5





# Notes: Domino Workload (1)

In the prior version of the Estimator, the user could opt to select a "Typical Setup" which represents use of Domino as an e-mail system and an application server. The Typical Setup for Domino consists of Mail and User Written Applications. Typical Setup is the default choice that is designed for first time users of Domino. This option has been removed.

The user has to select the Domino workload from

- Applications:
  - If you decide to use Domino only as an application server
- Mail:
  - If you decide to use it only as an e-mail system
- Domino.Doc application:
  - possible to select several uses together.



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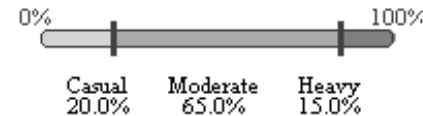


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### Domino #1

Mail Definition

- Number of registered users that are [mail users](#):
- Percent of mail users active at the same time ([Concurrent](#)):
- Type of [concurrent mail](#) users:



- Type of [mail access](#):
- Amount of disk storage per registered user needed for [mail databases](#): (MB)
- Number of [partitions](#) for MAIL in this instance of the Domino Workload (\*CALC will automatically include 0.0 partitions):

So far a total of **0.0** partition(s) are being used by **this** instance of the Domino Workload.  
A total of **0** partition(s) are being used for all instances of Domino in this estimation



# Notes: Domino Workload (2)

The Domino workload allocation between casual, moderate and heavy concurrent mail users is now input using a slide-bar, representing 100% of the users. In the previous version of the Estimator, the user had to ensure the total percentages added up to 100%.

This same "slide-bar" is used in specifying the concurrent user distribution for Domino Document Definition workload.



## IBM Workload Estimator for iSeries

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### Selected System

Choose Base System

An existing system has been chosen as one of the workloads. Please make a selection below.

If you chose one of the existing systems, then after all the processing requirements of the various workloads have been calculated, the system selection algorithms will attempt to give preference to the selected system or a system on its upgrade path.

	Workload Name	Model	Type	Feature	Hardware Feature
Select	sn: 10-12345	720	2061	1502	206C
Select	Production Planning	730	2067	1508	2B6E
Select	Do not limit selection based on <a href="#">upgrade path information</a> from any existing system. Size to any possible system.				



# Notes: Upgrade Selection

This panel allows you to specify which of the current systems (iSeries or AS/400e) you would like to have considered as a candidate for hardware upgrade. This preference could be as a result of factors other than hardware considerations, like financial issues related to a current lease on equipment.

# Recommended Upgrade

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### Selected System

Consider Growth

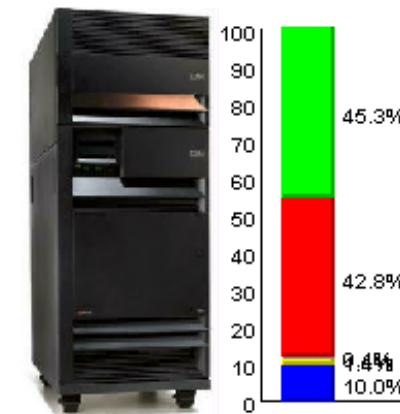
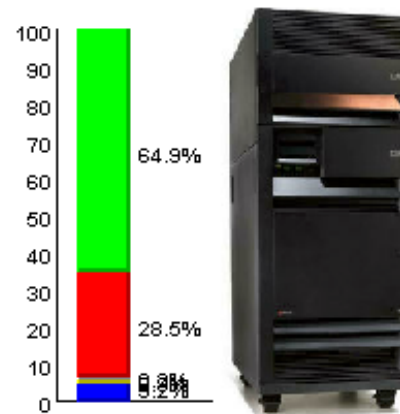
#### Immediate Solution

#### Growth Solution

Growth trends for PM400 workloads have been [previously set](#).

For non PM/400 workloads:  % growth

- Available
- Production Planning
- Domino #1
- Java #1
- sn: 10-12345



Model/Feature:	830-2402/1535 4200/1050
Processor CPW:	4200
Interactive CPW:	1050 (100% utilized)
Database Capacity:	
N-Way:	4-way

Model/Feature:	830-2402/1536
Processor CPW:	4200
Interactive CPW:	2000 (81% utilized)
Database Capacity:	
N-Way:	4-way

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# Notes: Recommended Upgrade

The Workload Estimator will make a suggestion on hardware requirements based on the workloads included in the profile and the estimated rates of growth of the resources. A recommendation for an immediate and "growth" solution are provided.

A capability to produce a .PDF file has been included in addition to the print option.

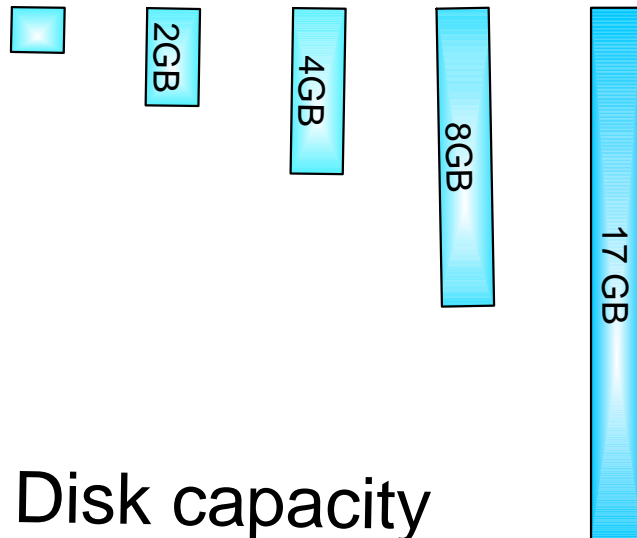
# Sizing number of disk arms

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Disk size



Disk capacity

## Facts

- ▶ High density drives reduce CPU performance when same total disk capacity is maintained, i.e. fewer disk arms
- ▶ Disk arms define performance - not disk capacity

## Challenge

- ▶ avoid disk constraint installations due to dramatic reduction in the number of disk drives as high density drives and/or disk compression became available
- ▶ The need to properly position the high density (18GB, 35GB (future)) and high RPM (10,000 rpm) disks

# Estimating number of disk arms solutions

IBM  server iSeries

## Disk Arms Considerations White Paper

- widely used in the field for 3 years
- key document in selling additional DASD arms

### Requires:

- some technical skills
- time for manual calculations

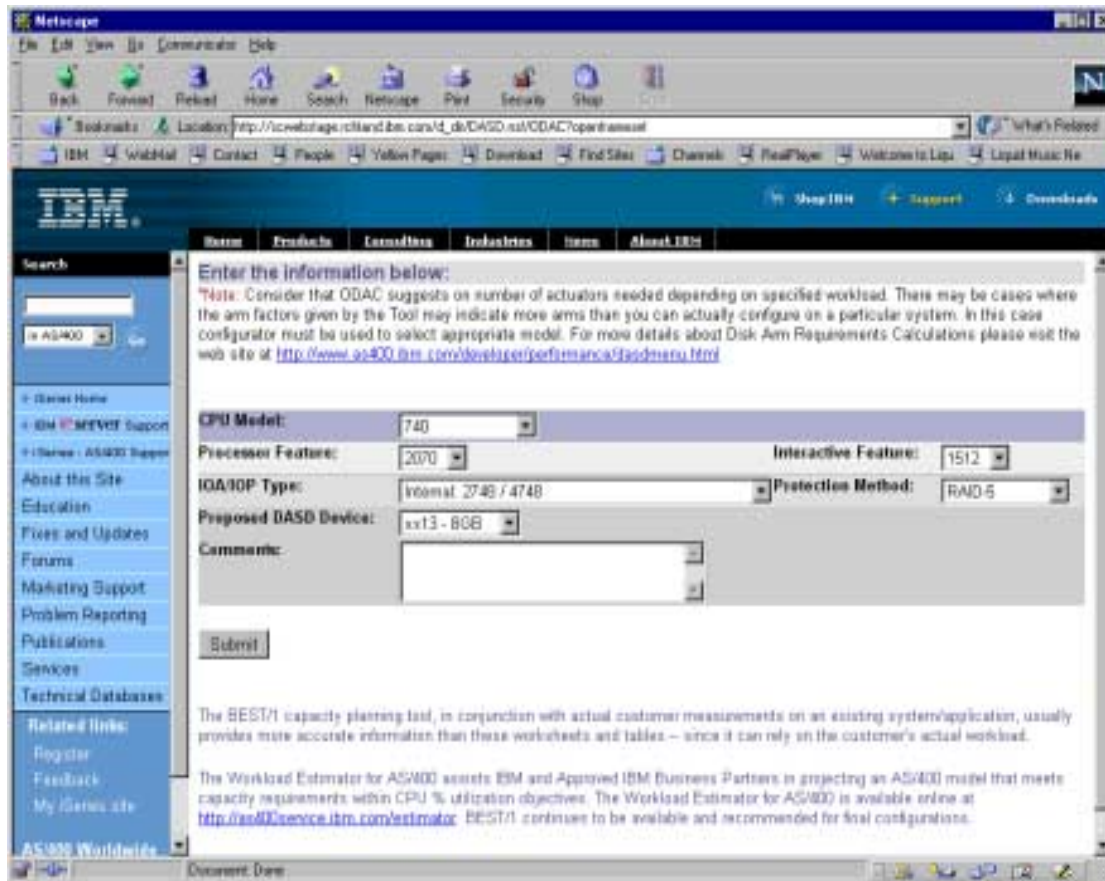


### Automated calculations:

- very fast - estimated usage time about 5 minutes
- no need for technical background
- work in progress ...

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# Disk Calculator on the Web



- Easy to maintain
- Easy to keep current

## Required input

- CPU Model
- Processor Feature
- Interactive Feature
- IOA/IOP Type
- Protection Method
- Proposed DASD Device

## Output

- number of disk Arms required to insure that CPU will not wait on disks

The ODAC tool and white paper may be found through the System Performance web site at:

- <http://www.ibm.com/eserver/iseries/perfmgmt/>

# ODAC, Workload Estimator, BEST/1

Tool	Answers question	Primary use	Required input	Output	Estimated time to use
ODAC	What number of disk arms are needed to avoid having the CPU waiting on the disks?	New sales / upgrades Focusing on disk arms	<ul style="list-style-type: none"> <li>• CPU Model</li> <li>• Processor Feature</li> <li>• Interactive Feature</li> <li>• IOA/IOP Type</li> <li>• Protection Method</li> <li>• Proposed DASD Device</li> </ul>	Number of disk arms	5 min
Workload Estimator	What is the minimum number of disk arms required for good performance on a specific and known workload?	New sales / upgrades Focusing on workload	<ul style="list-style-type: none"> <li>• Input can be from one of these sources:</li> <li>• PM/400e data</li> <li>• Model and CPW</li> <li>• Workload parameters for Domino, Java, or WebSphere</li> </ul>	<ul style="list-style-type: none"> <li>- Model, feature, memory</li> <li>- Number of disk arms</li> <li>- Total disk</li> <li>- CPU % utilization</li> <li>- Growth projections</li> </ul>	5 - 20 min
BEST/ 1  * BEST/1 will not be supported by IBM after V5R1	What is the number of disk arms needed in a complex configuration environment and for actual workload running on iSeries or AS/400	Upgrades  BEST/ 1 is intended for the use of experts knowledgeable in performance	<ul style="list-style-type: none"> <li>• CPU model</li> <li>• Processor feature</li> <li>• Interactive feature</li> <li>• IOA/IOP type</li> <li>• Number of arms</li> <li>• Protection method</li> <li>• Measured performance data</li> <li>• Proposed device features</li> <li>• Proposed growth rates</li> <li>• Compression information</li> </ul>	<ul style="list-style-type: none"> <li>- Disk features</li> <li>- Total disk utilization</li> <li>- CPU % utilization</li> <li>- IOA/IOP % utilization</li> <li>- MSecs per I/O</li> <li>- Communications</li> <li>- Growth projections</li> </ul>	Depends on the user experience . Can span from 30 min to a week.

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